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Website: https://conference-w.com/
E-mail: jap@conference-w.com
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EVALUATION OF THE GENETIC COMPONENTS OF THE MAIN VALUABLE AND ECONOMIC TRAITS OF MILLET

Zhirkhova Irina
S. Sefullin Kazakh Agro Technical University,
Rysbekova Aiman
S. Sefullin Kazakh Agro Technical University
Dyussibayeva Elmira
S. Sefullin Kazakh Agro Technical University
Zeinullina Aiym
S. Sefullin Kazakh Agro Technical University
Dolinnyi Yuri
A. I. Barayev Research and production centre for grain farming

Abstract
New varieties and hybrids of millet should combine quality and high productivity, be ecologically plastic in different regions of the republic, therefore, when obtaining material for a certain trait, it is necessary to select material that will fully meet the requirements of the culture for a certain territory.

Comprehensive evaluation of hybrid material will allow to select the source material, the signs of which will be realized in the future generation of received samples.

The use of various methods of evaluation and analysis will improve the quality of data and speed up the process of obtaining the final result.

These articles reflect the results of work with hybrid material of pearl millet for involvement in the breeding process.

Study of the obtained hybrid generations for productivity by analyzing the yield structure and selection of the best for productivity and the desired trait. Multiplication and evaluation of hybrid populations of generations F3 and F4

Аннотация
Новые сорта и гибриды проса должны сочетать в себе качество и высокую продуктивность, быть экологически пластичными в различных областях республики, поэтому при получении материала по определенному признаку необходимо подобрать материал, который полностью будет соответствовать требованиям культуры для определенной территории.
Всесторонняя оценка гибридного материала позволит подобрать исходный материал, признаки которого будут реализовываться в будущем поколении полученных образцов.

Использование различных методов оценки и анализа позволят улучшить качество данных и ускорить процесс получения конечного результата.

Данные статьи отражают результаты работы с гибридным материалом проса для вовлечения в селекционный процесс.

Изучение полученных гибридных поколений на продуктивность по анализу структуры урожая и отбор лучших по продуктивности и искомому признаку. Размножение и оценка гибридных популяций поколений F3 и F4

**Keywords:** millet; breeding; source material; hybrid; productivity; inheritance; generation.

**Ключевые слова:** просо; селекция; исходный материал; гибрид; продуктивность; наследование; поколение

**Введение.**

Просо-древнейшая культура. По свидетельству историков и другим материалам установлено, что первичными очагами культуры проса были Центральный и Западный Китай и горные районы Монголии, где она была известна за 3 тыс. лет до н. э.[1]

Просо посевное (*Panicum miliaceum* L.) занимает важное место в истории одомашнивания растений как новаторский злак, как в хронологическом, так и в экологическом плане. Он был одним из самых ранних одомашненных злаков в мире, по древности сравнимый с пшеницей и рисом [2] имеет короткий вегетационный период и самую высокую эффективность использования воды из всех злаковых, что позволяет как его выращивать на ранних стадиях в широком диапазоне экологических зон. [3]

Просо является культурой адаптированной к различным климатическим условиям и системам возделывания, что дает весомые основания для обогащения биоразнообразия, а также для диверсификации продовольственной зерновой корзины.

В условиях сценария изменения климата просо является наиболее надежной продовольственной культурой человечества, особенно для бедных ресурсами фермеров засушливых районов мира поскольку оно устойчиво к изменению климата и обеспечивает устойчивое производство зерна при минимальных затратах. [4]

Просо является высокопитательной культурой и содержит значительное количество витаминов и минералов. Просо является хорошим источником энергии, пищевых волокон, медленно перевариваемого крахмала и резистентного крахмала, что обеспечивает устойчивое высвобождение глюкозы и тем самым сытость. [5]

Просо имеет богатое генетическое разнообразие по агрономическим и адаптационным признакам. Во всем мире были предприняты огромные усилия по генетическому улучшению проса для решения многочисленных абиотических и биотических проблем. [6]

Обеспечение продовольственной безопасности государства может быть решено за счет мобилизации и сохранения генетических ресурсов сельскохозяйственных растений. Используя данные источники можно получить новые высокопродуктивные сорта и гибриды, отвечающие требованиям. [7]

При проведении селекционных работ, селекционер должен иметь представление о своем будущем сорте. Модель сорта как раз выступает в виде прогноза планируемого результата. Данная модель должна сочетать в себе признаки, которые обеспечат высокий уровень продуктивности, устойчивости к тем или иным факторам внешней среды.

Одним из популярных направлений селекции проса является получение крупнозеренных образцов, посев проса чаще всего проводят в пересушенный верхний слой и использование наиболее крупных семян позволит проводить посев глубже. [8]

**Материалы и методы** Для достижения поставленной цели был выбран метод гибрилизации. Родительские формы были отобраны на основе хозяйственно-ценных
признаков, а также с помощью биохимического и молекулярного анализа. Исследования проводили в 2018-2020 годы.

Исходный материал проса был подобран согласно лимитирующим требованиям условий Северного Казахстана, исследования проведены согласно методике ВИР. [9]

В течение трех лет исследования включали следующие этапы:
1. Коллекционный питомник: просо высевалось рядовым способом с междурядьями 0,45 м при длине делянки 2 м с площадью 2 м². Стандарт высевался после 9 номеров.
2. Питомник гибридизации: подбор родительских пар был основан на оценке коллекции по хозяйственно-ценным признакам.
3. В результате скрещиваний после получения гибридного материала был сформирован питомник размножения гибридов 4 поколений. Целью данного питомника было размножение исходного материала и проведение оценки полученных гибридов по хозяйственно ценным признакам.

Сорта, образцы, а также полученный исходный материал был проанализирован по уровню урожайности и его составляющих.

Для оценки количественных составляющих урожайности отбирали по 25 растений каждого образца. Учеты, наблюдения и анализы проведены в соответствии методике ВИР и Методике полевого опыта.

Результаты

Одним из популярных направлений селекции проса является получение крупнозерных образцов, посев проса чаще всего проводят в пересушенный верхний слой и использование наиболее крупных семян позволит проводить посев глубже. [10]

Также, согласно источникам, есть корреляционная зависимость между массой 1000 зерен и пленчатостью зерна, идет уменьшение пленчатости и повышение выхода крупы.

Успех проведения селекционных работ по крупности семян обоснован контролем генов Gr1, Gr2, Gr3, в результате рекомендантных скрещиваний данный признак будет стабильным за счет накопления рецессивных аллелей данных генов. [11]

Рисунок 1 – Масса 1000 зерен гибридов и родительских форм проса.

Проведенный анализ гибридных поколений проса показывает, что масса 1000 зерен имела эффект гетерозиса во втором поколении, показатели гибрида превышали родительские формы.

Масса 1000 зерен гибрида варьировала от 7,6 у F2 поколения до 3,7 у F4, идет снижение крупности семян, так как при оценке показателей озерненности колоса наблюдается увеличение количества семян с метелки (Рисунок 2)
Рисунок 2 – Количество семян с метелки гибридов и родительских форм проса

Озерненность метелки гибрида показывает превосходство над родительскими формами, но сравнение с хозяйственно ценным признаком крупности семян, полученный гибрид будет иметь большее количество мелких семян. В поколении F_2 озерненность составляет 596,7 шт при массе 1000 зерен 7,6, а в поколении F_4 при озерненности метелки 744 шт масса составляет 3,7 г.

Получение высокопродуктивного сорта является главной задачей селекционера. Урожайность гибридов напрямую зависит от правильного подбора родительских форм, обладающих высокими структурными данными (Рисунок 3).

Для скрещивания использовали родительские формы различного эколого-географического происхождения, но обладающие сходными данными по показателям урожайности.

Рисунок 3 – Урожайность гибридов и родительских форм проса

В результате полученный гибрид не превзошел родительские формы и урожайность была на уровне материнской и отцовской формы.
Результаты отбора на ранних этапах селекции по хозяйственно ценным признакам позволило сделать выводы, что наблюдается расщепление гибрида в поколении F₄ по всем изученным признакам. В первом поколении наблюдается эффект гетерозиса, гибрид значительно превосходит родительские формы. Последующие поколения имеют показатели признаков на уровне родителей или идет снижение.

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Architecture

THE ROLE OF ARCHITECTURE IN PROMOTING RESILIENCE TO EARTHQUAKES IN ALMATY

Shynar Nazargaliyeva

Faculty of Architecture, Kazakh Leading Academy of Architecture and Civil Engineering, Almaty, Kazakhstan

Abstract

This article is devoted to the study of buildings erected in seismic areas of Almaty, Kazakhstan as objects of increased responsibility, which have specific differences from buildings erected in seismically inactive areas. Architecture can play a significant role in promoting resilience to earthquakes by designing and constructing earthquake-resistant buildings and infrastructure, and by developing urban planning policies and practices that promote earthquake resilience.

Keywords: Architecture, Seismic Activity, Earthquake-Resistant Materials, Construction Techniques, Slipform-Based Technology.

1. Introduction:

Almaty is one of the earthquake-prone regions of our republic. Almaty is located on 27 dangerous faults of tectonic plates. The main ones are the mountainous areas of the city. The data presented below underscores the imperative need for designing structures with due consideration to these seismic conditions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1887</td>
<td>7.2</td>
</tr>
<tr>
<td>1889</td>
<td>8.3</td>
</tr>
<tr>
<td>1911</td>
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<td>1936</td>
<td>6.8</td>
</tr>
<tr>
<td>1951</td>
<td>6.6</td>
</tr>
<tr>
<td>1978</td>
<td>6.5</td>
</tr>
<tr>
<td>1992</td>
<td>6.2</td>
</tr>
<tr>
<td>2014</td>
<td>5.8</td>
</tr>
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<td>2017</td>
<td>5.5</td>
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<tr>
<td>2018</td>
<td>5.3</td>
</tr>
<tr>
<td>2021</td>
<td>5.1</td>
</tr>
<tr>
<td>2022</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Table 1
2. The following factors affect the earthquake resistance of a building:

- The type of ground vibrations, which depends on the distance from the hearth, the depth of the earthquake and the composition of the soil itself.
- The geographical location of the building relative to other landscape objects.
- The age of the structure and its technical condition: older houses have reduced stability in the event of aftershocks. In addition, it is necessary to take into account the material from which the construction will be carried out: brick houses are the most fragile, whereas buildings made of monolithic reinforced concrete do not collapse even with strong earthquakes. The intermediate state is occupied by structures made of reinforced concrete blocks and panel, panel-frame, frame houses.
- The shape of the building. The most earthquake-prone is the square one. Various extensions, overhanging elements, balconies, as well as alterations significantly reduce the stability of structures.
- The height of the structure. Very high houses will be more easily destroyed when an earthquake occurs. The building will be the more intact during aftershocks, the larger its area and less pressure on the soil.

3. Earthquake-Resistant Construction Techniques

Earthquake-resistant buildings designed for strong earthquakes have deep foundations and driven piles. All elements are connected in such a way that they move as a whole during vibrations. After all, during an earthquake, shock waves disperse along the earth in all directions in short, fast intervals. Horizontal movement causes vibration of all structural elements. Due to extreme stress, there is a rupture of the supporting frame and, as a result, the destruction of the entire structure.

Conventional structures are adapted to cope only with gravity and vertical forces created by their own weight. They are not designed for transverse forces arising from an earthquake, so they are destroyed.

Earthquake-resistant buildings with reinforced structure of the building, which are able to counteract the transverse forces of an earthquake, can avoid such consequences. And all thanks to the latest technologies in this area.

Isolation

To increase the seismic resistance of buildings and structures, for example, the Incas erected stone walls without using mortar: stones were picked up and laid so that a blade could not be inserted between them. Then the walls moved in time with the tremors, without completely collapsing. Today, modern engineering uses a different approach to earthquake-resistant construction, and technologies for earthquake-resistant construction have advanced significantly over the past decades.
Slipform-based technology

Slipform-based technology is a spatial formwork system installed along the perimeter of the wall and lifted continuously up the entire height of the structure as the monolithic walls are concreted at a set speed so that after its passage the walls are almost completely ready, with the exception of minor completions.

The main elements of sliding formwork:
— sliding formwork panels — height 1.1 or 1.2 m;
— jack frames — designed to lift and hold the sliding formwork in the design position, as well as to perceive the lateral pressure of the concrete mixture;
— hydraulic equipment of sliding formwork (hydraulic jacks, automatic pumping station, pipeline of hydraulic networks, etc.);
— upper and lower working platforms — designed to perform reinforcement, concrete, formwork, etc. works, as well as correction of defects in monolithic structures;
— equipment for monitoring the horizontality of the sliding formwork of the splint (a network of hydraulic levels, etc.) and equipment for monitoring the verticality of the structure (mechanical plumb lines, etc.);
— auxiliary equipment (proemobobravateli, conductors for fittings, devices for the device of channels, electrical equipment, water supply system for concrete care, equipment for heat treatment in winter).

A number of requirements are also imposed on buildings and structures erected using sliding formwork. Firstly, they should be as simple as possible in plan (round or square). Secondly, they must have a minimum number of window and door openings, as well as embedded parts. It should be noted that sliding formwork is advisable to use for the construction of several nearby structures.
SLIPFORM-BASED TECHNOLOGY:
1 — jack frame; 2 — hydraulic jack; 3 — jack rod; 4 — oil line; 5 — working floor; 6 — formwork panels; 7 — suspended external scaffolding; 8 — lamp; 9 — external working flooring

4. Earthquake-Resistant Materials

The stability of buildings largely depends on the materials used for its construction.

Steel truss. For earthquake-resistant buildings, structural steel is used, which makes it possible for the structure to bend without destruction. Steel is 10 times stronger than concrete and brick, so the use of a steel frame is justified. An example is the dormitory building of the University of California Berkeley. Earthquake-resistant construction also uses wood.

Alloys with shape memory. One of the most innovative materials, endowed with the property of withstanding significant loads, after which it returns to its original form. A variant of this alloy is nickel-titanium, 10-30% more elastic than steel.

Carbon fiber. An additional strength of about 40% is provided by a plastic film reinforced with fiber. Plastic material is wrapped around concrete columns, and epoxy resin is injected between the building element and the material. The carbon fiber reinforced plastic shell provides additional strength. Engineers also turn to natural elements to strengthen buildings, materials based on mussels, cobwebs, bamboo are being developed.

Cardboard pipes. In Japan, cardboard pipes coated with polyurethane are also used. The lightweight and flexible structure is able to withstand greater seismic loads than concrete.

5. Case studies of earthquake-resilient architecture in Almaty

Case Study: The hotel "Kazakhstan"

The hotel "Kazakhstan", one of the highest architectural gems of Almaty, appeared thanks to the talent of architects, their self-belief and fearless testing. The height of the structure is 102 m. The building consists of 25 floors. The building resembles a grain colossus - a kind of symbol of the development of Virgin Lands by the Kazakh people. For the high architectural and artistic merits of this building, the authors, architects Yuri Grigorievich Ratushny and Nikolai Ivanovich Ripinsky, together with their team of artists and builders, were awarded the Shokan Valikhanov Prize of the Kazakh SSR.

After the terrible earthquake of 1910, it was decided not to build buildings higher than 5-6 floors. In addition, in 1975, Tulebai Zhunusov, at that time the chief urban planner, decided to build a 100-meter building in the zone of 9-point seismicity. No one could decide to build such a tall building, considering Zhunusov's idea absurd. Still Tulebai Zhunusov was able to persuade the city administration to start construction. The architects decided to apply the slipform-based technology, which is actively used in Japan – when the entire structure as a whole is a reinforced concrete monolith. Such a formwork consists of a mold into which reinforced concrete is poured. So gradually, the building grows up. The main structural elements are the core of rigidity. The diaphragms, which are the walls of the rooms, depart from the oval structure. Elevator shafts and utilities are located in the core. In addition, all this is based on a two-story basement building.

After the building was almost finished, Tulebai Zhunusov insisted on testing the building with the help of special equipment that rocked the building, bringing the oscillatory movements to 9 points of a real earthquake. The equipment was delivered by helicopters directly to the roof. Tulebai Zhunusov, Yuri Ratushny and Lev Ukhobotov also went up there. After the equipment for rocking
the building was launched, the building began to sway with an amplitude of 1.5 meters. The building has shown its resistance to earthquakes of any strength.

In addition to the case study above, there are a number of other earthquake-resilient buildings and infrastructure projects in Almaty. These include:

The Almaty International Airport; Almaty Central Railway Station; The Almaty Tower; The Khan Shatyr Entertainment Center; The National Bank of Kazakhstan Headquarters; The Almaty Metro; The Almaty-Bishkek Highway;

These projects all feature a number of earthquake-resistant features, such as reinforced concrete construction, base isolation, and shear walls. These features are designed to protect the buildings and infrastructure from damage in the event of a major earthquake.

6. Conclusion

In conclusion, the role of architecture in increasing earthquake resistance in Almaty is undeniably high. When designing a building, it is necessary to take into account numerous factors, including the seismic activity of the area. However, new technologies and materials in construction give us the opportunity to show a great span of imagination and realize them, preserving the safety of citizens.

Thanks to such brave specialists as Tulebai Zhunussov, architects of Kazakhstan discovered that it is possible to build skyscrapers in the city of Almaty, which is a seismically active area of the 9-point zone.

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Arts

STUDY OF GEOMETRICAL SHAPES RATIONALLY USING ARCHITECTURE AS INSPIRATION FOR FASHION DESIGN INNOVATIVES

Erkeaiym Musaeva
Sapienza University Of Rome, Italy,
faculty of literature and philosophy department of fashion studies

Abstract
This study explores the composition and characteristics of the shapes for designers who express space in three dimensions. The inherent rules of Geometry, as well as the forms described by them, have always inspired artistic creation and suggested canons to achieve perfection in the creating of many works of art. Geometry has a fundamental role, since it is the moment of drawing of the project filtered by the metaproject, even today there are no unified standards for design. The creation processes of artists and architects are often seen as a throw of the genius. Looking for methods in designing remain a question for research in architecture and other creative disciplines.

Geometry as the science to capture, develop and generate structures and forms can give a scientific methodical background for designing. These surfaces, often described by structures of extraordinary beauty, are recognizable in the configuration of many natural growth’s forms, in some admirable architectural constructions characterized by perfect and futuristic shapes. This study hopes to serve as a stepping-stone for further research on innovations that combine fashion with technology.

Keywords: Geometric structures · Innovative Fashion · Architecture · Design methods

THE GEOMETRY OF BEAUTY
The awareness that very simple geometric figures can generate works of considerable aesthetic value is incredible and, at the same time, wonderful. This is the purpose of my research. We will always start from a simple figure, a polygon, and show how, using geometric transformations, we can obtain more complex shapes that describe, through synthetic processes, the beauty of both natural and artificial growth: phenomena that can be admired in the expressions of art and architecture. We could say that our recurring motif is the following: at the beginning there is always a polygon!

Let us start with the polygon that has the minimum number of sides: the triangle. This geometric shape is very present in our daily life; think of road signs and the fact that the triangular shape in this context indicates a danger and that attention must be paid. In this context, we do not want to dwell on the symbolic or religious aspect or on the various philosophical and psychological meanings; we will deal exclusively with the geometric figure, source of properties and principles but also the representation of a highly stable configuration. In three-dimensional space the solid consisting of triangles and with the minimum number of faces is the tetrahedron; a three-dimensional surface built through these forms is the tetrahelix, which is a self-supporting structure and which, theoretically, could extend itself into infinity. Although being the simplest form, has a very important structure and in nature the triangular shape is the most stable that exists. Also remember that through the triangle many other forms can be described both on the plane and on the space. An evidence of what has been said comes from Plato himself who, in Timaeus, explains the natural elements starting from the triangle. The triangle is one of the most diffuse forms in varied artistic expression.

From the Golden Spiral to the Helicoid
That rectangle whose height is the golden section of the base is called golden. Or, if we prefer, the ratio between the major and minor base is the golden number, which is indicated by the Greek letter φ and its value is approximately 1.618… with infinite and not periodic digits.
The golden section is the reciprocal of the golden number (the ratio between the golden number and the golden section is equal to 1); its value is about 0.618… but, as we all know, both the golden section and the golden number can be expressed in perfect form only through an irrational number.

The golden rectangle is important because, as always, it is what, among other infinites, describes beauty. Many artists, in fact, have believed and still believe that among all the rectangles the most “pleasing to see” is the one in which the base and height respect the golden ratio. We will not dwell on the known link between the golden number and the Fibonacci’s numbers. But, before continuing our story, we should remember that many works of art (in architecture, painting, and sculpture) were created respecting the rule of the golden section as a true canon of beauty. Do not forget that Le Corbusier himself (whose real name was Charles-Édouard Jeanneret-Gris, 1887–1965) was inspired by the golden section and the Fibonacci’s numbers to design his Modulor, in order to provide “a range of sizes harmonious to satisfy the human dimension, universally applicable to architecture and mechanical things”. It was in his work Le Modulor, that Le Corbusier states: “Mathematics is the masterful building imagined by men to understand the universe. The absolute and the infinite, the graspable and the elusive, meet there. In front of them rise high walls in front of which you can pass and go over again without any result; sometimes a door is encountered; you open it, you enter it, you are in other places, where the gods are, where the keys of the great systems are. These doors are those of miracles. Go through one of these doors, it is no longer the man who works: it is the universe that the same man touches anywhere. In front of him, the prodigious rugs of limitless combinations are unrolled and illuminated”. The golden rectangle can be iterated, that is you can build, starting from the first, infinite rectangles that will always be golden. To iterate the golden rectangle, just project the smaller side onto the larger one, thus dividing the rectangle into two parts: a square and a rectangle which is, in turn, still a golden rectangle. By repeating the construction several times, then carrying out an iterative process, “infinite” golden rectangles are described. Let’s refer to a golden rectangle and its iterations as we consider the points where the squares and the new golden rectangles separate and join them, we can describe a curve, called the golden spiral, which is a particular logarithmic spiral. This type of spiral is the basis for the growth of many biological forms, both animal (for example the nautilus) and vegetable (as in the sunflower) (Fig. 1).

![Fig. 1 Golden spiral in the golden rectangle](image)

Fig. 2 Conical helicoid.

If we now imagine rotating and translating the spiral around an axis, we obtain a conical helicoid (Fig.2) The helicoid is one of the oldest and most fascinating forms employed in architectural structures, especially in stairs, in towers, but also in the twisted columns used as ornament and embellishment. Some examples of stairs, called “spiral” staircases, are found in the towers of the
Sagrada Familia in Barcelona, and the two staircases by Bernini and Borromini inside Palazzo Barberini in Rome. The spiral staircase that connects Piazza Mercatale to the Sanzio Theater in Urbino; the work of the

Sienese architect Francesco Di Giorgio Martini and finally the spiral staircase in the Certosa di Padula (SA) in self-supporting white marble that allows access to the library. Apropos of towers, there are examples such as the Samarar Minaret (851 AD) in Iraq; Malwiyya, the helical minaret of the great Mosque of Caliph Al Mutawakkil, often mistaken for the legendary tower of Babel. In fact, many artistic representations of the tower of Babel are inspired by this form. The last example we are dealing with is the Lantermino of the church of Sant’Ivo alla Sapienza in Rome by Francesco Borromini; a work of great courage for those times, 1640, with the intervention done on an existing structure. The criticism and doubts aroused by this work because of the great weight imposed on the structure that, according to all, would not have lasted long and the sensation was such that the Rector of La Sapienza “protests against himself regarding any damage that could occur in fifteen years, according to the legal provisions of the city”; Borromini is so sure of his work that he replies to the Rector that he did not intend to evade this obligation but rather intended to increase this obligation by extending it also to his heirs as long as the commissioned Works were completed as requested by him. We can still admire the splendid Lantermino today.

Today the evolution of the tower has turned into the construction of skyscrapers with helical shapes; Zaha Hadid’s Storto in Milan is in fact a helicoid but other buildings such as Marilyn Monroe towers in Toronto and DNA Tower in Abu Dabi are also helicoids, the latter is inspired by the helical shape of DNA (Fig. 10) [1].

Fig. 3 Francesco Borromini (1599–1667) Sant’Ivo alla Sapienza (Lantermino)—Rome.

Proceeding with the same construction and with other quadrilaterals we note that the figure tends to roll into itself assuming the course of an authentic logarithmic spiral even if, obviously, the discrete nature of this procedure only allows an approximation of the curve with a polygonal.

We can repeat the construction, just seen in plan, in three-dimensional space starting this time from a pseudo-pyramidal trunk, to then add onto the minor base another pseudo-pyramidal trunk having that as the major base. And by continuing to repeat the procedure, a three-dimensional structure is obtained which rolls into itself, one in which the generating principles of the shape of a shell can be recognized.

All constructions were carried out with the Cabri II software by Roberto Di Martino within the context of an educational project which is obviously much broader than these examples mentioned as can be read in the article proposed in point 5 of the Bibliography [5].
Fig. 4 Parallelepiped built by stacking square sheets. Helicoid obtained from the rotation of the Parallelepiped

It should be understood what has been said through simpler passages and comprehended, for example, how a helicoid can be generated from a simple square [4].

If we stack square pieces of paper, we obtain a parallelepiped; then if we rotate the sheets around a central axis, the lateral edges, which are straight line segments, turn into helices that wrap around the shape (Fig. 4).

INNOVATIVE FASHION DESIGNERS

Gaurav Gupta Haute Couture

Gaurav Gupta is an Indian fashion designer and couturier who is known for his eponymous clothing brand. The avant-garde designer is popular for his unique sculptural garments. In 2017, he created India's first garment based on artificial intelligence in collaboration with Vogue and IBM's cognitive system Watson.

He is using on designs "futuristic" sculptural pieces, as Gupta described them, in chiffon, satin and organza. There were cut-out dresses over shimmering tights, skirts with trains that trailed nonchalantly across the floor and sleek, midriff-baring tops. Gupta has established over the years — sculptural, voluminous, dramatic — while mirroring qualities of the cosmos, like draping and contours that conjure images of the rings around a planet or embellishments that resemble galactic dust. Infinity is a signature sculptural technique for the designer. “I’ve always loved drape and structure, certainly going back 10 years,” Gupta says: “I like exploring volume and 3D embroidery.”

Gupta founded his eponymous label in 2005, after graduating from Central Saint Martins in London, the alma mater of Alexander McQueen and Stella McCartney, and then working for conceptual designer Hussein Chalayan. Over the past 18 years, his collections have embraced the skills of India’s gifted embroiderers, combined with his own whirlwind sculptural techniques to create glamorous gowns that appear on best-dressed lists in India and the Middle East, as well as in music videos and on the red carpet. The bridal market is a big part of business in India, but from haute couture he has expanded into evening ready-to-wear.

As a creator, Gupta describes himself as a non-conformist. “I don’t follow pattern making, but work with structured draping, mostly on a mannequin.” Every client has their own mannequin for precision fitting. There are up to 10 processes that a design goes through, from calico toile through stages of cutting handloomed fabrics, pleating and moulding the silhouettes, embroidery [he also uses bugle beads to create the 3D ribbing that holds the fabric in its wave-like structure] to the finished garment.

There is no referencing, and no mood board when he starts the design process. “It’s fluid freedom,” he says. If you were to point to any influence, then he is drawn to architecture and the anatomy, which inspire the fantastical shapes that make such a statement on the red carpet and spread into the experiential environments he has created in his stores around India. The boutiques are surreal, conceptual fantasy palaces that get nominated for architectural awards.
Iris Van Herpen

An Iris van Herpen is described as “a modern alchemist rather than a fashion designer– a prolific decade of creations now charts her relentless material curiosity and experimentation”.

Iris van Herpen, was born in the Netherlands in 1984. She graduated from the ARTEZ fashion school (Arnhem) with a degree in Fashion Design and then she carried out internships with Claudy Jongstra and Alexander McQueen—whose influences pervade throughout in her style and techniques. In her unique style, she is able to create a very peculiar type of couture, combining the qualities of hand-worked materials with digital technology, continuously pushing the boundaries of fashion design. Since 2007, the talented designer van Herpen combines the most traditional craftsman techniques and methods to the most innovative technologies into her unique aesthetic vision, with the clear intent of blending the past into the future. Due to this singular vision, combined with the complexity of her creations

3D printing technologies are among the new developments in fashion design. Iris van Herpen is one of the forerunners of 3D printing in fashion design. She uses in designs “fractal folds”: of inimitable curves, bends, and loops. Morphing art, fashion and technology, she developed productive collaborations with scientists and artists. Through a mixed method, she combines highly technical specifications with a commitment to esthetic design.

Yimeng Yu

Yimeng Yu, an interdisciplinary fashion designer and artist focusing on the future of fashion, accessories and materials in the context of the digital age. Graduated from Royal College of Art in London and currently work as the fashion design director at the Central Academy of Fine Arts, School of Design in Beijing, China. Currently, her main research focus is on computational design and digital
fabrication. Her work is dedicated to exploring avant-garde apparel aesthetics and the innovation within the fashion industry.

Social media has prompted an endless cycle of throwaway fashion culture. Outfits are bought and curated for one-off posts, and then cast aside. Digital fashion offers an attractive alternative to this system. Yimeng Yu is a traditionally trained fashion designer who has expanded her research and creative practice to digital design. Her work is fantastical, often consisting of fashion items that are unachievable using existing physical materials. We talked to her about the technical considerations of digital fashion design, why she made the move to this mode of working and her distinctive digital couture designs. As digital fashion finds more supportive technological ecosystems, and has already begun to populate social media.

Basic fashion knowledge and technical skills are the foundations of digital fashion design. Digital fashion is not only a way to replicate what can be done in real life, but more importantly, a way to break the boundaries of physical limitations and achieve something beyond reality.

Yimeng Yu says: “Through my background in traditional fashion, I got to understand the body’s structures, various material properties, space, the experience of wearing garments and so on. Then, when I started designing digitally, I was able to manage the fitting of virtual materials to a body well and make everything look in proportion. I have been integrating digital methods into much of my research in different stages and in various aspects, but I only started transitioning the core of my research to digital fashion last year.”

There are many ways to produce digital clothing items, and there are two major branches the final product can take. One is a fabric simulation item. Here, the digital clothing move with a body. These can be made using Clo 3D, Marvelous Designers and some other programmes; generally, using these tools to make patterns. The other is body-surrounding sculptural items. With these, the clothing items are normally static, this kind of object can be made by many software, such as Cinema 4D, Blender and Zbrush. There is not only one way to achieve a final product. The same outcome can often be done using different softwares. The digital design process is a totally new method, and it is significant for designers to have their own tools system, that is the key to remaining unique.

Digital designing attractive, because you can experimentally tweak everything digitally and can see the real time render effect. Technically, every material property can be simulated in digital world. If you have enough traditional experience of fabrics and special materials, then you can simulate the same in the software. And some of them can be made by 3D printers or by fabrics with the same physical properties in real world. But something that is more fascinating is that digital tools can be used to generate forms and structures that cannot be easily achieved in the real world.

Digital fashion seems to have drifted to the endlessly customisable and massively distributable, yet much of your digital design work is self-described as couture. The experience of digital fashion is more for visual than functional, so it requires different skills and processes from physical fashion.

Fig. 8 Yimeng Yu Digital Haute Couture Garments.
CONCLUSION

With the development of technology, the production models in the textile and fashion industries are continuously changing. The shown examples can only give an idea of the power of geometric structures for creation processes in art and architecture. Digital design techniques provoke a new actuality of geometric structural attempts in designing and creating. Digital design software offers numerous applications. Some designers went beyond, using technology and innovation in a process, that sees in generative modeling software the key of new forms of design that use geometry as a creative tool, that is combined with 3D printing and digital innovative materials.

Geometry was the best to describe natural shapes, as it can result to creating a very complex shapes but with a very simple laws and steps. Geometry has its place in design and should not be reduced to representation techniques. Those structural approaches facilitate design methodologies instead of intuitive throws of the genius and offer therefore ways for developing ideas.

This article presents pertinent innovative application solutions from three aspects of 3D printed clothing digital design, and gives some innovative design concepts, which has great reference value for designers. Fashion designers need to continue to be explored, but future innovative application solutions will certainly emerge in an endless stream.

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INTERNET SOURCES
APPLICATION OF GIS IN THE STUDY OF ANTHROPOGENIC TRANSFORMATION OF ECOSYSTEMS IN AJINOHUR ARID FORESTS

Adama Togola
Ph.D. student
Mahluga Yusifova
Doctor, Associate Professor, Head of Geographical Ecology Department
Faculty of Ecology and Soil Science, Baku State University, Azerbaijan

Abstract
Through this study, our goal is to detect the main causes and impacts of anthropogenic pressure on Ajinohur arid forests in Azerbaijan.

The methodology was based on documentary collection and documentary exploitation and analysis of cartographic data, tables and other figures.

The study revealed that the mainly cause of anthropogenic pressures is agriculture, which takes a large part of forest degradation following by Animal grazing, soil erosion (natural and anthropogenic), deforestation etc., with strong impacts on forests ecosystem of Ajinohur. With the GIS, the detection of change in term of increasing or decreasing of the ecosystem forest in Ajinohur is very clear and specially the area occupying by each plant formations and human activities. This knowledge permits us to take some measures to protect efficiently Ajinohur arid forests.

Keywords: Application of GIS- anthropogenic transformation- Ajinohur- arid forests.

1. Introduction
For decades now, experts, scientists and others researches use GIS in their different field of researches to do the diagnosis, to assess the change in the in their activities, their study areas. It’s used by militaries, geographs, environmental scientists, ecologists etc. In the field of forest management, it makes easier to assess the detection of change of forests within decades, centuries etc.

The functionality of using GIS technologies in determining the levels of anthropogenic impact on ecosystems creates the following opportunities [1, p.100-101]:

▪ construction and processing of basic sources of various types, scales and projections in GIS layers;
▪ creation of a specialized database of objects;
▪ selection of a location and an object that meets the specified criteria, the use of a polling system;
▪ use of various geoinformation analysis tools;
▪ preparation and analysis of digital terrain model;
▪ bring data into the form of maps and graphs and display them visually;
▪ analyze using remote sensing;
▪ analyze various data in the form of cartographic images.

Recently, the assessment of the dynamic impact of anthropogenic, endogenous and exogenous processes on our planet when studying the environment using traditional methods, its analysis does not give fully effective results. The analysis of the dynamics of anthropogenic impacts, their electronic mapping and the development of cartographic products suitable for various topics and other processes require the use of remote sensing. Remote sensing makes it possible to directly study objects and phenomena at a distance, without any contact, and also makes it possible to process them thematically. Thematic processing of data obtained by remote sensing captures natural and anthropogenic changes, creates conditions for their quantitative and qualitative assessment [1, p.78].
Remote sensing data are used in a number of areas, for example, determining the state of vegetation in agriculture, the state of cultivated fields, productivity, the state of meadows, the current state of vegetation, etc. [3, p. 173-174].

When studying the anthropogenic transformation of ecosystems, it is necessary to use modern technologies. The presence of geoinformation systems gives positive results in solving this problem. The ArcGIS Software Network is part of Geographic Information Systems. When carrying out cartographic work, not only an image is created, but also information about the area is collected in a single database [5, p.89].

When studying the anthropogenic transformation of the ecosystems of the study area, the capabilities of the ArcGIS network were widely used. The use of this program is necessary for the collection and processing, storage and integration of the coordinate system into a single central system of data related to the research area [4, p.4]. Currently, the creation of a Geographic Information Database creates opportunities for various purposes.

We used GIS to control, understand, assess the evolution and degradation of Ajinohur arid forests in the term of anthropogenic pressure.

2. Methods and materials

Documentary collection. At this stage, it has been necessary to gather document relating to our research areas and others areas studying by experts in forest management specially in the term of anthropogenic factors of degradation in Azerbaijan and though the world. We used articles experts reports, articles and specific data on the anthropogenic pressure on forests. Data analysis. We used the maps, tables of other figures relating to Ajinohur forests degradation by human activities for analysis.

3. Results and discussions

Looking at the land use map of Ajinohur arid forests, it indicates the position of each plant formations, activities and it location in the wole Azerbaijan map.
Fig. 1. Land use map of Ajinothur arid forests
The use of geoinformation analysis based on areas of spatial data, extent, coordinates and other features in the geoinformation database created in the study of landscape transformation has created positive opportunities for solving problems of various purposes.

To analyze the anthropogenic transformation, Amanova for the first time prepared in the ArcGIS program a “Land use map of the Ajinohur foothills and adjacent territories” [2, p.74], on the basis of which we compiled a “Land use map of the Ajinohur arid forests” (Fig. 1).

Based on the map and conducted field studies, it can be said that most of the study area is used for agricultural land (61.56%) and winter pastures (15.74%). This requires special attention to the territory under anthropogenic impacts.

According to the land use map, it was found that the total area of shrubs and pastures within the study area is 24014.17 ha (Table 1).

<table>
<thead>
<tr>
<th>Land use</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivated areas</td>
<td>93907.03</td>
</tr>
<tr>
<td>Bare soil</td>
<td>17552.24</td>
</tr>
<tr>
<td>Shrubs and Grassland</td>
<td>24014.17</td>
</tr>
<tr>
<td>Sparse vegetation</td>
<td>7868.15</td>
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<tr>
<td>Forests</td>
<td>3715.95</td>
</tr>
<tr>
<td>Residences</td>
<td>5487.61</td>
</tr>
<tr>
<td>Total</td>
<td>152545.15</td>
</tr>
</tbody>
</table>

Table 1. Land use in the Ajinohur arid forests

The construction of settlements causes a change in the micro-landscape in the natural ecosystems of the study area, a restructuring of the structural and functional features of the landscape and climate in the microsphere, an increase in waste, and an expansion of landfills. The total area of settlements within the study area is 5487.61 ha, which is 3.6% of the total study area. 25% of the settlements are located within arid light forests and shrubs, and 40% are located within a flat forest landscape (Fig. 1).

One of the factors accelerating the destruction of vegetation and soil cover is the construction of roads. According to Amanova’s map [2, p.74], 12% of the roads in the foothills of Ajinohur and adjacent areas are located in the mountainous semi-desert, 53% - in the dry desert, 15% - in the dry woodlands and shrubs, 20% - in the lowland forest. In the area of winter pastures, mainly steppe roads are common. In the densely populated eastern part, roads without asphalt concrete pavement are widespread within residential areas [2, p.123].

The arid climate requires irrigation. Artificial irrigation causes problems such as erosion, desertification, soil salinization, etc. The negative consequences of dangerous natural risks can weaken protective measures. It can be divided into two groups: complex measures taken for reliable protection against possible hazardous impacts, and measures taken against them after impacts have already occurred [6, p.103].

93907.03 hectares of the study area are used for crops. Mountain semi-desert makes up 10% of the total sown area, dry steppe - 65%, dry woodlands and shrubs - 3%, lowland forests - 20%. Crops are mainly distributed in the eastern part of the territory. There are also irrigated agricultural landscapes along the Alijanchay, Turyanchay, Goychay streams. Irrigation here has an ancient history and is often depicted as a quadrilateral in space images. However, as one moves away from these areas, the forms of cultivated fields change and take on a branched appearance on plateaus separated by river valleys. The area between the rivers is sharply dissected, and the terrain conditions hinder agriculture. However, from aerial photographs of the area, it can be concluded that under relatively favorable conditions in such territories, these areas are replaced by crops. Shrubs are mainly observed on a sharply fragmented relief.

At present, the area of lowland forests in the study area is 3715.95 ha, and the area of dry forests is 7865.15 ha. The study area accounts for most of the dry woodlands within the country. For their protection, a reserve has also been created here. In arid forests, the main composition of the forest is
Juniperus and Pistacia mutica, and in lowland forests - Populus, Quercus longipes, Alnus, Pterocarya fraxinifolia. Changes in the species composition of trees are also observed in the forest.

4. Conclusion
The application of GIS in the study of anthropogenic transformation of forest ecosystems in general and in particular Ajinohur arid forests here showed us the places of strong human pressures by creating settlement, pastures and others activities but also the area of each plant formations. It is the easy way to take measures to stop by protecting the whole forests. These can be such us: legal framework, awareness of population, creation of income generating activities etc.

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ECOLOGICAL-FAUNISTIC ANALYSIS OF INSECTS OF CHICKPEA AGROBIOCENOESIS (in the example of Northern Fergana region, Uzbekistan)

Zokirov Islomjon Ilkhomjonovich1
Yusupova Shoirakhon Khasanbayevna2
1Fergana State University, Doctor of Biological Sciences, Associate Professor, Uzbekistan
2Namangan State University, doctoral student, Uzbekistan

Abstract
The article describes the fauna and ecological features of phytophagous insects found in chickpea agrobiocenosis in the northern Fergana region. There are 44 species of insects belonging to 7 genus, 21 families, and 36 genera in the Northern Fergana chickpea agrobiocenosis. Nine of them are dominant species that specialize in chickpeas. As a result of research, two species of beetles (Dolycoris penicillatus, Carpocoris fuscispinus), three species of long-nosed beetles (Sitona crinitus, Sitona cylindricollis, Sitona lineellus), three species of leaf-eating beetles (Acanthoscelides obtectus, Bruchus pisorum, Callosobruchus maculatus), three species of moths (Spodoptera exigua, Heliothis peltigera, Syngrapha circumflexa), one species of leaf-eating moths (Cydia nigricana), one species of burrowing flies (Liriomyza cicerina) were recorded for the first time in the fauna of the Northern Fergana region.

Keywords: peas, agroecology, phytophagous, insect, fauna, dominant, northern Fergana

Introduction. The main part of Northern Fergana consists of the territory of Namangan region of Uzbekistan. Many pea agrobiocenoses have been established here, and the continental climatic condition has a serious effect on the distribution and life cycle of pests in the area. Food resources and distribution of phytophages found in the chickpea agrobiocenoses across the region are closely dependent on environmental factors. Similarly, phytophages collected from chickpea agrobiocenoses in the Northern Fergana region were recorded and considered in different seasons of the year [3, 4, 5].

Study of the topic and research methods. The insect fauna of vegetable crops has been studied from time to time in the valley. For instance, T. Tursunkhoyayev compiled a species list for the Eastern Fergana region [11] in the 1960s and 1970s, [11]. I. Zokirov compiled a species list for the Central Fergana region, however, this list does not take into account chickpea agrobiocenosis [6]. It was noted by many researchers that the share of phytophages living in agricultural crops, including vegetable crops, belongs to members of the Homoptera family. In particular, it was found that the share of Cicadinea and Aphidinea families in entomocenoses is high in vegetable crops [2, 6, 7, 8, 9].

This article was based on the materials collected from chickpeas in the farms of the Namangan region located in the northern part of the Fergana Valley during the years 2010-2022. Methods used in general entomology and agricultural entomology were widely used in the research [12].

The obtained results and their discussion.
Based on the collected material, it was determined that 44 species of insects belonging to 7 genus, 21 families, and 36 genera can be found in the chickpea agrobiocenoses in Northern Fergana. Below is information on their classification list, distribution, and nutrition features.

Chickpea agrobiocenosis has particular importance in the Northern Fergana region. The insect fauna formed here is directly related to the natural climatic conditions of the region, as well as to the types of crops grown in agriculture.

According to the taxonomic composition of phytophages of the entomofauna of the chickpea agrobiocenoses, representatives of the Coleoptera family have the largest number of species, including 14 of them. The share of these types compared to the total number of types is 31.8%. There are 6 families belonging to this genus and they have a share of 28.6% compared to other families. The number of generations also leaders, compared to the other family generations, that is, 11 generations is equal to 30.6%. The high number of insects that first pair of wings have hardened in the chickpea
agrobiocenoses can be explained by the high population density of these insects during the chickpea vegetation and the continental climatic conditions of the region allowing their rapid reproduction.

In the agrobiocenosis of chickpeas, representatives of the Orthoptera family take the next place in terms of diversity of species. 10 species (22.7%) belonging to 5 families (23.8%), 7 genera (19.4%) of this genus are pests. It is worth noting that the climatic conditions of the Namangan region, typical of the desert, and the steppe parts of the region play a crucial role in the mass reproduction of orthopteras, especially grasshoppers, and their migration through various agrocnoses (Table 1).

Table 1

<table>
<thead>
<tr>
<th>Name of the genus</th>
<th>Number of families</th>
<th>Share to families (%)</th>
<th>Number of generations</th>
<th>Share to generations (%)</th>
<th>Number of species</th>
<th>Share to phytophages (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthoptera</td>
<td>5</td>
<td>23.8%</td>
<td>7</td>
<td>19.4%</td>
<td>10</td>
<td>22.7%</td>
</tr>
<tr>
<td>Homoptera</td>
<td>3</td>
<td>14.3%</td>
<td>5</td>
<td>13.9%</td>
<td>6</td>
<td>13.6%</td>
</tr>
<tr>
<td>Hemiptera</td>
<td>2</td>
<td>9.5%</td>
<td>4</td>
<td>11.1%</td>
<td>4</td>
<td>9.1%</td>
</tr>
<tr>
<td>Thysanoptera</td>
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<td>4.8%</td>
<td>1</td>
<td>2.8%</td>
<td>1</td>
<td>2.3%</td>
</tr>
<tr>
<td>Coleoptera</td>
<td>6</td>
<td>28.6%</td>
<td>11</td>
<td>30.6%</td>
<td>14</td>
<td>31.8%</td>
</tr>
<tr>
<td>Lepidoptera</td>
<td>3</td>
<td>14.3%</td>
<td>7</td>
<td>19.4%</td>
<td>8</td>
<td>18.2%</td>
</tr>
<tr>
<td>Diptera</td>
<td>1</td>
<td>4.7%</td>
<td>1</td>
<td>2.8%</td>
<td>1</td>
<td>2.3%</td>
</tr>
<tr>
<td>Overall</td>
<td>21</td>
<td>100%</td>
<td>36</td>
<td>100%</td>
<td>44</td>
<td>100%</td>
</tr>
</tbody>
</table>

Representatives of Lepidoptera were also noted as significant phytophages in the chickpea agrobiocenosis. 3 families (14.3%), 8 species (18.2%) belonging to 7 genera (19.4) were found. According to the researches, among the phytophages, the damage of the cutworm to the chickpea crop is significant, and its germination period and generative organs are a vital source of food for the gnats. In particular, due to the rapid growth of the cotton cutworm and its feeding on chickpea grains, the grains do not have time to grow and the harvest is lost.

In terms of the number of species, the next place is occupied by representatives of the Homoptera family. That is, 6 species (13.6%) of 5 genera (13.9%) of 3 families (14.3%) cause serious damage to peas. Leguminous and psyllid aphids are especially important pests of chickpeas, causing 15-30% of the crop to die.

4 species of true bugs (9.1%) belonging to 2 families (9.5%) of Hemiptera family were recorded in chickpeas.

According to the analysis, according to the sequence of species, Thysanoptera and Diptera took the last place with representatives of 1 species each (2.3%). These are Thrips tabaci and Liriomyza cicerina.

Phytophages are analyzed by families, 9 of them (Tettigonidae, Pygromorphidae, Aleyroididae, Thripidae, Elateridae, Geotrupidae, Crambidae, Tortricidae, Agromyzidae) are monotypic, 5 families (Gryllidae, Gryllotalpidae, Cicadellidae, Pentatomidae, Miridae) are bitempic and 5 families (Aphididae, Coccinellidae, Scarabaeidae, Tenebrionidae, Chrysomelidae) were found to be tritypic as well.

Acrididae with 4 species and Noctuidae with 6 species dominate the entomofauna of the chickpea agrobiocenosis of Northern Fergana region. During the research, the representatives of the Acridiidae family (C.italicus italicus, C.turanicus, D.maroccanus and D.kraussi) are omnivorous and migratory polyphages, as well as their species composition of the Noctuidae family is high (H.armigera, A.segetum, A.exclamationis, S.exigua, H.peltigera, S.circumflexa) issue to their wide distribution in almost all agrocnoses. For example, the fact that the districts of Namangan region are the leaders in cotton cultivation, the expansion of the fields of corn and other vegetable crops as a secondary crop here creates a favorable opportunity for the migration of cotton cutworms.

As a result of research, two species of beetles (Dolycoris penicillatus, Carpocoris fuscispinus), three species of long-nosed beetles (Sitona crinitus, Sitona cylindricollis, Sitona lineellus), three species of leaf-eating beetles (Acanthoscelides obtectus, Bruchus pisorum, Callosobruchus maculatus),
three species of moths (Spodoptera exigua, Heliothis peltigera, Syngrapha circumflexa), one species of leaf-eating moths (Cydia nigricana), one species of burrowing flies (Liriomyza cicerina) were recorded for the first time in the fauna of the Northern Fergana region.

It is important to study the insects of the Northern Fergana chickpea agrobiocenoses by dividing them into groups by life form. Many scientific researches have been conducted in this regard. In particular, according to scientists, the lifestyle of insects and the composition of food resources significantly affects their morphological appearance [1, 4, 7]. It should be noted that the distribution and development of phytophages found in the chickpea agrobiocenoses is primarily dependent on temperature and food resources. For this reason, it is possible to analyze the species in chickpea agrobiocenosis into 3 main ecological groups according to their nutritional characteristics and distribution.

The first ecological group - species specialized in chickpea agrobiocenosis. The distribution of these species is rather wide, the density of the population in the chickpea agrobiocenosis and the high effect on the plant are distinguished.

This group includes insects that feed on chickpeas during the season, and they make up the main share of dominants in the entomofauna. As representatives of this ecological group: Aphis gossypii Glover, 1877, Acrithosiphon pisum (Harris, 1776), Lygus pratensis (Linnaeus, 1758), Sitona cylindricollis (Fahraeus, 1840), Bruchus pisorum Linnaeus, 1758, Callosobruchus maculatus (Fabricius, 1775), Helicothrips armiger (Hübner, 1808), Cydia nigricana (Fabricius, 1794), Liriomyza cicerina (Rondani, 1875) that creates burrow was selected.

Information on the development, distribution and damage to plants of these species is presented in detail, in the following chapters.

A. Norkulov (2020) divided this category of insects into 2 groups, that is, surface pests - 16 species and underground pests belonging to 11 species.

The second ecological group is species with chickpea plants in the spectrum of seasonal nutrition. Although they are serious phytophages, they are part of a number of plants, but they appear as secondary species in the chickpeaagrobiocenosis. Some of them live temporarily on this plant during the vegetation period of chickpeas, multiply and develop, but in other natural and cultural senoses, when there is enough food, they are species that migrate.

Representatives of this group are Melanogryllus desertus (Pallas, 1771), Calliptamus italicus italicus (Linnaeus, 1758), Trialeurodes vaporariorum Westwood, 1856, Aphis fabae Scopoli, 1763, Sitona luteolus Bonsdorff, 1785, Lethrus pygmaeus Vallion, 1871, Ostrinia sabulsum L., Acanthoscelides obtectus (Say, 1831), Agrotis segetum (Denis & Schiffermüller, 1775), Spodoptera exigua (Hübner, [1808]) = Laphygma exigua, Heliothis peltigera (Denis & Schiffermüller, 1775), Syngrapha circumflexa (Linnaeus, 1767) = Cornutiplusia circumflexa was selected.

The third ecological group - species whose living conditions are not directly related to the chickpea plant, and which are incidental to agrobiocenosis.

This ecological group includes Gryllus bimaculatus De Geer, 1773, Gryllotalpa gryllotalpa Linnaeus, 1758, Gryllotalpa unispina Saussure, 1874, Calliptamus turanicus Tarbinsky, 1930, Dociostaurus maroccanus (Thunberg, 1815), Dociostaurus kraussi (Ingenitzky, 1897), Tettigonia viridissima (Linnaeus, 1758), Pyrgomorpha bispinosa deserti Bey-Bienko, 1951, Empoasca meridiana Zachvatkin, 1946, Macrosteles laevis (Ribaut, 1927), Dolycoris penicillatus Horváth, 1904, Carpocoris fuscispinus (Boheman, 1851), Adelphocoris lineolatus (Goeze, 1778), Agriotes mecticosus Candèze, 1863, Blaps halophila Fischer von Waldheim, 1822, Dailognathia nasuta Menetries, 1819, Agrotis exclamationsis Linnaeus, 1758, Loxostege sticticalis Linnaeus, 1761.

According to the specialization of feeding, insects can be divided into several ecological groups. In particular, the ecological group of rhizophage species – 10 species, the ecological group of phylophagous species – 10 species, the ecological group of holophage species – 2 species, the ecological group of carpophage species – 2 species, the ecological group of species with phylophagous, antophagous and carpophage properties – 8 species, phylophage and the ecological group of species with anthophagic properties – 2 species, the ecological group of species with phylophagous and carpophage properties – 3 species, the ecological group of species with rhizophagous and antophagous properties – 3 species, the ecological group of species with
rhizophagous and phyllophagous properties – 2 species, the ecological group of species with anthophagous and carpophagic properties – 2 species (Table 2).

### Table 2

**Feeding characteristics of pea agrocenosis phytophagous insects**

<table>
<thead>
<tr>
<th>Family</th>
<th>Genus</th>
<th>Species</th>
<th>Frequency of encounter</th>
<th>Feeding characteristics</th>
<th>Specialties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ORTHOPTERA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gryllidae</td>
<td>Gryllus Linneaus, 1758</td>
<td>Gryllus bimaculatus (De Geer, 1773)</td>
<td>+++</td>
<td>■</td>
<td>♠</td>
</tr>
<tr>
<td></td>
<td>Melanogryllus Chopard, 1961</td>
<td>Melanogryllus desertus (Pallas, 1771)</td>
<td>+++</td>
<td>■</td>
<td>♠</td>
</tr>
<tr>
<td>Gryllotalpidae</td>
<td>Gryllotalpa Latreille, 1802</td>
<td>Gryllotalpa gryllotalpa (Linneaus, 1758)</td>
<td>++</td>
<td>■</td>
<td>♠</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gryllotalpa unispina (Saussure, 1874)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acrididae</td>
<td>Calliptamus Serville, 1831</td>
<td>Calliptamus italicus italicus (Linneaus, 1758)</td>
<td>+++</td>
<td>■</td>
<td>♠ ♠ ♠ ♠</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calliptamus turanicus Tarbinsky, 1930</td>
<td>+++</td>
<td>■</td>
<td>♠ ♠ ♠</td>
</tr>
<tr>
<td></td>
<td>Dociostaurus Fieber, 1853</td>
<td>Dociostaurus maroccanus (Thunberg, 1815)</td>
<td>+++</td>
<td>■</td>
<td>♠ ♠ ♠</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dociostaurus kraussi (Ingenitskii, 1897)</td>
<td>+++</td>
<td>■</td>
<td>♠ ♠</td>
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<tr>
<td>Tettigonidae</td>
<td>Tettigonia Linneaus, 1758</td>
<td>Tettigonia viridissima (Linneaus, 1758)</td>
<td>+++</td>
<td>■</td>
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<tr>
<td>Pyrgomorphidae</td>
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<td>Pyrgomorpha bispinosa deserti (Bey-Biyenko, 1951)</td>
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<tr>
<td><strong>HOMOPTERA</strong></td>
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<tr>
<td>Cicadellidae</td>
<td>Empoasca Walsh, 1862</td>
<td>Empoasca meridiana (Zachvatkin, 1946)</td>
<td>++</td>
<td>■</td>
<td>♠</td>
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<tr>
<td></td>
<td>Macrosteles Fieber, 1866</td>
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<td>++</td>
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<td>Aleyroidoidae</td>
<td>Trialeurodes Cockerell, 1902</td>
<td>Trialeurodes vaporariorum (Westwood, 1856)</td>
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<td></td>
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<td></td>
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<td>Acrystosiphon pisum (Harris, 1776)</td>
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<td><strong>HEMIPTERA</strong></td>
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<tr>
<td>Pentatomidae</td>
<td>Dolycoris Mulsant &amp; Rey, 1866</td>
<td>Dolycoris penicillatus (Horvath, 1904)</td>
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<td>Order</td>
<td>Family</td>
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<td>Suborder</td>
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<td>THYSANOPTERA</td>
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<td>Agriotes meticulosus (Candèze, 1863)</td>
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<td>Blaps halophila (Fischer von Waldheim, 1822)</td>
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<td>Bruchus pisorum (Linnaeus, 1758)</td>
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<td>+++</td>
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<td>Spodoptera exigua (Hubner, 1808)</td>
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<td></td>
<td>Syngrapha Hübner, 1821</td>
<td>Syngrapha circumflexa (Linnaeus, 1767)</td>
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<td></td>
<td>Pyralidae</td>
<td>Loxostege Hübner, 1825</td>
<td>Loxostege sticticalis (Linnaeus, 1761)</td>
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<td></td>
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<td>Cydia Hubner, 1825</td>
<td>Cydia nigricana (Fabricius, 1794)</td>
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</tr>
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<table>
<thead>
<tr>
<th>DIPTERA</th>
<th>Liriomyza Mik, 1894</th>
<th>Liriomyza cicerina (Rondani, 1875)</th>
<th>++++</th>
<th>●</th>
<th>♠</th>
</tr>
</thead>
</table>

**Comment:** overall - ++++; usual - +++; occasional - +++; random - +; monophagous - ●; oligophagous - ●; polyphagous - ♠; rhizophage - ♠; phyllophage - ♠; anthofag - ♥; carpophagous - ❌; holophagous - ▲

**Conclusion.** Based on the results of the research, it should be noted that 44 types of insects are found in chickpea crops grown in the northern region of Fergana. Among them, 9 species (20.5% of total species) are dominant species specializing in chickpeas. 2 species of beetles, 3 species of long-nosed beetles, 3 species of leaf-eating beetles, 3 species of moths, 1 species of leaf-eating moths, 1 species of burrowing flies are recorded for the first time in the fauna of the Northern Fergana region.

The results of faunistic studies allow to determine the share of pest species in chickpea agroecosystems, which are expanding in the country today, and to develop effective control measures by identifying the weak links in their seasonal development.

**References**

Chemical sciences

STUDY OF SOME SECTIONS OF THE Er-Bi-Se SYSTEM

Sadigov F.M.
Prof., Department of General and Inorganic Chemistry
Baku State University, Baku, Azerbaijan

Sultanova S.G.
Baku State University
Research Fellow
Department of General and Inorganic Chemistry
Baku, Azerbaijan

Gasanova Z.T.
Baku State University
Research Fellow
Department of General and Inorganic Chemistry
Baku, Azerbaijan

Ismailov Z.I.
Candidate of Technical Sciences, Associate Professor,
Department of General and Inorganic Chemistry
Baku, Azerbaijan

Abstract

Bi$_2$Se$_3$ - Er$_2$Se$_3$ and Bi$_2$Se$_3$ - ErSe systems were studied by complex methods of physicochemical analysis and state diagrams were constructed. Both fractions were found to be quasibinary fractions of Er-Bi-Se ternary system. In the Bi$_2$Se$_3$ – Er$_2$Se$_3$ system, a new ternary phase with ErBiSe$_3$ composition was found. ErBiSe$_3$ compound crystallizes in stibmite type in rhombic syngonia: a = 12.21; b = 11.98; c = 3.45 Å. In systems based on Bi$_2$Se$_3$, 6 mol% Er$_2$Se$_3$ and 3 mol% ErSe solubility fields were found at 300K.

Keywords: system, analysis, complex, diagram, syngonia, temperature.

Introduction

In modern times, the search for new functional materials, synthesis and improvement of their properties is one of the most important issues. Bi$_2$VX$_3$ (BiV – Sb, Bi; X – Se, Te) type compounds are intensively used due to thermoelectric, photoelectric, optical, magnetic topological insulator properties. [1-4]

Development of physico-chemical basis of directed synthesis of new multicomponent inorganic phases and materials is closely related to fundamental researches in the field of phase equilibria and thermodynamic properties of relevant systems. Among such systems, the structural analogues of known binary and ternary compounds and the formation of solid products based on them are of particular interest. The study of phase equilibria is very relevant both in systems where ternary analogs of the Bi$_2$Se$_3$ compound are formed, and in multicomponent systems based on them [5-7].

Incorporation of rare earth elements into the crystal lattices of the compounds is particularly important, as this can lead to improved thermoelectric properties as well as additional functionality, such as magnetic properties [8-11]. Analysis of literature data shows that ternary phases formed in Ln$_2$Se$_3$ – BV$_2$Se$_3$ (Ln – Ce, Tm; BV – Sb; Bi) quasibinary systems are considered interesting research objects.
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Therefore, it is important to study these systems, synthesis of new functional ternary compounds obtained in them, acquisition of single crystals, construction of state diagrams of the systems and detailed study.

**Purpose of the study**

The purpose of this work is to study the Bi$_2$Se$_3$ - Er$_2$Se$_3$ and Bi$_2$Se$_3$ – ErSe sections of the Er-Bi-Se ternary system.

**Materials and research methods**

The starting materials for the synthesis of alloys were Ce metal "Cem-0"; Sb, Bi - grade B-4, selenium grade extra pure.

The study was carried out by complex methods of physicochemical analysis.

The nature of the chemical interaction of the Er-Bi-Se ternary system was studied by differential thermal (DTA), X-ray phase (XRD), microstructural (MSA) methods, measurements of microhardness and density.

The heating curves of homogenized alloys were recorded on a HDTA-8M$_2$ device in an inert atmosphere using W-W/Re thermocouples; the heating rate for HDTA-8M$_2$: temperature determination accuracy is ±10K, and for NTR-73-10K/min, temperature determination accuracy is ±5K. All observed effects were endothermic, reversible.

MSA was performed on MIM-6 and MIM-7 microscopes. In the study of the microstructure of the alloys, an etchant with the composition of 10 ml of conc. H$_2$SO$_4$ + 5g K$_2$Cr$_2$O$_7$ + 90ml H$_2$O.

The microhardness was measured on a PMT-3 microhardness meter at an optimally chosen load of 10, 20, and 30 g, depending on composition. When measuring microhardness in polished samples, 5 rows of values were obtained.

XRF was carried out on a DRON-2 diffractometer in the CuK$_2$ study.

The nature of the chemical interaction in the Er-Bi-Se ternary system was studied on the sections Bi$_2$Se$_3$ – Er$_2$Se$_3$ and Bi$_2$Se$_3$ – ErSe.

Bi$_2$Se$_3$ crystallizes in rhombohedral syngonia in Bi$_2$Te$_2$S type, space group R3m – D$_3^5$d, lattice parameters: a=4.134; c=28.546 Å [1,2]

Bi$_2$Se$_3$ is a semiconductor with electron conductivity, the width of the forbidden band: ΔE = 0.36eV, the specific thermal conductivity is 0.025 cal/cm*sec*; thermo - e.h.q. coefficient is ~100mV/d, electrical conductivity is 2000 Om$^{-1}$ * sm$^{-1}$, microhardness is 720 MPa [3,4]

ErSe forms with an open maximum at 1630K, crystallizes in cubic syngonia in NaCl type, space group Fm3m (a=5.66 Å)

Er$_2$Se$_3$ melts congruently at 1400K, crystallizes in rhombic syngonia, structural type Sb$_2$S$_3$, space group Fdd2, lattice parameters a=11.38; b=8.10; c=24.20 Å [5,6]

The nature of chemical interaction in Bi$_2$Se$_3$ – Er$_2$Se$_3$ (ErSe) systems was studied by DTA – differential thermal, YTDTA – high temperature differential thermal, RFA – X-ray phase, MQA – microstructure analyses, as well as microhardness and density measurement methods:

Erbium – Erb-0; bismuth -13•4, selenium- "specialy pure".

The synthesis mode was selected based on the physico-chemical properties of elementary components and binary compounds and DTA results of ternary alloys.

The alloys were synthesized directly from the starting components at 1250K in deaerated quartz ampoules to 10$^{-3}$ kPa and gradually cooled in a quenched furnace mode. Samples containing up to 60 mol% Er$_2$Se$_3$ (ErSe) are compact, dark gray with a metallic luster, samples containing more than 60 mol% Er$_2$Se$_3$ (ErSe) are porous; received non-homogeneous. They were again crushed and crushed, pelletized under high pressure conditions, and again solid-phase synthesized.

After synthesis, in order to achieve homogeneity of the samples, they were thermally treated for 250 hours at a temperature 50-100K below the solidus.

Then the alloys were studied by physico-chemical analysis methods.

DTA Thermoxan-2 pyremotrin was measured using a chromel-alumel thermocouple, RFA-DRON-2 x-ray diffractometer in CuK$_\alpha$ radiation, microhardness in a PMT-3 device, microstructure in a MHM-7 microscope. Liquidation of the high-temperature area of the diagram was carried out in
the interatmosphere using a W-W/Re thermocouple on the BDTA-8 M2 device. The heating rate was 40 rpm.

In order to analyze the microstructure of the alloys, a tanning substance containing 10 ml of solid H$_2$SO$_4$ + 45 g of K$_2$Cr$_2$O$_7$ + 90 ml of H$_2$O was used.

State diagrams of Er$_2$Se$_3$ (ErSe) – Bi$_2$Se$_3$ systems were constructed based on the results obtained from the mentioned analysis methods.

Er$_2$Se$_3$ – Bi$_2$Se$_3$ system is quasibinary (Figure 1). It was determined that a new ternary compound containing ErBiSe$_3$ is formed as a result of a peritectic transformation reaction at 1050K in the system with a 1:1 mol ratio of components:

\[ \text{M+Er}_2\text{Se}_3 \leftrightarrow \text{ErBiSe}_3 \]

![Figure 1. State diagram of Bi$_2$Se$_3$ – Er$_2$Se$_3$ system.](image)

The compound ErBiSe$_3$ forms a eutectic with 85 mol% Bi$_2$Se$_3$ melting at 800K with an $\alpha$-solid solution based on Bi$_2$Se$_3$.

Based on Bi$_2$Se$_3$, 6mol% solid solution area is formed at 300K. At the eutectic temperature, this area increases to 9 mol%. As a result of comparing the X-ray images of the alloys, it was determined that the ErBiSe$_3$ compound crystallizes in the Sb$_2$S$_3$ type in rhombic syngonia. Gahs parameters: $a$ =12.21; $b$=11.98; $c$= 3.45 Å

X-ray density of ErBiSe$_3$ compound is 6.21; pycnometric density is 6.05 g/ cm$^3$.

Bi$_2$Se$_3$ – ErSe section (Figure 2). As you can see from the picture, the system is quasibinary and simple eutectic. Eutectic coordinates: 78mol % ErSe and 950K.
Based on Bi\textsubscript{2}Se\textsubscript{3}, 3 mol% ErSe dissolves at room temperature and 9 mol% ErSe at the eutectic temperature.

**Conclusion**

The nature of the interaction in the Er-Bi-Se ternary system was studied by methods of physicochemical analysis. State diagrams of the systems were constructed and it was established that they are a quasi-binary cross section of the Er-Bi-Se ternary system. In the system, the peritectic transformation reaction at 1150 K with a component ratio of 1:1 forms a loose compound containing ErBiSe\textsubscript{3}.

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In the last hundred years which might well be called the age of oil, the escape of oil into the environment has increased gradually in quantity and has become recently more objectionable causing oil pollution.

Pollution of water basins with crude oil and oil products is one of the principal problems facing mankind currently. Due to various reasons, including accidents in oil tankers and oil pipelines, a huge amount of crude oil enters the hydrosphere. After removing thick oil films by mechanical means on the water surface there always remains a thin oil film which is ecologically hazardous as it seriously disorders gas (mainly oxygen and carbon dioxide) and energy (sunlight) exchange at the water-air interface, thereby negatively impacting life conditions of hydrobionts. Such thin films may be liquidated only using colloid-chemical methods that include an application of petroleum-collecting and petroleum dispersing reagents [1-5].

So in this research work, it was planned to synthesize and study new and efficient reagents possessing petroleum-collecting and petroleum-dispersing capabilities. These chemicals are considered to be obtained based on (Z)-octadec-9-enoi acid and nitrogen-containing compound. (Z)-octadec-9-enoi acid (0.01 mol) was taken at an equimolar ratio with 1,2-diaminoethane. The components of reactions were mixed, closed well, and placed in a thermostat at a temperature ranging between 50 and 60°C for a period ranging between 15 and 20 hours. The obtained complex is generally viscous liquid and solid. Their colors vary from light yellow to dark brown. The synthesis of the complexes can be illustrated by the following reaction scheme:

$$C_{17}H_{33}COOH + NH_2-(CH_2)_2-NH_2 \rightarrow C_{17}H_{33}COOH \cdot NH_2-(CH_2)_2-NH_2$$

The structure of the synthesized complex was confirmed by FTIR, C\textsuperscript{13} and H\textsuperscript{1}-NMR spectra. The studied physicochemical indices are solubility in different solvents (water, ethyl alcohol, CCl\textsubscript{4}, toluene, and kerosene), electro-conductivity, and amine number. From measurement, it is noted that the obtained complex is generally viscous liquid and solid. Their colors vary from yellow to blackish-brown color. Measurements of the electrical conductivity of different concentrations of aqueous solutions of the complex indicate their polarity. Determination of the amine number for this complex was done (5.1 mg HCl/g). Such a selection is stipulated by the fact that previously in the above-indicated laboratory, surface-active compounds with a hydrocarboxyl group ensure a sufficient hydrophobicity, when having nitrogen-containing fragments in the hydrophilic part, possess strong petro-collecting and petro-dispersing properties.

Surface-active properties (interfacial tension) of the salt of dodecanoic acid with 1,2 aminoethane was determined using a tensiometer at the air-water interface using their aqueous solutions at various concentrations in the range of 0.01%-0.5%, at room temperature (25°C). It has been established that this complex (σ=21.09 mN/m) at concentrations (0.3%) exhibits high surface activity. The surface tension of distilled water at the border with air is 72.82 ± 0.2 mN/m without surfactant.

Surface properties studied included critical micelle concentration (CMC), maximum surface excess (Γ\textsubscript{max}). Efficiency (pC\textsubscript{30}), and minimum surface area (A\textsubscript{min}). Free energies of micellization (∆G\textsubscript{mic}) and adsorption (∆G\textsubscript{ad}) were calculated.
The synthesized complex has very good surface-active properties and may be used as petroleum-collecting and petroleum-dispersing agents for removing thin petroleum films from water surfaces as well as a corrosion inhibitor and antimicrobial agent.

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Economic sciences

COOPERATIVE MARKETING AS A CONCEPT OF ENTERPRISE ACTIVITY UNDER CONDITIONS OF MARTIAL LAW

Halyna Zaiachkovska
Doctor of Economic Sciences, Associate Professor
Khmelnytskyi Cooperative Trade and Economic Institute

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Всеукраїнська центральна спілка споживчих товариств (Укркоопспілка) – багатогалузева організація, яка займається різними видами діяльності: роздрібна і оптова торгівля, виробництво продуктів харчування; заготівля й реалізація сільгосппродукції; побутове обслуговування населення; підготовка фахівців в кооперативних університетах, інститутах й коледжах та ін. У сфері торгівлі функціонує більше 14000 кооперативних магазинів під єдиним брендом «СООР Україна», які реалізують продовольчі та промислові товари; працює близько 3000 закладів ресторанного господарства, мережа готельно-ресторанних комплексів, близько 300 підприємств і цехів з виробництва різних видів продукції [1].

Після повномасштабного вторгнення Росії в Україну у лютому 2022 року значна кількість підприємств опинилася у територіальній, фінансовій та інформаційній блокаді. Проведене дослідження дозволило виділити фактори, що впливають на діяльність підприємств системи кооперації в умовах війни:

− макроекономічна нестабільність – у 2022 році внутрішній валовий продукт України скоротився на 29,1% у реальному вимірі, споживча інфляція в річному вимірі становила 26,6%, дефіцит зовнішньої торгівлі товарами склав 11,125 млрд. дол. США [2];
− скорочення споживчого попиту – кінцеві витрати домогосподарств за підсумками 2022 року зменшилися на 26,7% [2];
− низька купівельна спроможність населення – у 2022 році спостерігався спад темпу зростання реальної зарплати щодо вартості продуктового коштника внаслідок значної інфляції;
− скорочення кількості нових замовлень – за результатами опитування підприємств кооперації цей показник склав 20,3%;
− порушення ланцюгів поставок внаслідок ускладнення процесу закупівлі товарів, зміни умов складського зберігання, відмови підприємств від створення значних запасів товарів;
− невизначеність умов діяльності, що пов’язано з проблемами в роботі операційної системи, зміною законодавства, безпекою співробітників тощо.

Не дивлячись на складність ситуації, підприємства кооперації адаптувались до нових реалій. Сьогодні перед ними стоять завдання збереження бізнесу і забезпечення його функціонування в складних умовах воєнного часу; реалізація заходів, орієнтованих на допомогу населенню, особливо внутрішньо переміщеним особам та соціально вразливим категоріям. Виконання цього завдання можливе завдяки використанню кооперативного маркетингу, який ми розглядаємо як процес прийняття управлінських рішень центрами прийняття рішень кооперації щодо цілей і ринково-продуктової стратегії діяльності, на основі дослідження факторів маркетингового середовища з метою реалізації економічних інтересів.
Він базується на кооперативних цінностях і принципах корпоративної соціальної відповідальності, а в умовах військового стану спрямований на отримання результатів, а не на розробку стратегії діяльності. Особливістю кооперативного маркетингу в сучасних умовах є безпосередній зв’язок з патріотизмом, який зачіпає дієздатне населення, поранених та сім’ї загиблих.

Здійснюючи маркетингову діяльність, підприємствам потрібно розуміти, що люди під час війни мають потреби в основних товарах та послугах, які забезпечують їхню життєдіяльність.

Матеріально-технічний потенціал споживчої кооперації є основним фактором розвитку і функціонування кооперативної торгівлі в умовах військового стану. Проводиться оновлення торгових центрів та розширення торгової мережі «СООР» у регіонах, де не ведуться активні бойові дії, за рахунок модульних конструкцій та поверхення приміщень з позаєміської оренди. У роздрібній торгівлі зросла питома вага непродовольчих товарів, а саме: високоліквідних будівельних матеріалів, електропобутових приладів, іграшок тощо. Констатуємо, що відбулась зміна маркетингових підходів до реорганізації, вивчення потреб клієнтів, потрібно більше уваги приділяти маркетинговим дослідженням відповідної галузі. Основним резонансом є зосередження уваги на придбанню товарів широкого асортименту не тільки вітчизняних, а й зарубіжних брендів – продуктів харчування, ряду виробів іншої категорії. В роздрібній торгівлі поширилася діяльність підприємств Укркоопспілки з поширенням асортименту товарів і послуг, підвищення їх концентрації за прийнятними цінами; продажу товарів першої необхідності за соціальними цінами; здійснення зв’язку зі споживачами, які вітчизняних, а й зарубіжних брендів.

Проаналізуємо, що відбулась зміна маркетингових підходів до здійснення підприємницької діяльності – у магазинах кооперації тепер можна придбати товари широкого асортименту не тільки вітчизняних, а й зарубіжних брендів, що сприяє покращенню обслуговування покупців та зміцненню авторитету споживчої кооперації на ринку. Відмітимо, що інформація про донати на Збройні сили України, яка висвітлюється в соцмережах, демонструє небайдужість торговельних підприємств.

Ресторанное господарство Укркоопспілки поновлює свою діяльність, хоча завантаження закладів значно зменшилося у результаті ведення військових дій, скорочення режиму роботи у результаті запровадження коменданської години, зниження доходів населення, значного подорожчання продуктів харчування для приготування їжі. В умовах війни використання класичних прийомів маркетингу рідко приносить результат, тому закладам харчування потрібно більше уваги приділяти маркетинговим дослідженням з метою оцінки ситуації, вивчення потреб клієнтів, зниження ризику прийняття помилкових рішень та ін. Це сприятиме їх реорганізації, дасть можливість не тільки вижити в умовах військових дій, але й охопити більшу цільову аудиторію, бути конкурентоспроможними. Крім того, долення до благодійної допомоги біженцям та військовим сприяє формуванню позитивного іміджу закладів ресторанного господарства.

У результаті дослідження пропонуються заходи кооперативного маркетингу для відновлення діяльності підприємств Укркоопспілки в умовах військових дій:

− розробка сценарних планів, а не стратегії, що дає змогу швидко переорієнтуватись у мінливому бізнес-середовищі та визначити нові приоритети [3];
− адаптація продукції та її асортименту до поточних потреб споживачів [4, р. 226];
− прийняття структурованих рішень на основі аналізу потреб та запитів реальних та потенційних клієнтів;
− зосередження уваги на задоволенні потреб споживачів у супутніх товарах і послугах;
− оптимізація маркетингових витрат, спрямованих на залучення клієнтів в результаті економії на каналах комунікації, проведенні аналізу існуючого контенту та ситуації;
− зміна контент-стратегії шляхом оновлення інформації про продукцію підприємств; висвітлення внеску в боротьбу з ворогом (волонтерство, благодійність); надання споживачам корисної інформації про товари та послуги;
− формування лояльності споживачів шляхом пропозиції достатнього асортименту продукції за прийнятними цінами; продажу товарів першої необхідності за соціальними цінами; випуск продукції під торговою маркою «СООР» з патріотичними лозунгами або хештегами.

До переваг використання підприємствами кооперативного маркетингу слід віднести:

− збільшення попиту на продукцію підприємств Укркоопспілки;
− сприяння кращому позиціонуванню продукції та підприємств, підвищення їхньої конкурентоспроможності;
− можливість більшого контролю в каналах розподілу;
– ефективне просування товарів і гнучке ціноутворення [5].

Використання кооперативного маркетингу як концепції діяльності підприємствами Укркоопспілки дасть змогу визначати пріоритети споживачів, корегувати їхню діяльність та адаптуватись до умов військового часу.

References
Today, Ukraine faces serious challenges in the field of health care, which are caused by a decrease in the level of provision of medical institutions with doctors and nurses, the need for constant growth of their professional competences, which directly affects the quality of the provision of medical services. The very organization of medical services depends first of all on the presence of professionals and specialists, the level of their professional training, monetary remuneration for the provision of medical services, social guarantees and social protection of medical personnel. The effectiveness of the organization of the work of medical workers in the provision of medical services by them in a separate health care institution in modern conditions depends not only on the level and quality of providing the medical institution with specialized medical personnel, but also on its working conditions, work regime, the availability of modern medical equipment in the medical institution equipment and diagnostic equipment. In the conditions of the implementation of the medical reform at the secondary and tertiary levels, the organization of the provision of medical services to the population by specialized health care institutions is of particular relevance.

In the context of the implementation of the medical reform, among the most important problems, it is necessary to single out the organization of the work of the personnel of health care institutions in the process of providing medical services, which are provided free of charge to patients of all levels provided for by the Program of Medical Guarantees. As for the process of implementation of medical services at the level of health care institutions, it is clearly spelled out in the Agreements that health care institutions have concluded with the National Health Service of Ukraine. Today, the mass media are intensively discussing the problems of quality provision of medical services to the population in the conditions of a pandemic, which largely depends on the professionalism of the medical staff and the efficiency of the organization of the provision of medical services.

The problem of personnel management in modern socio-economic realities is key, since personnel management of any organization is one of the main factors of its competitiveness. The future of the domestic health care system and its sustainable development also directly depend on industry specialists who use their skills and abilities, strive for self-improvement and are motivated for successful professional activity, which is the main task of the personnel management system of modern healthcare facility. Effective management of medical personnel contributes to solving the problems of improving the quality of medical care for the population.

Adoption of the paradigm of management of health care institutions, which is based on the above principles, should ensure a change in the competitive environment of the health care industry and lead to the introduction of a new type of management of these institutions, which is based on entrepreneurial activity. As mentioned above, medical personnel occupy a special place in the system of providing medical care and services. We see that the modern principles of reforming the industry require a change in the concept of managing these personnel:

1) application of personnel policy and strategy within the framework of the health care institution;
2) introduction of the latest forms, systems and principles of remuneration of medical workers;
3) implementation of a motivational mechanism and modern methods of stimulating the activities of medical personnel;
4) implementation of modern principles of formation and development of healthcare personnel;
5) application of the latest methods of training medical personnel, in particular managerial ones;
VI international scientific conference. Tokyo. Japan. 31.08-01.09.2023

6) introduction of the principles of teamwork within the framework of the provision of medical services by health care institutions [2].

The formation of a high-quality mechanism of motivation and stimulation is one of the most important functions of any manager or leader, as it influences the personnel of organizations, enterprises or institutions in order to activate their activities, increase efficiency and productivity. At the same time, the manager should consider motivation and stimulation as a whole, since they have different directions of action. Stimulating tools (rewards) reinforce the motivational process. They should always be carried out only in combination with the motivational process, because in this way the mechanism of motivation and stimulation in the organization is built. By staff stimulation, we mean an external incentive to act, the basis of which is interest (material, moral, individual or group). Any manager always deals with both the process of motivation and the stimulation of his subordinates. Internal reward, which we understand as motivation, is provided by the work itself. It can be a feeling of achieving a result, meaningfulness or significance of the work itself, self-respect, etc. Thus, the simplest means of ensuring internal reward is the creation of appropriate conditions for activity and precise setting of the task. Extrinsic reward does not arise from the work itself, but is provided by the organization. From a motivational point of view, it can be defined as work stimulation aimed at more complete realization of the available labor potential. Thus, motivation and stimulation embody the strategy and tactics of personnel management. Motivation is a strategic line aimed at achieving global goals that are set for the employee and are connected with the general goals of the organization. For example, a doctor seeking rotation or expansion of his professional knowledge undergoes training or advanced training courses at the expense of the medical institution in which he works, contributing to its development thanks to the acquired knowledge and skills. Stimulation is a tactic in the motivational mechanism that satisfies certain motives of employees (mostly material) and makes it possible to increase their work productivity. Thus, we see that motivation and stimulation are opposite in their directions: motivation involves changing the existing state in the organization, and stimulation - its consolidation, but they complement each other [1].

The main task of the medical staff of a health care institution is to provide patients with high-quality medical services. The effectiveness of the organization of the work of the staff for the provision of medical services depends on many factors, and first of all, on the qualifications of the staff, that is, doctors and nurses, medical equipment and modern diagnostic equipment, and the responsible attitude of the staff to the implementation of job instructions. Modern labor legislation actually limits the administration's ability to improve the qualification structure of personnel because it concludes employment agreements with them that are actually indefinite. One of the ways to improve the employment system in health care institutions is the introduction of a competitive recruitment system. Today, when filling vacant positions, it is necessary to involve medical self-government, which must be included when implementing a system for optimizing full-time positions in structural divisions. Improvement of the qualification structure of medical personnel can be achieved by developing an effective certification system, and its introduction is provided for in the Collective Agreement. Annual certification of medical professionals and specialists can significantly improve the quality of medical services. A written, anonymous survey of inpatients and outpatients with a request to express their wishes and suggestions can be used to improve the organization and quality of medical services. The introduction of an information system, the acquisition of knowledge, the administration's support of the staff's desire to undergo internships in leading medical education institutions, scientific institutions, and to participate in national and international scientific and practical conferences and seminars should serve to improve qualifications.

Conclusions
1. The implementation of the main provisions on health care reform involves:
- structural changes in the system of healthcare institutions;
- changes in personnel policy and increasing the competence of medical personnel;
- improving the organization of staff work in the process of providing medical services.
The measures proposed above are not exhaustive and are not a panacea, but they should become part of local and state incentives for the development of the health care system in Ukraine and the formation of a modern paradigm of personnel management in this field.

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APPLICATION OF BLOCKCHAIN TECHNOLOGY IN TRANSPORT LOGISTICS

Zhumatayeva Gaziza Erlankyzy
Academy of logistics and transport

Abstract

At present, transport infrastructure has become one of the main factors determining the effective functioning of the country’s economy and is one of the priorities, being an important condition for its further development and integration of regions into the world economy. Associated logistics is based on the management of interaction of various streaming processes from emergence to completion as a single system, the possibility of spatio-temporal concentration of resources, Structural information and knowledge in the economic sphere for effective results.

The basis for the article was the desire to better study the advantages and opportunities of introducing blockchain in the automotive industry. We believe that blockchain as an innovative technology can lead to a paradigm shift in many industries, although the prerequisites for its development are only beginning to emerge in the logistics sector of our country. The research area covers transportation from business to business. The methods used in the article cover a review of the literature that served as background for the research. The article is devoted to analysis of practical application of distributed recording technology or blockchain in logistics. The article considers theoretical issues of blockchain technology, gives different interpretations of blockchain definitions. In the field of transfer logic Special attention is paid to the study of the possibilities of using blockchain technology and its efficiency. This article also discusses the main advantages and obstacles to the introduction of IT technologies. The practical experience of blockchain technology and its organization is studied in the field of logistics. It is based on our current experience with blockchain technology in transport and logistics. Currently, logistics as an industry is gaining momentum and belongs to one of the most developed and large-scale markets.

Keywords: logistics, transport, Internet, distributed registry technology (blockchain), smart contracts, automobile.

Research confirms that the logistics market belongs to one of the best known and most important. According to a number of experts, its cost is estimated at more than 15% of the GDP and consists of 4 trillion dollars [1]. In this case, the most rapidly growing segment is the transport sector.

The purpose of this article is to study the possibilities of using blockchain technology in logistics. In order to reveal the main objective, set by the author of the article, the following tasks are proposed:
- analyze the concepts of «blockchain»;
- consider the experience of blockchain in logistics.

Ensuring continuous economic growth, raising the standard and quality of life of the population are some of the key, fundamental tasks of any modern state. Transport is one of the most important sectors of the economy, the «circulatory system» of the national economy, contributing to the deepening of interdisciplinary integration processes. The level of development of the transport system of the state is one of the most important signs of its technological progress and civilization, and at the same time - a fundamental objective condition for innovative economic growth, structural and systemic economic transformation.

Given the above, the beginning of the 21st century can be described as a period of great transport modernization in both developed and developing countries, as evidenced by the planned average annual investment in infrastructure up to 2024.

As sources of publications on this topic used monographs, scientific articles from the e-library base, articles of electronic professional-specialized sites. More narrowly, the article studies the problem of the application of blockchain technology in the field of logistics.
This topic is currently attracting not only the attention of the scientific community but also the attention of the operating business. According to the Worldwide Semiannual Blockchain Spending Guide (IDC) report, International Research and Consulting Company, the amount of investment of companies worldwide in the search for solutions in the blockchain sector in 2023 reached $12.7 billion, which will increase the world GDP by 7% and total traffic by 15% [2].

The total value of transactions in the transport and logistics sector amounted to 34.3 billion US dollars (the average value for the last ten half-years: 75.1 billion US dollars). At the same time, the last time a lower value of the average transaction value of 404 million US dollars was recorded in the first half of 2020, when COVID-19 spread around the world.

**What is blockchain?**

There are many definitions of blockchain. At the same time, not only individual publications appeared, but also fundamental blockchain research in foreign [3; 4; 8] and domestic research [5; 9].

In the past eight years, blockchains have gone from an unknown technology to a promising technology in which more than $2.5 billion dollars of venture capital has already been invested.

This article also discusses the main advantages and obstacles to the introduction of IT technologies. The practical experience of blockchain technology and its organization is studied in the field of logistics. It is based on our current experience with blockchain technology in transport and logistics.

If we generalize the majority of definitions, a blockchain is an efficient and sophisticated information exchange technology, creating an immutable digital transaction registry that is supported by a distributed network of computers. It should be remembered that blockchain is, first of all, technology. And secondly, blockchain is a combination of mathematics, encryption, and economics of behavior. A third - a unique platform for the application of a variety of resources: digital currencies, smart contracts, non-economic resources.

Informatization and automation of the transport industry are acquiring such an important, key character of economic growth that it is not surprising that there is a systematic and frequent discussion on various scientific platforms. For example, to the Institute of Material Flows and Logistics named after Fraunhofer (Dortmund, Germany) has been annually organizing a traditional scientific and practical symposium on the development of transport systems for more than twenty years, the central theme of which is the design, organization and technical means for the organization of transportation. Considerable attention at the last symposium was paid to the use of Internet technologies.

A large research work was carried out at the Institute of Production and Logistics Systems (IRL, Germany), in which the issues of the introduction of information technologies into transport systems (E-Business) were considered. Studies have shown the possibility of interfacing decentralized management devices with the creation of unified information systems that unite carriers, passengers, intermediaries and customers in a single database.

The question of the advantages of using blockchain technology was considered by such leading world experts as Jeremy Aller, Mark and Gaven Anderssen, Dino Angaritis, Andreas Antonopoulos, Adam Beck, Bill Barhidt, Paul Brody and others.

One of the definitions of blockchain technology (or distributed ledger technology - DLT) is given in the Report of the World Economic Forum (WEF): a technological protocol that allows data exchange directly between different contracting parties within the network without the need for intermediaries.

At the same time, there are two main ways of implementing blockchain technology: public and private.

The public blockchain is available for viewing by any user. The most famous example is bitcoin. It is completely decentralized, everyone can view the transaction history and make changes. To coordinate the actions of participants in public blockchains, various consensus mechanisms are used, the most popular of which are Proof-of-Work and Proof-of-Stake [6].

However, not all institutions want to make transactions publicly available. In this case, a private blockchain can be used. Only a limited number of authorized persons can view entries in the distributed registry in it. At the same time, either all authorized persons or only some of them can make
changes [7]. Even when using a private blockchain, its high transparency remains relevant. The advantages of a private blockchain over a public one are more flexible scaling capabilities, much lower costs for maintaining the functioning of the network (for example, to ensure the operation of the bitcoin blockchain, an amount of electricity is needed that would be sufficient to power a small country), as well as significantly higher throughput.

**From Third Party Logistics (3PL) to blockchain technology.**

In modern conditions, logistics is undergoing drastic changes, as new business models are emerging that require flexibility, transparency, individuality for the client and the introduction of IT technology. Meanwhile, the new technologies used in logistics in recent decades have been based on the standard model of logistics development: manufacturer-dealer – agent – buyer. At the same time, the costs of intermediaries, according to experts, range from 10-45% [10]. Currently, the industry is still operating on the basis of a centralized document management platform using the concepts of 3-PL, 4-PL, 5-PL, which only increases the number of agents, transactions and leads to an increase in the cost of delivery (Fig.).

The implementation of blockchain technology in logistics in the near future is a transition from a centralized platform for building document flow in logistics to decentralized based on blockchain.

Blockchain has the potential to solve problems in the logistics industry, because it represents a technological protocol that allows the exchange of data directly between different contracting parties within the network without the need for intermediaries.

![Centralized and decentralized platforms for building document flow in logistics blockchain](image)

The world's leading logistics companies are engaged in applied research in the field of blockchain technology and are looking for opportunities to implement it in their business, as this will reduce the costs of companies by:

- optimizing document flow and increasing transparency of transactions;
- ensuring transparency and full quality control of the goods, which in turn is ensured by the possibility of tracking the cargo in real time;
- reducing the number of intermediaries;
- ensuring the resolution of disputable situations.

At the same time, it must be remembered that the use of blockchain technology cannot provide 100% guarantees of preventing errors in agreements. But it will reduce the time to search for errors and eliminate the costs caused by delays or fraud [11; 12].

Despite all the advantages, there are difficulties in implementing blockchain technology in the logistics industry. This is hindered by legal and industry barriers that narrow the scale of its implementation (legal uncertainty, the presence of trade secrets, incorrectness when changing smart contracts) [13].

**Theoretical possibilities of blockchain implementation in Kazakhstan**

The analysis conducted on the practical implementation of blockchain technology in the field of logistics services showed that projects implemented in the world and in Kazakhstan use blockchain technology based on smart contracts, which ensures the inseparable connection of physical delivery,
all accompanying processes and document flow, and also allows all participants in the process to access reliable information in encrypted form.

Based on the imbalances caused by information loss, documentation discrepancies and opaque supply chains, this study aims to contribute to the field of logistics and supply chain management research by: exploring the potential of blockchain technology in logistics.

In his message to the people of Kazakhstan, the first President of the Republic of Kazakhstan, N.A. Nazarbayev, noted the urgent need for the introduction of new digital technologies in the transport and logistics sector, such as blockchain.

Kazakhstan has all the prerequisites for the application and implementation of blockchain technology in the transport and logistics industry [14]. To illustrate the potential of using blockchain technology in the transport industry, consider the example of sending one container of meat to China (to the Khorgos station) from the Akmola region of Kazakhstan. The route originates in the steppes of the Akmola region, where there is a small cattle meat processing plant, where a truck (refrigerated truck) picks up a batch of meat and delivers the cargo to the TLC (transport and logistics center) in Astana. In the TLC, the cargo is placed in a refrigerator for storing frozen products, waiting for the arrival of a refrigerated container and a fitting platform to send the cargo to the border with China. All necessary certificates, permits from veterinary control bodies, the Ministry of Agriculture, etc. are issued. In this example, the shipper is forced to interact with a dozen different legal entities and individuals to organize the shipment of one container.

![Image](image.png)

Pic. 2. Simplified current scheme for interaction and exchange of documents and information

When using blockchain technology and the capabilities of smart contracts, the scheme of interaction and exchange of documents could look like this (see Figure 3).

1. The advantages of implementing a platform based on blockchain technology are obvious:
2. Fast and secure access to information from the beginning to the end of the service provision process
3. A single source of truth
4. Verifiable authenticity and protection from retroactive changes of digital documents
5. Trusted workflows between organizations
6. Radical reduction of administrative costs and costs of transferring paper documents across international borders

A radical reduction in the number of claims of participants in the process, and the timing and quality of their consideration.
According to a study by Gartner, blockchain technology will gradually come to a "Productivity Plateau" phase over the next 10 years. In addition to the active projects we have described, many companies are already testing blockchain for transportation and simplification of logistics processes.

There are all prerequisites for the introduction of blockchain technology in the transport and logistics industry of Kazakhstan. The problems in organizing transportation, especially multimodal, are very similar to those that forced the world's leading transport company Maersk, together with the global IT giant IBM, to start developing and testing the TradeLens blockchain platform.

The only obstacle to implementation so far is the factor of legislation. However, at the moment, according to the National Association of Blockchain and Data Center Industry of Kazakhstan, the draft law on amendments and additions to some legislative acts of the Republic of Kazakhstan on the regulation of digital technologies regulating the scope of blockchain technology in Kazakhstan has been approved in the lower house of the Kazakh Parliament and is under consideration in the upper house (Senate) [15]. The adoption of this bill, coupled with the desire of market participants to increase efficiency and reduce costs in the organization of transport and logistics services, create all the necessary prerequisites for the start of active implementation of blockchain technology in supply chain management in Kazakhstan.

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Geological and mineralogical sciences

EXPLOSIVENESS OF COAL SEAMS

Maussymbayeva Aliya
Ph.D., senior researcher,
Abylkas Saginov Karaganda Technical University

We showed above that coal consists of a surface layer of size $R(I)$, which we will call the $\sigma_1$ phase, and a main substance, which we will call the $\sigma_2$ phase (Fig. 1a). When they are separated, work is expended, which is called the work of adhesion $W_a$ (Fig. 1b) [1]:

$$W_a = \sigma_1 + \sigma_2 - \sigma_{12} \approx \sigma_1 + \sigma_2,$$

where $\sigma_{12}$ is the surface energy at the interface, which is negligible due to a second-order phase transition.

For nano- and mesostructures, size effects take the form [2]:

$$A(h) = A_0, \quad \left(1 - \frac{R(I)}{h}\right), \quad h \gg R(I)$$

$$A(h) = A_0, \quad \left(1 - \frac{R(I)}{R(I) + h}\right), \quad 0 \leq h \leq R(I).$$

Here $A(h)$ is a physical property of the surface layer $h$, and $A_0$ is a physical property of a massive sample, where the properties do not depend on size (there is no size effect). The physical property of a solid is understood as melting point, heat capacity and other properties.

To calculate $\sigma_1$ using formula (1), it is necessary to take into account the size dependence of the melting temperature using formulas (2), where $A(h) = T(h)$ and $A_0 = T_m$, $T(h)$ is the melting temperature in the layer $R(I)$ and $T_m$ is the melting temperature of a massive sample of coal matter. The energy value $\sigma_1$ will be equal, according to work [2]:

$$\sigma_1 = 0.7 \times 10^{-3} \cdot T(h). \quad (J/m^2)$$

Using formulas (1-3), we present the work of adhesion in Table 1.
The work of adhesion is of interest in the calculation of internal stresses in a coal seam, which arise due to the presence of a surface of size $R(I)$. Internal voltages $\varepsilon$ between phases $\sigma_1$ and $\sigma_2$ can be calculated using the formula [1]:

$$\varepsilon_{is} = \sqrt{\frac{W_a}{R}} \cdot E \quad (Pa)$$ (4)

Then the average value of internal stresses for coal is presented in Table 2. The adhesion force for coal of different grades is equal to:

$$F_1 = \sigma_1 \cdot R(I) \quad (nN)$$ (5)

In this case, the internal stress $\varepsilon_{is}$ is equal to approximately 1/6 of the longitudinal elasticity $\sigma_u$ of coal of various grades.

Table 2. Adhesion parameters of coal of various grades

<table>
<thead>
<tr>
<th>Brand</th>
<th>$F_1$, nN</th>
<th>$\varepsilon_{is}$, MPa</th>
<th>$\sigma_u$, MPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown B</td>
<td>83</td>
<td>158</td>
<td>26,3</td>
</tr>
<tr>
<td>Long flame D</td>
<td>83</td>
<td>173</td>
<td>28,8</td>
</tr>
<tr>
<td>Gas G</td>
<td>83</td>
<td>176</td>
<td>29,3</td>
</tr>
<tr>
<td>Fat F</td>
<td>83</td>
<td>187</td>
<td>31,2</td>
</tr>
<tr>
<td>Coke K</td>
<td>83</td>
<td>200</td>
<td>33,3</td>
</tr>
<tr>
<td>Lean-sintering OS</td>
<td>83</td>
<td>183</td>
<td>30,5</td>
</tr>
<tr>
<td>Skinny T</td>
<td>83</td>
<td>212</td>
<td>35,3</td>
</tr>
<tr>
<td>Anthracites A</td>
<td>83</td>
<td>250</td>
<td>41,7</td>
</tr>
</tbody>
</table>

From the table 2 it follows that in a layer of size $R(I)$, the following relation holds: $F_1 = \text{const}$. It also follows from this that the force $F_1$ corresponds to intermolecular interactions in the surface layer of coal. From the table 2 also follows that the force $F_1$ has the same value for all grades of coal - from brown to anthracite. This, in our opinion, is due to the fact that intermolecular interaction in coals of various grades is associated with the structure of the macromolecule core, which is a benzene ring (Fig. 2). The number and composition of side groups largely determine the diversity of coals, but do not affect intermolecular interactions.

From Table 2 it follows that the internal stress $\varepsilon_{is}$ and longitudinal elasticity $\sigma_u$ increase from brown coal to anthracite. This is due to the fact that the thickness of the surface layer of brown coal is 1.5 times greater than that of anthracite.
Before discussing the explosiveness of coal seams, let’s consider their physicochemical properties, presented in Table 3 [3].

Comparing tables 1 – 3, we note the fact that from brown coal to anthracite the following values decrease: molar mass M; thickness of the surface layer R(I); heat capacity CV; humidity W; the yield of volatile substances V\text{daf}, and the following values increase: density \( \rho \); adhesion energy \( W_a \); internal stress \( \varepsilon \); longitudinal elasticity \( \sigma_u \); calorific value \( Q_G \); gas content \( c_0 \).

According to the energy theory of emissions [4], the energy conditions under which emissions occur are written in the form of an energy balance:

\[
W_u + W_g > A_u + A_g,
\]

where \( W_u \) is the energy of elastic deformation of the coal seam, MJ; \( W_g \) is the energy of free gas contained in the coal seam, MJ; \( A_u \) is the work of destruction of coal, MJ; \( A_g - \) work of movement of coal destroyed during ejection, MJ.

Energy \( W_u = \sigma_u^2 / 2E \), for different grades of coal \( W_u = (\sigma_u^2 / 2E + 2.72 \times 10^{-3} \text{ N}) \text{ MJ} \), where H is the depth of the coal seam. Work \( A_u = \sigma_u / (597 \text{ m}) 1.75 \), where m is the particle size of coal destroyed during ejection, MJ.

Work of displacement \( A_g = mgL \), where m is the mass of ejected coal or rock, kg; g gravity acceleration, cm/sec\(^2\); L is the distance by which the center of gravity of ejected coal moves during a sudden ejection, m. All the above data are presented in Table 4.
Table 4.

<table>
<thead>
<tr>
<th>Coal grade</th>
<th>$W_u$, MJ</th>
<th>$W_g$, MJ</th>
<th>$A_u$, MJ</th>
<th>$A_g$, MJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown B</td>
<td>0.79</td>
<td>0.11</td>
<td>0.73</td>
<td>0.08</td>
</tr>
<tr>
<td>Long flame D</td>
<td>0.85</td>
<td>0.12</td>
<td>0.75</td>
<td>0.09</td>
</tr>
<tr>
<td>Gas G</td>
<td>0.85</td>
<td>0.12</td>
<td>0.75</td>
<td>0.10</td>
</tr>
<tr>
<td>Fat F</td>
<td>0.89</td>
<td>0.14</td>
<td>0.81</td>
<td>0.11</td>
</tr>
<tr>
<td>Coke K</td>
<td>0.94</td>
<td>0.16</td>
<td>0.83</td>
<td>0.13</td>
</tr>
<tr>
<td>Lean-sintering OS</td>
<td>0.86</td>
<td>0.12</td>
<td>0.81</td>
<td>0.10</td>
</tr>
<tr>
<td>Skinny T</td>
<td>0.98</td>
<td>0.18</td>
<td>0.95</td>
<td>0.15</td>
</tr>
<tr>
<td>Anthracites A</td>
<td>1,12</td>
<td>0,21</td>
<td>0,99</td>
<td>0,17</td>
</tr>
</tbody>
</table>

From equation (6) and table 4 it follows that the ability to explode coal and gas is inherent in all coal seams. It is believed [4] that coal and gas emissions occur in coal seams of grades G, Zh, K, OS, T and A, i.e. excluding grades B and D, although the latter are self-igniting.

The result of the research is the conclusion that the stress-strain state of the coal seam, associated with a violation of the structure of coal at the mesolevel, plays a decisive role in the release of coal and gas. To prevent the potential for explosion of coal and gas in coal seams, it is necessary to install sensors of various physical quantities that would respond to the fact that conditions for a sudden release of coal and gas are approaching.

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Historical sciences

THE ATTITUDE TO SECTION 907 OF THE “FREEDOM SUPPORT ACT” ADOPTED BY THE US CONGRESS IN AZERBAIJANI HISTORIOGRAPHY

Balamirza Mammadli
PhD student at Baku State University

Abstract

Relations between the United States of America, the world’s main superpower and the Republic of Azerbaijan, which has just regained its state independence after the dissolution of the USSR, have been extremely important since the first days of Azerbaijan’s foreign policy line. The United States, in turn, was interested in establishing diplomatic relations with Azerbaijan, which is one of the countries with the most favorable geostrategic position not only in the South Caucasus, but in the whole world, and as a result of this, in December 1991, the United States officially recognized the independent Republic of Azerbaijan. Nevertheless, the first relations between Azerbaijan and the United States are mostly remembered as “incomprehensible relations” in historiography. In particular, Section 907 of the “Freedom Support Act” adopted by the US Congress in 1992, which deprived Azerbaijan of all US aid, had a great negative impact on bilateral relations. Section 907 was accepted under what circumstances and for what reason, which has caused heated discussions in Azerbaijani historiography, and the issue has been widely discussed in the studies of many Azerbaijani researchers. In the article, a comparative analysis of those historiographical materials was conducted, generalizations were made and conclusions were drawn.

Keywords: Azerbaijan, USA, foreign policy, “Freedom Support Act”, Section 907, Azerbaijani historiography.

After regaining its independence in 1991, the Republic of Azerbaijan began to conduct an independent foreign policy as other post-Soviet countries. In the first years of independence, the main direction of the foreign policy line of Azerbaijan was the establishment of the first diplomatic relations with the countries of the world and the official recognition of state independence. At this time, one of the most important directions in Azerbaijan's foreign policy begins to form relations with the world's most important superpower, the United States. The first practical steps in establishing politico-diplomatic relations between Azerbaijan and the United States coincided with the beginning of 1992. So, on February 12, 1992, US Secretary of State James A. Baker made a business trip to Baku [8, p.30]. Azerbaijani historian M. Qasimli writes about the purpose of that visit: “The US government was worried about the processes taking place in the region, especially the deepening of the Nagorno-Karabakh conflict, Iran’s activation in the South Caucasus region after the dissolution of the USSR. ... It was necessary to discuss those issues” [20, p.153]. It was because of this that J. Baker received extensive information from official Baku about the domestic and foreign policy of newly independent Azerbaijan, economic reforms, the Armenian-Azerbaijani Nagorno-Karabakh conflict, and important aspects of the future relations of the United States with Azerbaijan were discussed. J. Baker, returning from the trip, advised the US government to establish diplomatic relations with Azerbaijan. It was for this reason that only five days after Baker’s visit – on February 17, the US Secretary of State’s personal representative, and ambassador for special tasks Nicholas Sangoya visited Baku and met with Azerbaijan’s State Secretary Mithad Abbasov. They discussed the establishment of diplomatic relations between the two countries, as well as the opening of the US embassy in Baku [16, 22]. In March 1992, embassies were opened in both countries: first, the Azerbaijani embassy in Washington and then the US embassy in Baku [4, 2]. During the opening of the United States embassy in the capital of Azerbaijan, US Chargé d’Affaires in Azerbaijan Robert Finn made a speech and emphasized that the embassy will serve the development of relations between
the two countries [20, 154]. This event meant the establishment of diplomatic relations between Azerbaijan and the United States.

The period when the first diplomatic relations between Azerbaijan and the United States were established is characterized by the transition of the Armenian-Azerbaijani Nagorno-Karabakh conflict to the war phase. From the very beginning of the Azerbaijan-US negotiations on the conflict in Karabakh, the United States expressed its support for the resolution of the conflict within the framework of the Council on Security and Cooperation in Europe (CSCE; since January 1, 1995 – OSCE). Already in March 1992, the CSCE Minsk Group, co-chaired by the United States, was created to resolve the conflict. In April 1992, the US government sent a delegation of the US Congress to Baku under the leadership of Senator Dennis DeConcini, the chairman of the Senate's Commission on Nuclear Weapons. Azerbaijani researcher L. Musa characterizes this visit of US officials as a “reconnaissance mission” to study Azerbaijan [15, p.507]. Azerbaijani politician and historian A. Hasanov writes about this visit: “It goes without saying that all these delegations thoroughly study Azerbaijan and determine the contours of the future foreign policy of the United States in relation to this country” [9, p.145-146].

After the change of power in Azerbaijan in May-June 1992 and the election of Abulfaz Elchibey as the new president, US official circles once again tried to expand relations with the Republic of Azerbaijan, which is of great geostrategic importance, and to actively intervene in the socio-political and military problems in the region. For this purpose, in July 1992 – on the eve of the CSCE Helsinki summit, US President J. Bush sent a letter to the President of Azerbaijan and stated that his country is ready to establish and develop relations with Azerbaijan in all spheres. At that time, the head of the White House wrote in his congratulatory letter to the President of the Republic of Azerbaijan: “I welcome your loyalty to the work of creating democracy and free market relations in Azerbaijan” [15, 508]. However, it is a pity that the leadership of the republic at that time could not go ahead of its predecessors and underestimated this important initiative of the United States. Thus, as a result of the inadequate foreign policy course conducted by the Azerbaijan's leadership at that time, Azerbaijan could not properly benefit from the support of a superpower as the United States at the CSCE Helsinki summit held at a time when Armenia's occupation policy reached its highest level. At that time, Azerbaijan participated in the Helsinki summit, but as A. Hasanov wrote, it failed to put the issue of aggression of the occupying Armenian leadership on Azerbaijani lands on the agenda of the summit [7, 12].

The first years of the establishment of politico-diplomatic relations between Azerbaijan and the United States are described as “incomprehensible relations” in the Azerbaijani historiography, and one of the most important reasons for this is Section 907 added to the “Freedom Support Act” by the US Congress. This is often referred to in Azerbaijani historiography as the “907th amendment”. It is no coincidence that H. Pashayev, who was the first extraordinary and plenipotentiary ambassador of Azerbaijan to the United States in 1992-2006, characterized this as the first obstacle in the bilateral relations between Azerbaijan and the United States [18]. To clarify the essence of this issue, it is necessary to first pay attention to what the “Freedom Support Act” is. The Freedom Support Act or the Freedom for Russia and Emerging Eurasian Democracies and Open Markets Support Act in its full name was proposed as a bill by Congress representative Dante Fascell on March 24, 1992, approximately 3 months after the end of the existence of the USSR. The goal here was to organize and systematize the financial, technical and other assistance provided by the United States to the newly independent states in the post-Soviet space in order to advance on the path of democracy, open society and market economy. The Freedom Support Act bill entered the Senate on April 7, 1992 under the name “S.2532” with the support of Senator Claiborne Pell, and on July 2, it was passed in the Senate by 76 votes to 20 [22]. On October 24, 1992, the “Freedom Support Act” was signed by US President George Bush [6]. There were 10 titles of the Freedom Support Act:

1) General provisions;
2) Bilateral economic assistance activities;
3) Business and commercial development;
4) The democracy corps;
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5) Non-proliferation and disarmament programs and activities
6) Space trade and cooperation;
7) Agricultural trade;
8) United States information agency, Department of State, and related agencies and activities;
9) Other provisions;
10) International financial institutions [19].

Unfortunately, a special section called Section 907 was added to the “Freedom Support Act”, which prohibits the United States from providing any kind of assistance to Azerbaijan. This section, which F. Ismayilov rightly called “one of the important obstacles in the solution of the Karabakh conflict”, was a part of the above-mentioned ninth section [12, 65]. The document containing Section 907 was included in the bill at the suggestion of Senator representing Massachusetts John Kerry during its discussion in the Senate Foreign Relations Committee. Although four senators, including Indiana Senator Richard Lugar, were against this proposal, the section in question was included in the bill of the upper house of Congress [15, 508]. It wasn't just the four senators who opposed the bill in Congress. For example, among the supporters of justice was Representative Greg Laughlin. H. Pashayev writes about this in his memoirs “An Ambassador’s Manifesto”: “G. Laughlin was a supporter of justice. He was one of the first members of Congress to support Azerbaijan. Throughout his tenure as a member of Congress, he insisted that Section 907 was an unfair decision and did everything possible to repeal it” [17, 46-47].

Section 907, which was added to the “Freedom Support Act”, of course, could not be welcomed coldly by the Republic of Azerbaijan. That is why, on July 15, 1992, an appeal to the US Congress was accepted in the Milli Majlis (National Assembly of Azerbaijan). In the appeal, concern was expressed about the suspension of all aid to Azerbaijan by the United States under Section 907 and it was stated that the Republic of Azerbaijan has no territorial claim to any country and no intention to occupy the territory of another country. The war in the region is being waged on lands that are de jure recognized as the territory of Azerbaijan throughout the world, and it is initiated by Armenia. As a result of the aggressive policy started by Armenia, more than 60 Azerbaijani cities and villages were occupied in Nakhchivan, Upper Karabakh and bordering areas, and thousands of civilians, including the elderly, women and children, were brutally murdered. ...Despite the efforts of international organizations and various countries to resolve the Nagorno-Karabakh problem, the Republic of Armenia openly violates all international legal norms in the UN charter and the obligations it has undertaken as a participant of the CSTO. The appeal also stated that members of the US Congress were invited to Azerbaijan to assess the real situation. However, unfortunately, there was no positive response to the mentioned appeal of the Milli Majlis [20, 155-156].

Thus, as mentioned above, on October 24, 1992, when US President J. Bush signed the Freedom Support Act, Section 907 was officially approved [14, 243]. It should be noted that according to M. Qasimli, the “Freedom Support Act” provided aid in the amount of 460 million US dollars for the purpose of “development of democracy and transition to a free market economy” [20, 156]. The essence of Section 907 is explained by F. Ismayilov as follows: “This is about limiting of assistance to Azerbaijan and states that assistance will not be provided to the government of Azerbaijan until the President determines that the government of Azerbaijan will not take demonstrative steps to lift all blockades and aggressive use of force against Armenia and Nagorno-Karabakh, and will not report this to Congress” [12, 65]. When the territories that de jure recognized as a part of Azerbaijan were attacked by the invading army of Armenia, calling the Azerbaijani side the aggressor was undoubtedly an unfair and biased decision. That is why A. Kamandari-Mammadova evaluated the addition of Section 907 as “evidence of the existence of double standards applied in the foreign policy of the American government regarding Azerbaijan and Armenia” [13, 25]. A. Hasanov in his book “Modern international relations and Azerbaijan’s foreign policy” characterized Section 907 as “a very heavy blow for Azerbaijan, which took the path of independent state building and was forcibly involved in the war” [10, 231]. Kh. Heydarova called the mentioned section a factor that brings coldness to bilateral relations and creates serious problems in Azerbaijan-US relations [11, 381].
Different approaches to the question of why the unfair Section 907, also known as the “Kerry Amendment” that directed against Azerbaijan, was adopted, have caused widespread debate in Azerbaijani historiography. These positions can be mainly grouped into two types:

1) The presence of a strong Armenian diaspora in the USA and the activities of the Armenian lobby;

2) The incompetent foreign policy of the then government in the Republic of Azerbaijan.

The first position, that is, the idea that adoption of Section 907 is the result of the activities and the “great victory” of the Armenian diaspora and the lobby in the US is more widely accepted in historiography. The point is that, according to estimates, there are approximately 800 thousand to 1.5 million Armenian diaspora in the US [1]. During the comparative analysis of historical facts, it becomes clear that the activity of the Armenian diaspora and lobby was the main reason for the refusal of the US to recognize the Azerbaijan Democratic Republic in 1920. Thus, while the White House recognized the Republic of Armenia in that year, it refused to recognize Azerbaijan Democratic Republic [15, 509]. This fact confirms that the Armenian diaspora regularly conducts anti-Turkish and anti-Azerbaijani propaganda in the US, as in other countries of the world, since the beginning of the last century. M. Qasimli writes about the role of the Armenian diaspora and lobby in adding Section 907 to the “Freedom Support Act”: “…under the influence of the Armenian diaspora and lobby, a section was adopted in the US congressional committee on the suspension of humanitarian aid to Azerbaijan” [20, 155]. Later, M. Qasimli adds: “The propaganda of the Armenian societies against the Turks in the USA was one of the main activities. The main struggle of their mass media was directed against Turkey and Azerbaijan” [20, 156].

Associating the adoption of “Section 907” directly with the influence of the Armenian lobby, B. Bayramova writes in her article “Section 907 as an unsolved problem towards the resolution of the Armenian-Azerbaijani Nagorno-Karabakh conflict”: “This bill was proposed by Senator John Kerry and it was proposed in the Congress by Congressman Wayne Owens (Utah) with the support of the Armenian lobby organization and was adopted by the Congress in 1992 as a result of the pressure of the Armenian lobby” [3, 188]. A. Bagirova explains the Armenian lobby factor in the adoption of Section 907 in the article “Legal bases of the US interests in the South Caucasus conflicts in the 90s of the 20th century” as follows: “Under the influence of the Armenian community and its lobby, this law was passed against the backdrop of false information about Azerbaijan in the United States, such as the allegedly Azerbaijani blockade of Armenia and violence against the Armenians of Nagorno-Karabakh” [2, 73].

The Armenian lobby factor in the adoption of Section 907 was expressed by the British author Thomas de Waal in his book “The Black Garden: Armenia and Azerbaijan through Peace and War” as follows: “On October 24, 1992, at the height of the election campaign in the United States, Armenian lobby carried through Congress the 907th amendment to the Freedom Support Act” [23, 313].

Many American historians, political scientists and media representatives also assessed Section 907 as “an example of political propaganda and lobbying”. For example, US historian Tadeusz Swietochowski writes that this amendment distanced the American government from the issue of conflict settlement [21, 301]. R. Armitage, who worked as the US coordinator for assistance to the newly independent states and was well acquainted with the political and scientific community of Azerbaijan, stated at Congressional hearings in February 1994 that due to our incapacity, with this legislative act we deprived ourselves of any possibility of influence to Azerbaijan [15, 509]. Or State Department spokesman J. Rubin said: “I was involved in the preparation of this terrible Senate amendment during the Bush administration, and we simply did not understand what we were doing”. Thus, with this we put an end to the hand of the administration and its ability to influence peace in the region” [15, 509-510]. It can be seen from the information provided by H. Pashayev in his work “An Ambassador’s Manifesto” that many American politicians and statesmen themselves have a rightful negative attitude towards “Section 907”. H. Pashayev writes in the mentioned work: “Section 907 will remain as a stain in the history of American democracy. It would be wrong to think that only Azerbajianis are trying to erase this stain. The determination of the Americans was also strong in their
It should be noted that the pro-Armenianism of Senator J. Kerry, the author of “Section 907” and his inclusion in the Armenian lobby, are also confirmed in foreign historiography, as well as by a number of Armenian authors themselves. This fact once again proves that the first position is the truth. For example, researcher A. Qaltsyan writes in his candidate thesis “Armenian lobby in the USA: formation and main directions of activity (1915-2014)”: “J. Kerry is a representative of the strong Armenian lobby in the US Senate and in 1995-2011 was a member of Armenian Caucus (the group on Armenian issues) in the Congress. He was involved in the recognition of the Armenian genocide (1984, 2000, 2005, 2006 and 2010), the allocation of financial aid to Armenia by the United States in 1992-2012, and the draft laws on the so-called Nagorno-Karabakh Republic in 1994-2012, as well as anti-Azerbaijani lobbied for Section 907” [24, 236-237]. Here, it would be appropriate to compare A. Qaltsyan’s information about Senator Kerry with the information provided by M. Qasimli in his monograph called “Foreign policy of the Republic of Azerbaijan (1991-2003)”. M. Qasimli shows that the event that influenced the adoption of this amendment presented by Senator J. Kerry from the state of Massachusetts, where there are many Armenian voters, was Azerbaijan’s supposed blockade of Armenia and Nagorno-Karabakh. Actually, it was an excuse. Then M. Qasimli writes: “The congressmen who voted for the adoption of the document did not even know about the events in the region. The main factors that influenced the adoption of the amendment were the provocation and slanderous propaganda of the powerful Armenian lobby against Azerbaijan, the weakness of the Azerbaijani community in the United States, the lack of or wrong information about Azerbaijan by American legislators” [20, 156].

The second position, that is, the idea that the addition of Section 907 is associated with the incompetent foreign policy of the then government in Azerbaijan (A. Elchibey’s government), is clearly manifested in the research works of A. Hasanov in the Azerbaijani historiography. A. Hasanov writes in his monograph “Azerbaijan’s foreign policy: European states and the United States (1991-1996)”: “In the months of July-December 1992, the unceasing activity of A. Elchibey’s government in the field of foreign policy decreased not only the remaining interest in the United States towards Azerbaijan, also reduced the importance of Azerbaijan in the Caucasus and the whole region. ...Exactly as a result of this policy and with the influence of the strong Armenian diaspora in the United States, in December 1992, the US Congress adopted a document called “Section 907”, which prohibits any assistance to Azerbaijan” [9, 148]. It is clear from the author’s information that in addition to the influence of the strong Armenian diaspora, the incompetence of the then government in Azerbaijan played a certain role in the adoption of the mentioned document. A. Hasanov explains this political incompetence of then government in Azerbaijan for two reasons: firstly, the importance of Azerbaijan to the US superpower was not properly evaluated by the government of A. Elchibey, and secondly, the lack of due importance to the activities of the Armenian lobby, which exists in the United States and has reliable support, strong mechanisms of influence and organizational structures [9, 148]. While evaluating the adoption of Section 907 as a coincidence of three factors, I. Musa notes that one of the factors here is the inability of the Azerbaijani government and public circles to sufficiently inform the authorities in the United States and the American society about the “Nagorno Karabakh problem” and confirms the Azerbaijani government’s weakness in the “information warfare”. Furthermore, the author also emphasizes the importance of taking into account the existence of certain objective difficulties [15, 511].

Section 907 of the “Freedom Support Act” that characterized as a heavy blow to the reputation of the Republic of Azerbaijan, naturally had a negative impact on the relations between Azerbaijan which had just regained its independence and the United States. Because the infamous Section 907 deprived Azerbaijan of humanitarian aid from the world’s main superpower, and, in the words of M. Qasimli, it attacks the principle of respect for human rights in the entire South Caucasus region, prevents the establishment of peace, creates the impression that Azerbaijan is a “victim of secret agreements between big states and their small neighbors”, raises doubts about the objectivity and fairness of the US position, as well as tempts Armenia, which has grossly violated the norms of
international law and carried out militarily invasions of Azerbaijan’s lands [20, 156]. With the mentioned article, Azerbaijan became the only state in the post-Soviet space deprived of the official assistance of the United States through legislation. However, as I. Musa compared, even North Korea, which the White House later considered to be a member of the “evil triangle”, received appropriate assistance from the United States at that time [15, 511]. A. Hasanov describes the result of Section 907 as follows: “Azerbaijan, in need of comprehensive economic and political assistance, was deprived of the support not only of the United States, but also of other countries that are connected to Washington and take into account its opinion on all international issues” [9, 148]. Thus, in the struggle for its rightful cause, the Republic of Azerbaijan became isolated not only in the South Caucasus region, but also in the international arena, on the contrary, the aggressor forces of Armenia, having won the support of many countries of the world, became even more rabid.

Thus, the relations of the Republic of Azerbaijan, which has regained its independence at the end of the 20th century, with the United States, the world’s most important superpower, have been of great importance since the beginning of Azerbaijan’s independent foreign policy course. Although the establishment of political-diplomatic relations with the US in the first years of the restoration of independence was a rather successful event in the course of Azerbaijan’s foreign policy, until the middle of 1993, Azerbaijan-US relations have had a more “incomprehensible” character, which most of Azerbaijani historians associate with the inadequate foreign policy line implemented by the country’s leadership in Azerbaijan at that time. The most important factor affecting bilateral relations in the first years of Azerbaijan-US relations was the adoption of Section 907 of the “Freedom Support Act” directed against Azerbaijan. In the Azerbaijani historiography, this event has been the object of extensive research and various positions have been exhibited regarding its causes. However, there is an unequivocal position regarding the essence of Section 907: its unfair nature and negative impact on bilateral relations. Therefore, as the President of Azerbaijan Heydar Aliyev said in an interview with S. Kuing, the editor of “Institutional Investor” magazine in 1997: “Section 907 was applied against Azerbaijan in 1992, thus the US Congress caused injustice to Azerbaijan. The US has lost a political assistance, was deprived of the support not only of the United States, but also of other countries that are connected to Washington and take into account its opinion on all international issues” [9, 148]. Thus, in the struggle for its rightful cause, the Republic of Azerbaijan became isolated not only in the South Caucasus region, but also in the international arena, on the contrary, the aggressor forces of Armenia, having won the support of many countries of the world, became even more rabid.

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Jurisprudence

FEATURES OF APPLYING MODERN TECHNOLOGY IN FORENSIC ACTIVITIES

Akhmedova Guzalhon Utkurovna
Associate Professor of the Department of Criminalistics and Forensic Expertise, TSUL

Orifjonov Doston Rustamovich
4th-year student of TSUL, Faculty of Criminal Law

Abstract
This article deals with the introduction of modern technologies in the conduct of forensic examinations and the study of the scene of the accident on the investigation and detection of crimes. The authors study some of the practical aspects of the use of technology and the challenges faced by professionals (forensics). The authors also analyze the experience of applying modern technologies in foreign countries. The study delves into the foreign practices of implementing various techniques in crime investigation and the integration of artificial intelligence into the investigative process.

Keywords: expertise, forensics, special knowledge, resolution methods, nanotechnology, artificial intelligence, investigation.

Introduction
In today’s time of rapid development of science and technology in all spheres of life, artificial intelligence comes to all spheres of human life. Moreover, this, in turn, inevitably entails certain changes in the behavior of people, in the development of science, education, in the economy, healthcare, law and other industries. In this paper, we would like to separately consider the use of artificial intelligence in the investigation of crimes and forensic examinations. First, forensics as a science studies the practice of committing a wide variety of crimes, generalizes the investigative and operational experience of their detection and investigation1, as well as provides law enforcement agencies with scientific tools and methods in the investigation and detection of crimes. Seizure, storage, study and use of material traces of crime in accordance with procedural legislation.

Analysis and comparison with the experience of foreign countries, serves to improve skills, methods, methods and techniques, to improve the effectiveness of the application of these norms in the legislation. Criminalistics as a science studies the practice of investigation of a wide variety of crimes, techniques, tactics and methodology2, and accordingly generalizes the investigative and operational experience of their detection and investigation3, as well as to equip law enforcement agencies with scientific tools and methods in the investigation and detection of crimes. Forensic science has very extensive links with natural and technical sciences, and they are continuously expanding under the influence of scientific and technological progress. The links between forensic science and these sciences mainly consist in the creative use of their achievements to develop and improve forensic tools and methods.4

With the help of advanced technology, in the future, forensic scientists can use a range of advanced equipment to investigate crime and analyze physical evidence. The principles of impartiality, comprehensiveness and completeness of investigation guarantee, first, the fairness of judicial decisions of verdicts. At the same time, the forensic expert, in order to achieve this principle, must conduct research objectively, on a strictly scientific and practical basis, within the limits of the relevant specialty, comprehensively and fully. In addition, the conclusion of a forensic expert shall be based

1 Ischenko Evgeniy Petrovich "Criminalistics" 2007, P. 5
2 Ischenko Evgeniy Petrovich "Criminalistics" 2007, P. 5
4 Ischenko Evgeniy Petrovich "Criminalistics" 2007, P. 7
on the provisions that make it possible to verify the validity and reliability of the conclusions drawn in accordance with the basis of generally accepted scientific and practical data.

**Analysis of problems of artificial intelligence application**

This paper is descriptive and comparative in nature. At the stage of descriptive research, the goal was to identify and define the needs in technology. Nowadays, technology is developing more and more in all spheres of human life. Moreover, it is not uncommon for criminalists to have to cope with new programs, or with technical means. According to the subject of criminalistics, information is the content of the result of the reflection process, in which one object interacts with another object, causing changes in its state and thereby transmits to it a part of the information about its own content. In this case, we are talking about information used in criminal proceedings, the emergence of which is caused by an event, a crime. Because of the commission of a crime, evidence in the criminal procedure sense arises, and information related to the commission of a crime, to the facts of change due to this real reality. In addition, indeed, such information exists objectively, outside the consciousness of the person investigating the crime or other subject of criminal procedure. To date, the problems that specialists may face are:

1. **Complexity of technical devices** - used to analyze and collect evidence. The times when investigators had enough forensic knowledge to deal with simple mechanisms are outdated. Today, they must have in-depth knowledge of electronics, computer science to deal with modern devices.

2. "**Huge amount of data**" - that forensic scientists have to work with. In this era of digital technology and internet, every aspect of our lives leaves its traces. This means that forensic scientists have to deal with huge amounts of digital data that needs to be processed, analyzed, and interpreted. This can be a daunting task that requires specialized skills and tools.

3. "**Computer Technology**" - the growth of computer technology has also led to an increase in cybercrime. Investigating such crimes requires specialized knowledge of computer forensics. Forensic investigators must keep up to date with the latest encryption and data protection techniques to effectively investigate and prevent cybercrimes.

4. "**DNA analysis methods**" - have become more accurate and sensitive, but they have also become more complex in their application. These analyses require specialized laboratories and equipment, as well as highly skilled professionals. This means that forensic scientists must be prepared to use new methods and constantly improve their skills.

5. Despite the fact that genetic identification uses methods from a wide variety of sciences - molecular and population genetics, biochemistry, mathematics, computer science, etc. - all these methods are refracted through the prism of solving forensic problems. In doing so, they undergo a significant transformation and are transformed into special, forensic methods. Conceptually, genetic identification is based on the theory of forensic identification and is carried out based on its methodology.

6. "**Biometric Method**". The introduction of biometric methods and facial recognition systems provides new opportunities for forensic scientists. However, such systems also include technical challenges related to accuracy and security. Forensic scientists must be alert and aware of the latest developments in this field in order to utilize them in their work.

7. "**Mobile Devices**". Analyzing mobile devices and smartphones is becoming increasingly important in forensic investigations. Mobile devices contain a wealth of information that can be useful for investigations. However, accessing and analyzing data on mobile devices can be technically challenging. Forensic investigators must be familiar with different operating systems and data extraction techniques to successfully conduct forensic analysis of mobile devices.

From the above we can say that "progress" does not stand alone, in order to introduce modern technology in the forensic field, it is necessary to create the appropriate conditions for this, in turn, all

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these technological complexities require forensic scientists to constantly learn and adapt to new technologies. They need to be up to date with the latest developments in forensic science and ready to utilize new tools. Only in this way, they will be able to ensure its correct and fair resolution, respect for human rights and freedoms, also provide evidence in court.7

The use of technology can vary greatly from country to country, including their technical resources, scientific capacity and legislative frameworks. For example, in the modern world, new ways of technology have "emerged":

Of great interest to us are the new technologies in forensics in the USA and China:

USA started to use - "Drones and high precision GPS systems" - law enforcement officers with the help of drones, are able to get a high altitude view of some crime, or incident. Meanwhile, surveillance drones could help in day-to-day police work at crime scenes or disasters and accidents.8 As well as take aerial photos and get all the necessary tactical information. It is worth noting that specialists in Uzbekistan still use "panoramic photography" (i.e. photography is carried out with a special apparatus or is carried out partially, and at the same time from the same distance photos are taken several times). This, in turn, is already an old method of capturing .

"Nano-technology", which is the possible use of nano-technology to investigate trace evidence such as hair and fibers. The use of nano-technology in forensics allows forensic scientists and investigators to obtain more accurate and faster results, which can speed up investigations and provide more evidence that is reliable. This has important implications for legal proceedings and justice. As well as detecting traces and evidence with accuracy.

"Use of Biometrics", The U.S. is actively using biometric techniques, such as fingerprint scanning and facial recognition, to identify suspects and victims of crime. At the same time, U.S. law enforcement agencies using biometric data of its citizens establish monitoring over its citizens through biometrics.10

In addition, consider based on the experience of China, China in turn began to use the method of skull identification "virtually". The method requires not only computer technology, but also anthropological and anatomical knowledge, which is sometimes beyond the control of programming.11 Identification - such a technique will provide a qualitative facial similarity for the discovered skull. For this purpose, a database of CT ("computer tomography", hereinafter referred to as CT) images has been created.

Moreover, more interestingly, China is actively developing AI (artificial intelligence) and video surveillance systems, including face recognition and behavioral analysis based on artificial intelligence.

Since the introduction of AI, it has also affected the technical methods of forensic scientists. For example, the advantage in turn AI shows in forensic cases such as- Artificial Intelligence is able to quickly analyze the volume of data including crime statistics, video surveillance footage, phone calls and social media that it can save time for professionals and experts.12

And, the artificial intelligence system is trained to detect and analyze even the smallest changes in facial expression and skin. The program creates a pie chart showing the proportion of a person's negative or anxious state.

It is worth noting that according to research firm «IHS Markit», there are more than 176 million surveillance cameras in China. With the help of artificial intelligence, it can be used to recognize images in photos and videos, recognize behavior and analyze gait, and is reportedly even able to identify suspicious people in a crowd and whether a person is blacklisted, which helps identify suspects.

7 Criminalistics "Kolenko E.V. Khidoyatov B.B. TSUL /2018 p.-5
9 Criminalistics "Kolenko E.V. Khidoyatov B.B. TSUL /2018 p.-49
In addition, I would like to add, in the monograph A. Powell's monograph «Electronic Crime and Punishment states» - "AI provides a better understanding of the complex legal and technical issues that arise in the use of digital technologies and in crime investigation and litigation". 13

In conclusion, having studied the experience of some countries in the field of forensics we came to the conclusion that modern problems need modern solutions, that is, it would be advisable to include in the national legislation norms on the use of the latest technologies of developed countries to further improve the normative-legal support of forensic activities. It is important to note that it is necessary to actively cooperate with international organizations and share experience in the field of forensics. These technologies will complement traditional methods of forensics and will help criminals to investigate various types of crimes more accurately, quickly and effectively.

We believe that with the help of the latest technologies will improve the quality of work of forensic specialists in the collection of traces, physical evidence, photo-video-documentation provides fairness, objectivity in decision-making.

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13 https://online.zakon.kz/document/?doc_id=35690135&pos=26;6#pos=26;6
The article is devoted to the study of the actualization of the transformation of the international legal order, as an immanent component of international security law in the conditions of globalization. It is proved that in the context of world development, which became the main challenge to humanity at the turn of the second and third millennia and determines the everyday life of people, regardless of whether they willingly accept it or resist it, the trends of structural and functional institutionalization, which are observed regarding states, the world community as a whole and its institutions. And this even more actualizes the doctrinal and normative support of the international legal order, as the main teleological dominant of international security, objectifies the need to develop its functional and specific characteristics, because the international legal order actually establishes the polyfunctional systemic-structural and object-subject characteristics of the modern international law, within the framework of which the relevant subjects who enter into relations of a profile nature act on the basis of its norms.

Abstract

The article is devoted to the study of the actualization of the transformation of the international legal order, as an immanent component of international security law in the conditions of globalization. It is proved that in the context of world development, which became the main challenge to humanity at the turn of the second and third millennia and determines the everyday life of people, regardless of whether they willingly accept it or resist it, the trends of structural and functional institutionalization, which are observed regarding states, the world community as a whole and its institutions. And this even more actualizes the doctrinal and normative support of the international legal order, as the main teleological dominant of international security, objectifies the need to develop its functional and specific characteristics, because the international legal order actually establishes the polyfunctional systemic-structural and object-subject characteristics of the modern international law, within the framework of which the relevant subjects who enter into relations of a profile nature act on the basis of its norms.

Anotacija

Стаття присвячена дослідженню актуалізації трансформації міжнародного правопорядку, як іманентної складової права міжнародної безпеки в умовах глобалізації. Доводиться, що в контексті світового розвитку, який постав на рубежі другого і третього тисячоліть основним викликом людству і визначає повсякденне життя людей незалежно від
того, охоче ті його сприймають або ж йому чинять опір, – особливого значення набувають тенденції структурної та функціональної інституційалізації, які спостерігаються щодо держав, світового співтовариства в цілому і його інститутів. А це ще більше актуалізує доктринальне і нормативне забезпечення міжнародного правопорядку, як основної телеологічної домінанти міжнародної безпеки, об’єктивує необхідність розробки його функціонально-видових характеристик, адже міжнародний правопорядок фактично встановлює поліфункціональну системно-структурну і об’єктивно-суб’єктивну характеристики сучасного міжнародного права, в рамках якого діють відповідні суб’єкти, що вступають у відносини профільного характеру на основі його норм.

Ключові слова: міжнародна безпека, міжнародний правовий порядок, загальне міжнародне право, суб’єкти міжнародного права, загальновизнані норми і принципи міжнародного права

I. Питання миру і війн завжди на протязі всього існування людства виступали важливим питанням міжнародних відносин. З моменту виникнення міжнародного права як зводу звичаїв, правил і норм ця делікатна сфера міждержавних відносин набула нормативного звучання та міжнародної договірної форми.

Виходячи з того, що міжнародне право не є системою, яка раз і назавжди сформувалася, воно знаходиться в перманентному динамічному розвитку, оскільки змінюється в бік розширення коло відносин, в які вступають держави і інші суб’єкти міжнародного права, поглиблюючи свою комунікативну взаємодію та виробляючи міжнародно-правову синхронізацію своїх дій на міжнародній арені. Зазвичай, таким чином відбувається формування нових галузей міжнародного права, а також зміна (розширення, модифікація, вдосконалення тощо) суб’єктивно-об’єктивного складу, змісту, нормативних орієнтирів галузей, що вже утворились та функціонують в рамках загального міжнародного права. До таких галузей сучасного міжнародного права, що, з одного боку, формуються, а з іншого боку, – постійно змінюються, відноситься право міжнародної безпеки.

Необхідно наголосити на тому, що і у вітчизняній, і в зарубіжній міжнародно-правовій доктрині право міжнародної безпеки різними вченими визначається по-різному. В основному, відмінності пов’язані з різним розумінням безпеки, а отже, з предметом даної сфери регулювання.

Вважаємо, що визначаючи онтологічний зміст самого явища безпеки, як опорного терміну в терміносистемі «міжнародна безпека», в обов’язковому порядку слід звернути пильну увагу на низку оригінальних, добре розвинених і фактологічно обґрунтованих концепцій сучасності, що були розроблені за останні трьо десятиліття в західній теоретичної соціології. Особливістю цих теорій є те, що серед основних питань їх фокусу та акцентування знаходяться цивілізаційні протиріччя людської цивілізації, а конкретніше, – людської спільноти, що є пов’язаніми як з пошуком вирішення глобальних проблем свого існування, так і з перетвореннями сучасних суспільств в суспільство ризику або, як справедливо зауважує А. Ш. Вікторов, в суспільство, що створює і відтворює небезпечне середовище проживання [1, с. 23].

Дійсно, на сьогодні поняття безпеки стає ширшим і водночас всеосяжним. Безпека людини є невід’ємною складовою стратегічного напряму людства, як визначений ООН як «сталий людський розвиток» (Sustainable Human Development). Отже, цей розвиток, що веде не тільки до економічного, а й до соціального, культурного, духовного зростання, який сприяє гуманізації менталітету громадян і збагачення позитивного загальнолюдського досвіду [2, c. 291].

II. Постановка питання саме в такій площині детермінована радикальними соціальними трансформаціями кінця XX – початку XXI ст., що супроводжуються не тільки
фундаментальними зрушеннями у відносинах між людьми (комунікативний аспект – авт.), у ставленні людини до самої себе і до всього оточуючого (індивідуальний аспект – авт.), а й пошуками державами (колективний аспект – авт.) нових парадигм свого існування і функціонування в умовах посилення феноменів глобалізації та інтеграції (глобально-функціональний аспект – авт.), що фактично об’єктивно і детермінує виникнення відповідних механізмів забезпечення стабільності і безпеки та скеровує істотний вплив на умови такого виникнення (телеологічно-безпековий аспект – авт.).

Саме у зв’язку з цим виникла об’єктивна необхідність не тільки нової рефлексії сучасних соціальних процесів в контексті безпеки, а й актуалізації модерністського підходу к розумінню її існування, функціонування та застосування на всіх рівнях існування людського соціуму – індивідуальному (на рівні конкретної людини), локальному, субрегіональному, регіональному, глобальному, включаючи й міжнародну безпеку, – що сприяло інтенсифікації продукування наукових уявлень про даний складний і суперечливий феномен соціального життя.

Певні теоретико-методологічні підходи до дослідження безпеки в суспільстві «пізнього модерну» (late modernity) або «високого модерну» закладені в працях класиків соціологічної науки Е. Гідденс, У. Бека, Н. Лумана, П. Штомпки. У результаті проведення системного аналізу їх доктринальних поглядів на концепт безпеки встановлено, що ключовими у визначенні основних рис сучасності є такі однопорядкові та людинорозмірні явища, як довіра, ризик, небезпека, невизначеність, безпека.

Так, польський соціолог П. Штомпка вказував на те, що «сучасна соціологія вважає нові форми довіри і недовіри, ризику і безпеки в ході глобалізації головною ознакою нашої епохи» [3, с. 556-559]. Тобто, він робив особливу акцентуацію на дихотомії основоположних характеристик функціонування людської цивілізації, що існує та функціонує в умовах державно організованого соціуму.

Знаний соціолог з Великої Британії Е. Гідденс вважав, що «жити в епоху «пізньої сучасності» – значить жити в світі випадковості і ризику...». Розглядаючи сучасність як «нищівну силу», напрямок і рух якої контролювати неможливо, він зауважує, що «мі ніколи не будемо відчувати себе в цілковитій безпеці, оскільки місцевість, по якій проходить цей шлях, чревата досить істотними ризиками» [4, с. 107]. Цей підхід характеризується наявністю нестабільних детермінант існування людської цивілізації, розвиток якої, в обов’язковому порядку, є пов’язаний з кризовими аспектами.

Німецький соціолог У. Бек вводить в науковий обіг термін «суспільство загального ризику» («world risk society»), розуміючи під ним модель сучасного світу [5, с. 8]. Тобто, цей дослідник вже фактично сформулював подальшу модальність існування і функціонування суспільства як у виході постійно зростаючої кризи і перманентній наявності конфліктів, що підтверджується розростанням локально-регіональних військових конфліктів у світі та загрозою розв’язання конфлікту глобального.

Збільшення невизначеності соціальних подій як характеристика епохи також відзначається в працях багатьох дослідників. Тому можна погодитись з дослідником О. С. Сліфімовим в тому, що концептуальні підходи до інтерпретації безпеки в теоріях модерну повинні враховувати взаємозв’язок або протиставлення понять дихотомічної властивості: довіра / недовіра – безпека / небезпеченість; ризик (небезпека) / невизначеність – безпека / небезпечність [6]. Звідси можна стверджувати, що світовий розвиток саме й пов’язаний з наведеними дихотоміями і людству перманентно необхідно шукати яка сторона в них є найбільш вигідною та оптимальною для його існування.

III. Отже, у міжнародних відносинах (і міжнародному праві) міжнародна безпека в традиційній глобально-управлінській парадигмі розглядалася як підтримка миру і створення умов для безпечного існування держави, а «право міжнародної безпеки має своїм предметом міжнародні відносини, пов’язані із застосуванням сили і забезпеченням світу» [7, с. 588].

Для більш глибокого розуміння значущості міжнародної безпеки для існування та охорони міжнародного правового порядку (міжнародного правопорядку), тобто стану
міжнародного миру і міжнародної безпеки, необхідно наголосити на тому, що основу підходи післявоєнної побудови міжнародних відносин і міжнародної безпеки були закріплені в Статуті Організації Об’єднаних Націй, що був прийнятий на міжнародній установчій конференції в Сан-Франциско (США) 26 червня 1945 року. У п. 1 ст. 1 Статуту ООН визначена і закріплена одна з головних цілей – телеологічних домінант ООН: «Підтримувати міжнародний мир і безпеку, і з цією метою приймати ефективні колективні заходи для запобігання і усунення загрози миру і придушення актів агресії або інших порушень миру і проводити мирними засобами, в згоді з принципами справедливості і міжнародного права, залагоджування або вирішення міжнародних суперечок або ситуацій, які можуть привести до порушення миру» [8, с. 2].

Тлумачення наведеної парадигми дій міжнародної спільноти та її держав-членів в цій специфічній сфері існування та функціонування міжнародного правопорядку, дає можливість визначити право міжнародної безпеки як «галузь міжнародного права, що представляє собою систему принципів і норм, що регулюють військово-політичні відносини держав з метою забезпечення миру і міжнародної безпеки» [9, с. 391]. У структурному розумінні така дефініція відповідає звичайному формулюванню при визначенні будь-якої галузі права, роблячи акцент на предметі та методі правового регулювання [10].

Звідси, предметом цієї галузі міжнародного права виступає система принципів і норм, що регулюють військово-політичні відносини держав з метою забезпечення миру і міжнародної безпеки.

Методом цієї галузі міжнародного права є імперативний метод, що полягає у впливі волі міжнародного співтовариства держав на відповідного державу-члена співтовариства щодо обов’язкового виконання приписів норми міжнародного права в сфері міжнародної безпеки, що крім всього для держави-підписанта Статуту ООН та будь-якого багатостороннього чи двостороннього міжнародного договору в сфері міжнародної безпеки, трансформується у міжнародне-правове зобов’язання держави з міжнародного права.

Крім того, необхідно акцентувати увагу на тому, що міжнародна безпека розглядається у більш глобальному і більш багатоплановому аспектах, як «світопорядок, в якому створені та сприятливі міжнародні умови для вільного розвитку держав та інших суб’єктів міжнародного права» [9, с. 391]. Вважаємо, що такий підхід актуалізує та об’єктивує акцентування на визначенні міжнародного правопорядку як основоположні мети – телеологічної домінанти міжнародної безпеки та існуванні такої безпеки в умовах і в координатах такого міжнародного правопорядку як визначальної ознаки його стабільного існування, доброякісного функціонування та позитивного вдосконалення. У той же час необхідно відзначити, що право міжнародної безпеки розглядається широкому сенсі, причому не тільки з позицій глобального існування, а й з позицій предметно-об’єктного та предметно-видового визначення самої міжнародної безпеки, тобто через призму її автоматичного, але системного існування та функціонування. Так, наприклад, в підручнику «Международное право» під редакцією Г. М. Мелкова зазначається: «Право міжнародної безпеки в широкому сенсі – це сукупність загальновизнаних і спеціальних (галузевих) принципів і норм, спрямованих на підтримання миру і міжнародної безпеки, тобто через призму її автоматичного, але системного існування та функціонування. Так, наприклад, в підручнику “Международное право” під редакцією Г. М. Мелкова зазначається: “Право міжнародної безпеки в широкому сенсі – це сукупність загальновизнаних і спеціальних (галузевих) принципів і норм, спрямованих на підтримання миру і міжнародної безпеки, припинення актів агресії, забезпечення політичної, військової, економічної, екологічної, продовольчої, інформаційної та інших видів безпеки держав, а також політичної, економічної та соціальної стабільності в світі; у вузькому сенсі – це сукупність загальновизнаних і спеціальних (галузевих) принципів і норм, спрямованих на забезпечення військово-політичної безпеки держав, запобігання виникненню війни і швидке і ефективне припинення актів агресії в будь-яких районах світу” [11, с. 327].

Найбільш класичними визначеннями міжнародної безпеки сьогодні є наступні: А) міжнародна безпека – це система міжнародних відносин, що базується на дотриманні всіма державами загальновизнаних принципів і норм міжнародного права, що виключає
вирішення спірних питань та суперечок між ними за допомогою сили або погрози силою [12] (базується на механізмі вирішення спорів з антиконфліктогенною метою – авт.);

Б) система міжнародних відносин, базована на дотриманні всіма державами загальновизнаних принципів та норм міжнародного права, що виключає вирішення спорів між ними за допомогою сили чи її погрозою [13] (базується на механізмі вирішення спорів, що не веде до застосування сили або її погрози – авт.);

В) система міжнародних договорів та угод, що забезпечує збереження миру на основі визнання суверенітету, недоторканності кордонів та територіальної цілісності держав, відмови від застосування сили або її погрози у вирішенні міжнародних суперечок [14] (базується на механізмі застосування основоположних принципів міжнародного права.

Отже, як бачимо, існує багато підходів до визначення концепту “міжнародна безпека”. Найбільш прийнятним та відповідним реаліям міжнародного політично-правового процесу при дослідженні міжнародних відносин, на нашу думку, є використання визначення, що базується на інтегрованому підході, а саме: міжнародна безпека – це система міжнародних відносин, яка базована на дотриманні всіма державами (та/або іншими суб’єктами міжнародного права) загальновизнаних принципів та норм міжнародного права (та взятих на себе міжнародних зобов’язань), що виключає вирішення спірних питань та розбіжностей за допомогою сили або її погрози застосування. Не дивлячись на те, що це визначення є по своїй суті ідеалістичним, бо, по-перше, практичні відносини в рамках системи, як глобального так і регіонального рівнів є занадто складними та різноплановими, а по-друге, роблять досягнення такого стану майже нездійсненим завданням, воно містить в собі спробу розробити та втілити в практику відповідну поведінково-діяльну парадигму, що має за телесоціальну домінанту створення міжнародного правового порядку.

Саме тому ми й вважаємо, що використання таких полісемічних підходів – предметно-об’єктного (сукупність загальновизнаних і спеціальних (галузевих) принципів і норм, підтримання миру і міжнародної безпеки, припинення актів агресії тощо) та предметно-видового визначення міжнародної безпеки (політична, військова, економічна, екологічна, продовольчого, інформаційна та інші види безпеки держав; політична, економічна та соціальна стабільності в світі), не тільки підкреслює, а й актуалізує проблематику міжнародного правопорядку як основоположної функціонально-телесоціальної квітесценції профільної безпеки в міжнародному порядку.

IV. Необхідно зазначити, що проблематика міжнародного правового порядку (міжнародного правопорядку) (далі – МПП) представляється особливо актуальною в світлі тих змін, які відбулися на міжнародній арені, особливо в останні роки – це не тільки відсутність західними державами і США Косова як суверенної держави, визнання Росією Південної Осетії і Абхазії такими суб’єктами, а ж існування на цьому тлі досить великої кількості невизнаних суб’єктів міжнародного права, котрі прагнуть шуканого статусу; а й реваншистська політика Росії проти України, що спочатку набув характер гібридної війни, а з лютого 2022 року й характер прямої нічим не спровокованої агресії, – що фактично не тільки суперечить основоположним принципам міжнародного права, а й комплексно нівелює саме міжнародне право, причому в великій кількості невизнаних суб’єктів міжнародного права, котрі прагнуть щуканого статусу; а й реваншистська політика Росії проти України, що спочатку набула характер гібридної війни, а з лютого 2022 року й характер прямої нічим не спровокованої агресії, – що фактично не тільки суперечить основоположним принципам міжнародного права, а й комплексно нівелює саме міжнародне право, причому в великій кількості галузей (міжнародне право збройних конфліктів, міжнародне гуманітарне право, міжнародне право прав людини, міжнародне морське право тощо).

Отже, можна констатувати, що сучасний МПП, який спирався на договірні домовленості Ялти і Потсдама (Ялтинська конференція, лютий 1945 року; Потсдамська конференція, липень 1945 року) /Ялтинсько-Потсдамський правопорядок/ та багатостороннє договірне врегулювання питань міждержавних кордонів в Європі (Гельсінська Конференція, 30 липня–1 серпня 1975 року) /Гельсінський правопорядок/ було знищено, що потребує суттєвих зусиль для його відновлення, охорони і захисту.

Отже, у зв’язку з цим дуже актуальними є проблеми формування якісно нової системи міжнародної безпеки, що спирається на стабільний МПП. І це пояснюється не лише безумовним значенням такої системи міжнародної безпеки для збереження людської
цивілізації, а й важливим значенням для стабільного і передбаченого існування і функціонування світу та міжнародної спільноти держав на засадах міжнародного права. Тобто, між процесом формування якісно нової системи міжнародної безпеки та МПП існує залежність, більш того, — вона є прямою і носить імперативний та абсолютної характер.

Крім того, треба ще раз підкреслити, що в міжнародному праві під безпекою в основному розуміють стан захищеності інтересів держави, групи держав чи міжнародного співтовариства від зовнішніх і внутрішніх загроз. Отже, забезпечення міжнародного миру і безпеки та запобігання війні є одними з основних завдань міжнародного права та всіх держав-членів міжнародної спільноти. Саме вони й формують й забезпечують МПП. Бо у сучасному взаємозалежному та глобалізованому світі жодна конкретна держава не в змозі самостійно організувати, забезпечувати і гарантувати свою безпеку. Особливо в умовах, коли коло загроз міжнародній безпеці перманентно розширюється. Дійсно, поряд із традиційними загрозами, такими як міжнародні конфлікти та зброя масового знищення, з’являлися нові загрози та виклики: тероризм, регіональні та внутрішні збройні конфлікти, організована злочинність. Отже, забезпечення міжнародного миру і безпеки та запобігання війні є одними з основних завдань міжнародного права та всіх держав-членів міжнародної спільноти. Саме вони й формують й забезпечують МПП. На сьогодні міжнародна безпека також є передумовою розвитку. Враховуючи це, все більшого значення набуває право міжнародної безпеки та співробітництво держав в цій сфері [15, с. 415].

Тому видається доречним простежити концептуальні аспекти становлення МПП, виявити його понятійні, елементні й функціональні характеристики як певного стану організаційної моделі світового співтовариства, заснованого на імперативних засадах і нормах сучасного міжнародного права, в тому числі й праві міжнародної безпеки.

Визначаючи дефініцію МПП, слід зазначити, що наукові дефініції служать засобом для пізнання і з'ясування сутності того чи іншого явища, включаючи і суспільне життя; вони покликані дати чітке уявлення про це явище, в даному випадку про МПП. Тому, приступаючи до аналізу будь-якого поняття, доцільно насамперед встановити статус, початковий і справжній зміст і призначення тих слів (або термінов), які використовуються в ньому.

Необхідно відразу ж зазначити, що визначення дефінітивного концепту «міжнародний правопорядок» (МПП), представляє певні труднощі методологічного та етимологічно-семантичного порядку. На наш погляд, проблема полягає в тому, що на сьогоднішній день немає чіткого і однозначного, а й легітимного визначення поняття «міжнародний правовий порядок» або «міжнародний правопорядок». Перш за все, варто відзначити наявність смислових відмінностей між виразами «міжнародний порядок» і «світовий порядок», оскільки ці відмінності в сучасному слововживанні стають більш суттєвими, незважаючи на те що вони досить активно застосовуються в заявах і виступах офіційних представників держав, в багатьох міжнародних документах, в тому числі і в рішеннях ООН та інших міжнародних організацій. Ці терміни стали звичними для публікацій політиків, дипломатів і журналістів з актуальних питань сучасних міжнародних відносин [16, с. 4].

Що стосується використання цього терміну в роботах юристів-міжнародників, то для них характерно постійне звернення до тих чи інших конкретних проблем або до різних аспектів зміцнення і подальшого прогресивного розвитку сучасного МПП [17]. Правда, при цьому нерідко зазначається, що, «на жаль, наука міжнародного права поки що не має в своєму розпорядженні не тільки скільки-небудь значної роботи з питання міжнародного правопорядку, але навіть з чітким визначенням такого» [18].

Проте в юридичній науці, переважно в теорії держави і права, є загальні підходи до визначення опорного слова, терміну, що міститься в досліджуваній понятійній конструкції. Це відноситься до терміну «правопорядок» (від англ. Law and order), який в широкому сенсі
визначається, як заснована на праві і сформована в результаті здійснення ідеї і принципів законності впорядкованість суспільних відносин, що виражається в правомірній поведінці їх учасників. У вузькому сенсі правопорядок розуміється як певний стан врегульованих правом суспільних відносин [19, с. 416].


У зазначеному контексті можна охарактеризувати і дефінітивне визначення правопорядку, запропоноване О. Ф. Скакун. Воно має більш детальну методологічну та структурну характеристику: «... правопорядок – це стан (режим) правової упорядкованості (урегульованості і погодженості) системи суспільних відносин, що складається в умовах реалізації законності, тобто це атмосфера нормального правового життя, що встановлюється в результаті точного і повного здійснення розпоряджень правових норм (використання прав, виконання обов’язків, дотримання заборон) всіма суб’єктами права» [23, с. 290].

Вважаємо, що позитивною рисою такого доктринального підходу є наявність гносеологічних критерій правової упорядкованості системи суспільних відносин – її урегульованість і узгодженість, а також визначення й виділення основоположних поведінкових установок суб’єктів права в умовах правопорядку – використання прав, виконання обов’язків, дотримання заборон, з яких на практиці виростає системний комплекс видів їх правової поведінки.

Більш того, розвиваючи далі систему критеріїв правопорядку, О. Ф. Скакун акцентує особливу увагу на наступних:

1) він закладається в правових нормах у процесі правотворчості (нормативно-легалізуюча ознака / критерій – авт.);
2) спирається на верховенство права і авторитет закону в галузі правових відносин (пріоритетно-засаднича ознака / критерій – авт.);
3) встановлюється в результаті реалізації правових норм, тобто при здійсненні законності в правореалізаційній діяльності (праксеологічно-правореалізаційна ознака / критерій – авт.);
4) створює сприятливі умови для використання суб’єктивних прав (позитивно-суб’єктивна ознака / критерій – авт.);
5) обумовлює своєчасне і повне виконання всіма суб’єктами юридичних обов’язків (детермінаційно-облігаторна ознака / критерій – авт.);
6) вимагає відповідальності для кожного, хто вчинив правопорушення (обов’язково-деліктна ознака / критерій – авт.);
7) встановлює сувору громадську дисципліну (суспільно-стабілізаційна ознака / критерій – авт.);
8) передбачає чітку і ефективну роботу всіх державних і приватних юридичних органів і служб, перш за все, правосуддя (обов’язкова професійно-функціональна ознака / критерій – авт.);
9) створює умови для організованості громадянського суспільства і режим сприяння для індивідуальної свободи (правовільна індивідуально-групова ознака / критерій – авт.).

На наш погляд, заслуговує на особливу увагу багаторівневий характер критеріальних ознак правопорядку: статусна (наприклад, № 1, 2, 3, 7), публічно-приватна (№ 8), функціонально-інституційна (№ 9, 10), суб'єктно-об'єктна (№ 4, 5, 9), превентивно-карально-орхіонна (№ 6, 7, 10) і така, що модифікує (№ 3).

Разом з тим, варто наголосити на тому, що представляють прагматичний і науковий інтерес й інші доктрінальні позиції теоретиків права. Так, відомий радянський теоретик права С. С. Алексєєв зазначав, що правопорядок, «будучи вінцем, підсумковим результатом дії права, як би замикає ланцюг основних суспільно-політичних явищ з області правової надбудови (правозаконність – законність – правопорядок)» [25, с. 98]. У цій доктрінальній позиції, як видається, основний акцент робиться на найважливіші статутарні аспекти генезису правопорядку й його важливу функціональну роль у самому процесі здійснення права.

Здається, що системний і саме тому предметний характер, в контексті дослідження, що проводиться, носить дефініцію правопорядку, що міститься в дослідженні організаційно-правового забезпечення правопорядку, авторами якого є Ю. Є. Аврутін, В. Я. Кикоть, І. І. Сидорук. Так, зазначеними авторами виділяється чотири ознаки правопорядку, які вони називають основними, суттєвими:

1) закріплена юридичними нормами правова структура суспільства, куди включаються держава, її органи, підприємства, установи, недержавні утворення, громадяни (нормативно-інфраструктурна ознака – авт.);
2) правові відносини і зв'язки, які виникають в різних сферах життєдіяльності суспільства, послідовність їх виникнення, розвитку і припинення (інституційно-правова ознака – авт.);
3) учасники (суб'єкти) правопорядку, характер організаційно-правових відносин та зв'язки між ними (суб'єктно-організаційна ознака – авт.);
4) методи впливу на відносини і поведінку людей, процедури і процеси правової регламентації відносин [26, с. 56] (процесуально-процедурна ознака – авт.).

Застосування методу імітаційно-прагматичного моделювання за допомогою інтерпретації наведених ознак на міжнародно-правовий рівень, як видається, сприяє інституціалізації і становленню функціональних основ суб'єктно-об'єктного складу МПП.

Ще більш активізує і рефлексує ці процеси ряд ознак екзистенційної властивості, запропонованих для критеріальної характеристики правопорядку А. Ф. Крижанівським:

1) правопорядок є різновидом, складовою частиною громадського порядку і отже «викликається» для існування суспільних потреб та інтересів (аксіологічна домінанта – авт.);
2) існує як стан впорядкованості, організованості і стабільності в правовій сфері життєдіяльності суспільства (організаційна домінанта – авт.);
3) утворюється сукупною правовою поведінкою суб'єктів права, яке інтегрується в якісний стан суспільного життя, правовий клімат, який отримує властивості квазінормативного впливу на свідомість і поведінку соціальних суб'єктів (легально-управлінська домінанта – авт.);
4) є результатом правової самоорганізації суспільства (легітимна домінанта – авт.);
5) пов'язаний і взаємодіє з правом, правовою культурою, правозаконністю і т. д. (нормативно-детермінаційна домінанта – авт.) [27, с. 73-74].

Досить продуктивною в зазначеному аспекті видається позиція В. М. Додонова, який визначає правопорядок як одну з основних складових частин громадського порядку, що складається в результаті здійснення різних видів соціальних норм, що регулюють різноманітні сфери суспільного життя і які розрізняються між собою характером і незбіжним способом впливу на поведінку людей (звичаї, норми моралі, внутрішні правила організацій та ін.) [28, с. 526]. Тут безумовний інтерес представляє акцент на різноманітність нормативних джерел, що впливають на інституціоналізацію правопорядку.
Також вважаємо, що концептуально важливим є й те, що практично всі доктринальні визначення правопорядку містять вказівки на його функціональний характер – тобто, на те, що останній характеризується реальним рівнем дотримання законності, забезпечення і реалізації суб’єктивних прав, виконанням юридичних обов’язків усіма громадянами, органами і організаціями. Основним тут є визнання того факту, що кожна держава має свій правопорядок.

V. Отже, термін «правопорядок» щодо будь-якої сфери суспільних відносин означає існуючу їх предметну і просторову порядоковість. Виходячи з наявних теоретичних посилок стає можливим визначити поняття МПП, що формується і функціонує в сфері міжнародних відносин і політико-правового та іншого співробітництва суб’єктів міжнародного права.

В якості методологічної домінанти формування МПП як своєрідного міжнародно-правового механізму, що забезпечує в статутарному аспекті світовий порядок, необхідно акцентувати увагу на те, що на стику XX–XXI ст. інстинкт виживання і самозбереження привів людство до розуміння об’єктивної реальності світу в його єдності природи і людини. І в цьому контексті слід привести слова Генерального секретаря ООН (1997–2006) Кофі Аннана, який з цього приводу зазначає: «Ми живемо в світі, де жодна людина і жодна держава не існують в ізоляції. Ми всі в один і той же час є членами наших громад і всього світу в цілому» [29].

Отже, можна зробити однозначний висновок про те, що поняття МПП носить складний, багатоаспектний, а також – у архітектонічному своєму розумінні та прояві, – синтетичний і інтегративний характер. Пристосовано до міжнародного співтовариства держав поняття «порядок» також має відповідати сформованим загальнолюдським уявленням і, отже, позначатиме певний порядок у відносинах між державами, передбачений і встановлений міжнародним правом. Необхідно вказати, що Міжнародний суд ООН неодноразово звертає увагу на цей найважливіший соціальний аксіологічний феномен міжнародного права, що фактично позначає його якісний стан та праксеологічну застосовність, і зазначав, що вельми складне сучасне міжнародне співтовариство «як ніколи потребує того, щоб постійно і ретельно дотримуватися норм, які були спрямовані для забезпечення упорядкованих відносин між державами-членами спільності» [30, р. 44].

У міжнародно-правовій літературі радянського періоду питання МПП почали всебічно і глибоко розглядатися тільки в 80-і роки минулого століття. Їм були присвячені роботи І. П. Блищенка, Ю. М. Колосова, І. І. Лукашука, А. П. Мовчана, К. К. Сандровського, М. О. Ушакова, С. В. Черниченка та ін., в яких розглядались поняття МПП, зв’язок МПП і міжнародного права, а також умови для зміцнення МПП. Природно, у вітчизняній міжнародно-правовій доктрині існує багато визначень МПП, що мають методологічний потенціал. Так, наприклад, М. О. Ушаков і М. Л. Ентін розуміють під МПП сукупність правовідносин, які складаються відповідно до норм і приписів міжнародного права, зокрема і особливо відповідно до приписів основних загальнозвизнаних його принципів – норм, що мають імперативний характер загальнообов’язкового права (jus cogens) [31, с. 83]. Це визначення в структурному відношенні складається ніби з двох блоків – перший містить загальновизначення МПП, а в другому міститься найважливіша прив’язка МПП до його правової основи – імперативним нормам jus cogens. Слід зазначити, що це визначення пов’язує МПП з сучасністю, оскільки імперативні норми jus cogens отримали широке визнання і утвердження держав лише в наші дні (зокрема, у Віденській конвенції про право міжнародних договорів 1969 р.) [16, с. 8].

Аналігічний підхід до визначення поняття МПП притаманний і В. І. Евінтову. Він визначав правопорядок в міжнародному співтоваристві як такий феномен, що володіє своєю структурою – «сукупність відносин, заснованих на нормах права, якомусь основному принципі міжнародного права загальні правовідносини між суб’єктами співтовариства держав з приводу захисту спільних інтересів і збереження цінностей, подібно до наших усіх» [32, с. 71].

Більш спрощено і, як видається, більш схематично підходить до вирішення цього питання І. К. Шаов, який вважає, що сутність і особливості МПП визначаються міжнародним
правом як сукупність певних юридичних норм, що реалізуються в міжнародному житті, в стосунках держав, в їх діяльності на міжнародній арені. Будучи складним соціально-
політичним і правовим явищем, МПП характеризується станом міжнародних відносин. На думку цього автора, МПП є порядок відносин держав, заснований на законності і на
міжнародному праві [33, с. 10-11].
У процесі системного аналізу цієї доктринальної позиції виникає питання, що
представляє прагматичний інтерес: в якій мірі поняття міжнародного праворядку зводиться
dо сукупності відносин або правовідносин? Відповідь на це питання, наверное, нам
бачиться в площині загальної теорії права. Відповідно до її положень правовідношення в своїй
основній характеристикі виступає у вигляді підсумку, результату дії, реалізації норми права,
її втілення в поведінці конкретних суб’єктів права. Правовідношення – це право в дії, в житті,
це перетворення абстрактного правила поведінки (норми) в конкретну дію або бездіяльність
конкретного індивіда або колективних утворень [34, с. 252].
Тому, коли мова йде лише про сукупність відносин, «заснованих на нормах права», або
про сукупність правовідносин, «які складаються відповідно до норм і приписів міжнародного
права», обсяг поняття МПП обмежується сумою або сукупністю тих норм міжнародного
права, які вже практично застосовуються в реальній дійсності [16, с. 7].
Отже, В. І. Євінтов, пропонуючи своє визначення МПП, підтверджує, що в даному
визначені мова йде не стільки про поняття, скільки про реальність даного праворядку. Більш того, він фактично дає поліфункціональну системно-структурну характеристику такого
праворядку, в рамках якого діють відповідні суб’єкти, що вступають у відносини
профільного характеру на основі норм міжнародного права. Наведений автор зазначає, що
«міжнародне право історично стало тим інструментом, який забезпечив формування системності та впорядкованості співпраці (суб’єктів міжнародного права – авт.). Як
структурний елемент воно опосередковує порядок відносин, які розвиваються (політичний, економічний, соціальний та ін.) в середині спільноти, перетворюючи його в праворядок.
Міжнародне право містить модель праворядку, який створюється, відбувається в самій міжнародно-
правовій практиці: оцінки праворядку окремими державами, їх асоціаціями (союзами – авт.) та об’єднаннями; оцінки, які даються в Раді Безпеки і Генеральній Асамблії ООН, інших універсальних та регіональних організаціях» [35, с. 687].
На функціонально-прагматичну домінанту націлене визначення праворядку, що
запропоноване Р. А. Мюллерсоном: «З нашої точки зору, міжнародний праворядок – це
такий стан міжнародної системи, що характеризується досить високим ступенем відповідності
фактичного стану міжнародних відносин вимогам принципів і норм міжнародного права» [36,
с. 147].
Методологічно чітким, і таким, що носить функціонально-заставовий характер, нам
відається визначення міжнародного праворядку, яке дане М. О. Баймуратовим. Міжнародний праворядок автор розуміє як певну модель функціонування міжнародного
співвідносини держав, що має свою основою метою стабільне, продуктивне й
безконфліктне їх співіснування на міжнародній арені за допомогою певних інструментів
(держав, міжнародного права, міжнародних інституцій) [37].
Необхідно зазначити, що якщо у вітчизняній науці дослідження феномену міжнародного
праворядку проводиться переважно в сфері міжнародного публічного права, то в зарубіжній
– це є в основному прерогативою політичної науки. Звідси в зарубіжній політичній науці з
позицій прикладного аналізу виділяють три основні підходи до інтерпретації МПП:
реалістичний, соціально-конструктивістський і інституційний. Для реалістичного підходу
характерний акцент на співвідношеннях потенціалів між основними суб’єктами міжнародних
відносин. Для соціально-конструктивістського – підкресленій інтерес до правил поведінки між
ними, правил, що розуміються в динаміці їх розвитку та впливу на поведінку держав і
окремих особистостей. Інституційний підхід рефлексує основну увагу на інструментарії регулювання, основою якого виступають міжнародні інститути, що розуміються як механізми міждержавного співробітництва, які здатні надавати примирливий і стримуючий вплив на поведінку окремих держав на користь інтересів спільноти в цілому [38].

Компаративний аналіз наведених підходів показує, що в чомусь вони протистоять, а в чомусь доповнюють один одного. Наприклад, найбільш спірним аспектом тут виступає можливість і реальність регулювання міжнародних відносин за допомогою матеріально-силових і ідеально-інформаційних напрямів імпульсів, що посилаються через інституції міждержавного співробітництва, які здатні містити можливі управленські потенціали. Причому прихильники однієї з теорій – соціально-конструктивістської – вважають, що вплив матеріально-силових імпульсів є відносно минущим, адже співвідношення можливостей між країнами швидко змінюється, при цьому потенціал впливу іного країн має здатність накопичуватися і виникати можливість інших. Потенціал впливу другого країна має здатність накопичуватися і надавати більш слабкий, але згідне і більш довгостроковий, ніж фактор сили, вплив на поведінку держави і лідерів. Вплив третіх країн взагалі дуже рухливий і може рости або зменшуватися в залежності від того, сильнішим чи слабшим робиться вплив силових факторів. Досліджуючи впорядковуючу роль факторів матеріально-силової властивості, вони відзначають, що останні більш рельєфне проявляються в коротко- і середньострокові перспективи, ідеально-інформаційні – в довгостроковій, а інституційні – коливаються навколо деякого середнього, але не особливо високого показника, який в історії міжнародних відносин останніх ста років жодного разу не ставав для міжнародного порядку визначальним.

Інтерпретація порядку в реалістичній традиції з малими варіаціями сходять до класичних праць Г. Моргентау, Р. Арона і К. Уолтца. Ключовим для їх побудов було розуміння порядку як горизонтального тимчасового зрізу міжнародних відносин, їх «об'єктивно заданого стану», який в кожен момент виступає в співвідношенні потенціалів між великими державами. Причому самі держави мали уявлення про це співвідношення, не завжди адекватне і таке, що було офіційно заявлено, і порівнювали свої дії з можливими його наслідками. Це коло ідей переважало в науці і політиці в перші три-чотири десятиліття після Другої світової війни. Однак в останні два десятиліття XX в. вектор наукових дискусій перемістився на критику реалістичних інтерпретацій, які декілька абсолютизувалися в роки біполярної конфронтації. Більш популярними стали гуманітарній аспект, який викладав, що для загального блага найкраще надати найбільшу міру свободи і можливості окремій особі в суспільстві, а інституційні підходи відповідали ідеям соціального конструктивізму, співвідносними до того ж з елементами реалполітичного аналізу [39, с. 23].

Саме в такому інтегративному аспекті в літературі 1990-х років популярність придбала концепція американського вченого Л. Міллера, який виділяв в якості головної ознаки МПП присутність у світовій системі едичного основоположного принципу, яким свідомо чи стихійно керувалися держави. Він вважав, що середини XVII ст. до Першої світової війни в світі існував лише один порядок, який автор називає вестфальським (по Вестфальському миру, що поклав кінець Тридцятилітній війні в Європі і що послужив, як стверджує Л. Міллер, початком нового Вестфальського правопорядку). Підставою для такої узагальнення автор вважав ту обставину, що в основі міжнародних відносин всього цього періоду лежав принцип дозволу (laisser-faire – «дозволяти робити»), або «невтручання». Він зазначав, що «в найширшому сенсі концепцію дозволу передбачає, що для загального блага найкраще надати найбільшу міру свободи і можливості окремій особі в суспільстві служити своїм власним інтересам» [40, р. 50]. Цей принцип передбачає відмову однієї держави від спроб перешкодити іншій державі в
здійсненні її завдань у всіх випадках, коли це не стосується безпосередньо життєвих інтересів першої.

Антиподом цієї політики Л. Міллер вважав вільсоніанський принцип міжнародного регулювання, вперше представленний Президентом США В. Вільсоном в 1918 році, що втілився в «інтервенціоністській» політики Ліги Націй, потім і в діяльності ООН, а з другої половини 90-х років XX ст. до теперішнього часу – є всі підстави продовжити міркування автора – він реалізувався в політиці США і ситуативних коаліцій, які вони створюють. На відміну від реалістів Л. Міллер розумів «порядок» не як «устрій» і «стан», а як «образ дії» і «процес», тобто не стільки в статичному розумінні, скільки в розумінні більш динамічних їх характеристик. Аналогічно пояснював МПП і британський вченый Роберт Купер, який запропонував кілька можливих інтерпретацій «порядку». По-перше, таким він вважав переважаючий тип зовнішньополітичної поведінки держав (pattern of actions), незалежно від того, чи служить вона упорядкуванню або дезорганізації системи; по-друге, порядок може означати певну ступінь стабільності і цілісності системи; по-третє, його можна розуміти як «правила, які керують системою і підтримують її в стані стабільності; моральний зміст, який втілює ідеї справедливості і свободи» [41, р. 8].

Цікавим є той факт, що закінчення біполярної конфронтації не призвело до явного теоретичного перевагування ліберальної школи, як того можна було очікувати, коли політична публіцистика була переповнено спрощеним розумінням «беззастережну перемогу» політичного лібералізму у всесвітньому масштабі, який приписувався Ф. Фукуямі.

Яскравим прикладом такої тенденції створити синтетичне бачення МПП шляхом гармонійного поєднання в рамках єдиної аналітичної схеми гідностей декількох методологічних шкіл стала робота американського вченого Дж. Айкенбері «Після перемоги. Інститути, стратегічна стриманість і перебудова порядку після великих воєн» [42, р. 3], що була видана в 2001 р. Хоча автор й зараховує себе до інституціоналістів, його схема МПП, по суті, явиє собою інтегративну концепцію досліджуваного феномена. Айкенбері також вважає ключовою ознакою МПП наявність загальнозначних правил і принципів, якими суб’єкти керуються у відносинах між собою. При цьому він вводить дуже красномовне поняття «конституційності» або «неконституційності» тих чи інших міжнародних порядків, підкреслюючи, що порядок, заснований тільки на співвідношенні сил, є неконституційним [42, р. 7]. Вірно визнаючи, що феномен конституційності виник в сфері внутрішніх соціальних відносин держав, він підкреслює і визнає правильною активізацію її експансії в область міжнародних відносин на початку XXI ст. [42, р. 19], підкреслюючи таким чином існування трендової концепції про конституціоналізацію міжнародного права та інтернаціоналізацію конституційного правопорядку держав [43].

Поклавши в основу своєї теорії концепт конституційності, що фактично наблизило її до рівня нормативного розуміння та тлумачення, Дж. Айкенбері обґрунтовано вважає, що останній втілюється в заснованій на статутах або договорах діяльності міжнародних організацій та інших інститутів міждержавної взаємодії (тобто, в сучасному розумінні, заснованому на правилах – авт.), в завдання якій входить забезпечення більш справедливого, рівномірного представництва інтересів менш сильних держав при прийнятті найважливіших міжнародних рішень, які найчастіше виробляються найпотужнішими державами в однорядному порядку, «егоїстично», і в розрахунку лише на власні національні інтереси. При цьому на відміну від тріадної схеми МПП (потенціали /реалісти/ – ідеї /соціально-конструктивісти/ – механізми /інституціоналісти/) модель Дж. Айкенбері є бінарною: для його розуміння МПП важливим є, перш за все, співвідношення двох елементів – ідей і інститутів, з
одного боку, і могутності держави-гегемона – з іншого. Тому в історії міжнародних відносин він виділяє три типи міжнародного порядку: рівноважний, гегемонічний і конституційний. Практично ігноруючи перший, він всю свою увагу зосереджує на взаємодії другого з третім. При цьому він акцентує увагу на тому, що МПП не обов'язково має на увазі дії сторін на утискі поколінням правилами, він може втілювати практику поведінки, якої дотримується найсильніша країна, дії якої в цьому випадку можуть самі по собі ставати правилом як норма, що є закріпленою ланцюгом прецедентів. Отже, «сила перетворюється в право, а примус – в борг» [42, р. 19].

При цьому, як вельми точно помічає автор, роль інститутів конституційного регулювання буває важливою на етапах занепаду держави-гегемона або на етапах її раннього сходження, коли інститути можуть надавати максимальний вплив на міжнародну ситуацію. При зворотній ситуації, коли гегемон знаходиться в зеніті могутності, він може безкарно ігнорувати впорядковують імпульси з боку «конституційних» інститутів. При цьому інститути, якщо вони відчувають свою слабкість, можуть поступатися гегемонові або гегемонам чільну роль у формуванні порядку – на основі або гегемонії, або рівноваги. За Дж. Айкенбері, «політичний порядок – це базова згода (arrangement) між групою держав, що відбувається в результатах взаємодії між ними» [42, р. 45].

Аналіз такого концепту досить яскраво і чітко проявляє і демонструє елементні риси МПП, до яких можуть бути віднесені наступні:

а) наявність визнаної ієрархії між суб'єктами міжнародного права і міжнародних відносин, включаючи і держави, і нові суб'єкти міжнародної політики (інституційно-ієрархічна риса – авт.);

б) сукупність принципів і правил зовнішньополітичної поведінки (засадничо-поведінкова риса – авт.);

в) система прийняття рішення з ключових міжнародних питань, що включає в себе механізм представництва інтересів нижчих учасників ієрархії, при прийнятті рішень на вищих її рівнях (системно-структурене рішення – авт.);

г) набір морально допустимих санкцій за їх порушення і механізмів застосування цих санкцій (санкційно-допустима риса – авт.);

г’) форми, методи і прийоми реалізації прийнятих рішень – режим реалізації МПП (організаційно-сукупна риса – авт.).

Виходячи з викладеного вище, можна зробити проміжний висновок про те, що практика застосування поняття МПП офіційними представниками держав, дипломатами і юристами, не кажучи вже про засоби масової інформації, свідчить про те, що мова при цьому завжди йде про стабільний, належний, передбачений, прогнозований порядок поводження держав, закріплений в міжнародному праві й насамперед в його загальновизнаних принципах та нормах. Саме про такий порядок дій, акцій, заходів держав і їх взаємодії на міжнародній арені, який передбачений у чинному міжнародному праві, але не про балануючу суперечність таких відносин або важливої. У цьому контексті вельми важливою є характеристика МПП, що пропонується Д. В. Терьохіним, який вважає, що:

1) його основу становить суворе і безумовне дотримання державами норм і принципів міжнародного права (засадничий критерій – авт.);

2) змістом МПП є певні права та обов'язки учасників міждержавного співробітництва (зобов'язальний критерій – авт.);

3) МПП є результат стільки адресований державами міжнародної спільноти загальнообов'язковості норм міжнародного права [44, с. 6] (колективно-підтримуючий критерій – авт.).

Звідси, поєднуючи наведені вище характеристики МПП, і додаючи до них структурно-функціональну і інституційно-нормативну основи, Д. В. Терьохін визначає дефінітивне розуміння МПП як реально існуючу і таку, що функціонально розвивається впорядкованість відносин між державами, що грунтуються на взаємній (консенсусальний) системі джерел
міжнародного права з можливістю використання як міждержавних, так і внутрішньодержавних механізмів та інститутів забезпечення [44, с. 6].

Розглядаючи обов'язковий та зобов'язальний характер дотримання МПП, наведений вище автор доходить висновку, що МПП повинні дотримуватися всі держави, незалежно від того, вступили вони в реальні конкретні правовідносини чи ні – тобто фактично мова йде про априорне визнання та дотримання МПП. Особливо наочно це видно на прикладі держав, що виникають знову, які ще тільки починають вступати в міжнародне життя, знаходячись у пошуку відповідних “якостей і характеристики” суб’єктів міжнародного права. Однак ця вимога повною мірою стосується і вже існуючих державам, незалежно від часу їх виникнення. Так, держави, які вирішили встановити між собою дипломатичні відносини, зобов’язані суворо дотримуватися того порядку встановлення і здійснення дипломатичних відносин, який передбачений у чинному міжнародному праві (зокрема, у Віденській конвенції про дипломатичні зносини 1961 року). Іншим прикладом можуть слугувати діяльність і взаємини держав з освоєння просторів і природних ресурсів Світового океану. На практиці не всі держави є прибережними до морських просторів, а також такими, що безпосередньо беруть участь в такій діяльності з освоєння просторів і природних ресурсів, отже, не всі вони є учасниками профільніх міжнародних правовідносин, що виникають з приводу використання морських просторів і ресурсів. Однак, приступаючи до здійснення тієї чи іншої діяльності в Світовому океані, всі держави зобов’язані суворо дотримуватися встановленого міжнародним правом порядку мореплавання або видобутку ресурсів в територіальному, відкритому морі, в межах континентального шельфу або економічної зони [16, с. 9].

Своєю чергою, варто звернути увагу на позицію М. І. Лазарєва, яка містить вельми важливі положення, що відбиває об’ємну і одночасно граничну характеристику досліджуваного феномена. Він зазначає, що “в міжнародному праві правопорядок – це частина громадського порядку, а весь громадський порядок, і він повинен відповідати міжнародному праву, його основним принципам, Статуту ООН і принципам і нормам, що їх конкретизують. Все, що не відповідає праву, – це вже не громадський порядок” [45, с. 127]. Аналогічні думки дотримується і відомий український юрист-міжнародник В. А. Василенко, доктринальна позиція якого містить акцент на суб’єктний склад МПП. Він вважає, що “міжнародний правопорядок – це порядок суспільних відносин, який встановлений між взаємодіючими державами або між ними та створеними ними міжнародними міжурядовими організаціями за допомогою міжнародно-правових норм, вироблених згідно суб’єктами міжнародного права” [46, с. 4].

По суті ту ж парадигму, але з акцентом на функціональний аспект, проводить в своїх дослідженнях про міжнародно-правові норми, про функціонування міжнародного права І. І. Лукашук. Він зазначає: «Міжнародно-правове регулювання може забезпечити певний порядок в міжнародних відносинах. Це досягається шляхом упорядкування міжнародних відносин шляхом міжнародно-правового регулювання. Міжнародний правопорядок в цьому сенсі є результатом упорядкування системи міжнародних відносин за допомогою міжнародно-правових норм, вироблених згідно суб’єктами міжнародного права» [47, с. 17].

Пізніше він підтверджує цю позицію, але вже з філософської гносеологічної точки зору, вказуючи, що “правопорядок є результатом функціонування міжнародного права, його дії, що впорядковує”, підкреслюючи при цьому, що “суть правопорядку полягає в забезпеченні структурної стійкості системи міжнародних відносин за допомогою права, або, інакше, в підтримці стабільності певного порядку та протидії його дезорганізації, зростанню ентропії” [48, с. 73, 76].

Всі наведені позиції міжнародно-правової і політичної доктрини щодо поняття і сутності МПП синергують і кореспондують з основними позиціями загальної теорії права, яка виходить з розуміння правопорядку як “порядку суспільних відносин, що сформувався під правовим впливом” [49, с. 180; 50, с. 356].

Знаходять відбиток і підтримку в теорії права і положення міжнародно-правової доктрини щодо тісного зв’язку між системою норм міжнародного права і системою правових
взаємовідносин держав, оскільки такі міжнародно-правові відносини свідчать про практичну реалізацію вимог МПП, його дієвості та реальному втіленні в міжнародне життя і практику.

Необхідно враховувати, що процес формування стійкого стану МПП поки далеко від завершення. У світовій політиці постійно виникають нові фактори невизначеності і глибоких змін. Є очевидним, що сучасні міжнародні відносини за минуле десятиліття завершили перехід від конфронтаційної біполярної моделі світу до нових обрисів, знову повертаються до конфронтації. Разом з тим, сучасний МПП успадкував від Ялтинсько-Потсдамської системи післявоєнного устрою значну частину міжнародних механізмів, і перш за все універсальну систему ООН. Співіснування нового і традиційного — один з основних факторів сучасних міжнародних відносин [51, с. 3-4].

VI. Але, на наш погляд, не можна забувати про функціонально-прогностичну складову МПП, що сьогодні в умовах катастрофічного ускладнення міждержавної взаємодії в системі міжнародних відносин, починає відігравати важливу роль і набувати важливого стратегічного значення. Бо її зміст як раз і полягає в тому, щоб не тільки наказувати і надавати певний порядок діяльності держав на міжнародній арені і всім тим міждержавним відносинам, які виникають і складаються в міжнародному житті, — а й забезпечити постійне дотримання і здійснення цього порядку за допомогою всіх юридичних приписів, засобів, методів і процедур, які передбачені нормами чинного порядку загального міжнародного права. Таке розуміння, як видно з викладеного вище, притаманне всім юристам- міжнародникам, які звертаються до визначення МПП, але не завжди притаманне представникам політичної науки.

Разом з тим, незважаючи на певні відмінності в проведенні аналізу цього міжнародного соціального явища, всі вони, по суті, дотримуються і керуються думкою, що чинне в наш час міжнародне право являє собою вихідну юридичну нормативну основу сучасного МПП. І це головне, що необхідно враховувати при розкритті, розумінні і дефінітивному визначенні поняття «міжнародний правопорядок».

У своїй книзі «Міжнародний правопорядок» А. П. Мовчан дає узагальнене системно-концептуальне визначення цього феномена як порядку (стану) міжнародних відносин, який встановлений і здійснюється на основі принципів і норм чинного міжнародного права, і спрямований на забезпечення нормальних і миролюбних відносин і співробітництва між усіма державами, незалежно від їх політичних, економічних, соціальних систем і рівня їх розвитку» [16, с.15]. «Таким чином, — зазначає А. П. Мовчан, — міжнародний правопорядок відображає і втілює в собі інтереси міжнародного співтовариства держав в цілому» [16, с. 16].

Слід погодитися, що таке розуміння і тлумачення сучасного МПП є результатом формування його принципових засад і складових частин, що й підтверджується їх системним аналізом. До таких принципових засад, безумовно, належать такі положення:

- наявність самого міжнародного права в його нормативному значенні — як сукупність або система юридично обов'язкових правил і приписів (включаючи основні принципи міжнародного права, які, по суті, є фундаментом правопорядку в міжнародних відносинах);
- практична реалізація принципу мирного співіснування держав як нового порядку відносин і співробітництва в рамках міжнародного співтовариства в цілому;
- наявність і використання системи юридичних процедур міжнародного правотворчості і правозастосування;
- наявність і застосування інтернаціональних механізмів та інститутів, що призначені для оптимального поєднання інтересів держав з інтересами світової спільноти [16, с. 16].

Виходячи з викладеного вище, можна дійти висновку, що міжнародний правопорядок — це: а) певна модель функціонування міжнародного співтовариства держав, що б) має телегологічно обрублений модальний характер своєї функціонування, в) який своєю основною метою має стабільне, продуктивне і безконфліктне їх співіснування на міжнародній арені, г) за допомогою певних інструментів (держав, міжнародного права, міжнародних інституцій тощо). Звідси, представляє суттєвий науковий і практичний інтерес
визначення критеріальних характеристик такої моделі, до яких, на думку М.О. Баймуратова, можна віднести наступні:

- **організаційна** — означає побудову оптимальної організаційної структури, що дозволяє ставити цілі і реалізувати їх, досягаючи при цьому певного управлінського ефекту;

- **нормативна** — МПП заснований і ґрунтується на міжнародному праві, його принципах і нормах;

- **суб’єктна** — в рамках МПП діють належні суб’єкти — держави і створювані ними міжнародні організації;

- **об’єктна** — основним об’єктом МПП в буквальному сенсі виступає забезпечення порядку, упорядкованості в міжнародних відносинах, бо він спрямований на забезпечення нормальних і миролюбних відносин і співробітництва між усіма державами, незалежно від їх політичних, економічних, соціальних систем і від рівня їх розвитку;

- **поведінкова (діяльнісна)** — МПП заснований на відповідній поведінці та діяльності його основних суб’єктів — держав і створених ними міжнародних організацій;

- **інституційна** — в своїй структурній основі МПП являє сукупність міжнародних інституцій, тобто міжнародних загальних і спеціальних організацій світової спільноти;

- **комунікативна** — в рамках МПП здійснюються і реалізуються відносини між державами, між державами і міжнародними організаціями, між державами та іншими суб’єктами міжнародного права і міжнародних відносин;

- **гносеологічна, епістемологічна (пізнавальна)** — МПП дає знання про принципи і методи пристрою світової спільноти;

- **аксіологічна (ціннісна)** — розкриває ціннісний потенціал МПП як досягнення людської цивілізації і його особливу ціннісну важливість для її існування;

- **методологічна** — в рамках МПП є можливість виділення системи принципів і способів організації та побудови теоретичної і практичної діяльності людей і держав в рамках світового співтовариства;

- **конституючою** — МПП фактично закріплює і формалізує світове співтовариство держав в якості суб’єкта як такого;

- **доктринально-прагматична** — формування МПП здійснюється на підставі міжнародно-правової доктрини, практичного досвіду держав і міжнародних організацій, а також загальновизнаних принципів і норм міжнародного публічного права;

- **статутарна** — МПП закріплює реальний стан міжнародного співтовариства, його держав-членів і міжнародних інституцій і їх особливу значимість;

- **елітірна** — функціонування МПП дає можливість виявити його характерні риси, принципи його діяльності, форми його реалізації;

- **проспективна (прогностична)** — проявляється в тому, що функціонування МПП дає можливість передбачити основні тенденції перспективного розвитку світової спільноти і ставити нові завдання щодо їх вдосконалення і вирішення;

- **компаративна** — МПП як понятійний (семантичний) елемент дає можливість виділити цілу низку понятійних характеристик міжнародного публічного права — держави, міжнародне співтовариство, міжнародне право, міжнародна законність, міжнародні організації тощо;

- **депіджентрична** — феномен МПП співвідноситься і може порівнюватися як з правопорядком в державі, так і з різними аналогічними, але вже галузевими феноменами, існуючими в міжнародному праві, наприклад, з міжнародним економічним правопорядком, міжнародним гуманітарним правопорядком, міжнародним правопорядком в міжнародному морському праві т. д.;

- **нараціональна** — розуміння МПП в якості моделі функціонування міжнародного співтовариства держав, з властивими йому критеріальними характеристиками, допоможе більш чітко уявити основні тенденції формування і функціонування не тільки цього найважливішого міжнародного феномена, а й всього загального міжнародного права [52, с. 9-10].
Резюмучи, необхідно зазначити, що в контексті світового розвитку, який постав на рубежі другого і третього тисячолітій основним викликом людству і визначає повсякденне життя людей незалежно від того, охоче ті його сприймають або ж йому чинять опір, особливого значення набувають тенденції структурної та функціональної інституціоналізації, які спостерігаються щодо держав, світового співтовариства в цілому і його інститутів. У спеціальній доповіді під назвою «Перебудова світового порядку», підготовленій з ініціативи Римського клубу Я. Тінбергеном, зокрема, обґрунтовується думка про те, що «існування міжнародної системи вимагає фундаментальних структурних реформ» і створення «нового міжнародного соціального і економічного порядку» [53, с. 3]. А це ще більше актуалізує доктринальне і нормативне супроводження і забезпечення МПП, як основної телеологічної домінанти міжнародної безпеки, об’єктивує необхідність розробки його функціонально-видових характеристик, адже МПП фактично встановлює поліфункціональну системно-структурну і об’єктно-суб’єктну характеристику сучасного міжнародного права, в рамках якого діють відповідні суб’єкти, що вступають у відносини профільного характеру на основі його норм.

Наведені вище завдання щодо відповідного доктринального і нормативного супроводження і забезпечення МПП набувають пріоритетного значення, що володіють суттєвим праксеологічним потенціалом, бо саме вони об’єктивуються й актуалізуються історичною трансформацією в сфері МПП, що була детермінована неспровокованою прямою агресією Росії проти України у лютому 2024 року.

Саме дії Росії як держави-агресора, призвели до того, що Ялтинсько-Постдамський міжнародний правопорядок (що був скерований на відновлення системи міжнародних відносин та побудову нової системи міжнародної безпеки) та Гельсінкський міжнародний правопорядок (що був спрямований на вдосконалення системи міжнародної безпеки та системи міжнародних відносин, що функціонують на основі дотримання основоположних норм і принципів міжнародного права) був фактично зруйнований, про що заявив Державний секретар США у своєму виступі в Дипломатичній школі Університету ім. Дж. Хопкінса у вересні 2023 року [54].

У перспективі для міжнародного співтовариства держав маєть місце нестабільний міжнародний правопорядок, що є характерним для глобального Півдня – йому притаманні зусилля держав щодо превенції війни, але вони будуть відбуватися на фоні відсутності остаточного визнання та дотримання кордонів держав та можливості їх гарантування лише за рахунок приналежності держав до безпекових військово-політичних блоків (формування). Тому таким важливим й виступає відновлення функціонування Гельсінкського міжнародного правопорядку.

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Medical sciences

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SOME ASPECTS OF MORBIDITY AMONG SCHOOLCHILDREN IN EASTERN SIBERIA WITH ENT PATHOLOGY. ETHNIC CHARACTERISTICS

I.A. Ignatova1,2

Federal State Budgetary Institution Federal Research Center KSC SB Scientific Research Institute of Medical Problems of the North1
FSBEI HE "KSMU named after. Prof. V.F. Voino-Yasenetsky" Ministry of Health of the Russian Federation 2

Abstract
The work is devoted to the study of ethnic characteristics of ENT pathology in adolescents in Eastern Siberia. Otolaryngological diseases are a significant socio-economic problem, due not only to the rapid increase in prevalence, but also to the severity of these diseases, as evidenced by the results of our previous studies. Among adolescents in Eastern Siberia, there is a high percentage of hearing impairment due to frequent complications of diseases of the upper respiratory tract (acute sinusitis, sinusitis and adenoiditis), which is explained by the extremely harsh continental climate of this region.

Keywords: Children, diseases of the nose, throat and ear, software module.

Аннотация
Работа посвящена исследованию этнических особенностей ЛОР - патологии у подростков Восточной Сибири. Отоларингологические заболевания являются значительной социально-экономической проблемой, обусловленной не только стремительным ростом распространенности, но и тяжестью течения этих заболеваний, о чем свидетельствуют результаты проведенных ранее нами исследования. Среди подростков Восточной Сибири высок процент нарушения слуха вследствие частых осложнений заболеваний верхних дыхательных путей (острых риносинуситов, гайморитов и аденоидитов), что объясняется экстремально суровым резкоконтинентальным климатом данного региона.

Keywords: Children, diseases of the nose, throat and ear, software module.

Актуальность. Общеизвестна значительная статистика детской оториноларингологической заболеваемости при резком континентальном климате Восточной Сибири. Использование информационных технологий и междисциплинарный подход в медицине значительно помогают в организации процесса диагностики, хранении и обработки информации.

Одной из задач правительства Российской Федерации является повышение качества жизни, в связи с этим актуально внимание к качеству здоровья населения Восточной Сибири. Коренное население северных территорий России относится к различным этническим и языковым группам и характеризуется разной длительностью проживания на Севере. В системе расовой классификации все эти народности относятся к монголоидному типу, однако,
отличаются друг от друга степенью выраженности монголоидных особенностей и удельным весом европеоидного компонента. (Бромлей Ю.В., Маркова Г.Е., 1982). Сенсорные системы организма в первую очередь подвергаются воздействию экстремальных факторов внешней среды.

- Известно, что хакасы относятся к южносибирскому типу монголоидной расы, у которых антропологами прослеживается наличие европеоидной примеси (Алексеев В.П., Гохман И.И., 1984). Эти представления о наличии европеоидной примеси у хакасов подтверждаются современными генетическими исследованиями. При исследовании гаплогрупп Х-хромосомы у мужчин хакасской национальности, выявляется с достаточно высокой частотой (27,9%) гаплогруппа R1a1. Присутствие ее авторы вполне обоснованно связывают с европеоидным компонентом. (Штыгашева О.В. с соавт., 2010). Известно, что на территории Хакасии с древнейших времен (за несколько тысячелетий до новой эры) проживали европеоиды. Это было население, относящееся к Афанасьевской, Андреевской, Тагарской археологическим культурам с высоким для того времени уровнем развития.


- Этногенез indoевропейского этноса – русских также был очень длительным, в течение тысячелетий и проникал преимущественно на территорию Восточной Европы. В процессе этногенеза u каждого этноса могут формироваться свои закономерности функционирования физиологических систем организма, что может сказываться на особенностях резистентности.

- Коренное население северных территорий России относится к различным этническим и языковым группам и характеризуется разной длительностью проживания на Севере. В системе расовой классификации все эти народности относятся к монголоидному типу, однако, отличаются друг от друга степенью выраженности монголоидных особенностей и удельным весом европеоидного компонента. (Бромлей Ю.В., Маркова Г.Е., 1982).

Сенсорные системы организма в первую очередь подвергаются воздействию экстремальных факторов внешней среды.

- Орган слуха и нос в силу своей филогенетической молодости отличаются особой чувствительностью к воздействию неблагоприятных окружающих условий, в связи с чем проблема данных патологий, имеющая огромную социальную значимость в современном обществе, существует. Население северных территорий России относится к различным этническим группам. Распределение генов системы HLA у монголоидов Сибири подтверждает некоторые общие закономерности, характерные для генетической структуры монголоидных этносов мира: высокую частоту генов HLA-A9, B15, B40 и отсутствие или крайне низкую частоту генов B8, B14, B18 и B21 (Фефелова В.В, 1991, 2012) существенно возрастает в районах высоких широт.

С целью оптимизации процесса верификации и дифференциальной диагностики заболеваний ЛОР - органов среди школьников, нами проведена разработка программного модуля «Модуль определения этнических особенностей ЛОР – патологии у школьников Хакасии». Он содержит карты пациентов, список обследований, список диагнозов и реализует постановку предварительного диагноза оториноларингологических заболеваний с возможностью создания и добавления новых обследований и диагнозов.

Программные комплексы давно стали неотъемлемой частью медицинских исследований. Однако на сегодняшний день не существует программ, способных не только поставить диагноз, но и оценить риск развития патологии еще до ее наступления.
Отоларингологические заболевания являются большой социально-экономической проблемой, связанной не только со стремительным ростом распространенности, но и тяжестью течения этих заболеваний. Особенное затруднение вызывает постановка диагноза в районах Севера, ввиду нехватки профессиональных медицинских кадров и узких специалистов.

Использование информационных технологий в медицине значительно экономит временные затраты и труд врачей, помогает в организации процесса диагностики, хранении и обработке информации, накоплению знаний узкоспециализированных врачей, поэтому разработка различных систем связанных с этой областью не перестает развиваться (Покидышева Л.И. с соавт.).

МАТЕРИАЛЬНО-ТЕХНИЧЕСКОЕ ОБЕСПЕЧЕНИЕ РАБОТЫ:
Для выполнения задания применялись кроме осмотра, тестирования и анкетирования школьников по опросникам. Диагностический аудиометр AD-226, отоскоп и набор ЛОР-инструментов, ЭВМ программа, программные модули.

Цель исследования: Повысить эффективность специализированной персонифицированной медицинской помощи детскому населению Восточной Сибири в разновозрастных группах с ЛОР-патологией.

ОБЪЕКТ ИССЛЕДОВАНИЯ
Школьники г. Красноярска и Хакасии от 11 до 18 лет с патологией ЛОР органов (n=340).

КРИТЕРИИ ВКЛЮЧЕНИЯ В ИССЛЕДОВАНИЕ:
1. Возраст: дети с 11 года до 18 лет;
2. пол (мальчики и девочки);
3. наличие оториноларингологической патологии;
4. информированное согласие на участие в исследовании.

КРИТЕРИИ ИСКЛЮЧЕНИЯ ИЗ ИССЛЕДОВАНИЯ
1. Возраст младше 11 года и старше 18 лет.
2. Отсутствие оториноларингологической патологии.
3. Психические заболевания.
4. В течение шести месяцев после черепно-мозговой травмы.
5. Отказ от участия в исследовании.

ДИЗАЙН ИССЛЕДОВАНИЯ:
1. Анкетирование школьников по опроснику врача-оториноларинголога.
2. Клинико-функциональное обследование (осмотр врачом оториноларингологом, осмотр невропатологом, клиническим психологом, педиатром).
3. Внесение данных анкетирования, тестирования и клинико-функционального обследования в базу данных программы ЭВМ с помощью разработанных диалоговых окон (программного интерфейса).
4. Обработка и анализ внесенных данных в соответствии с алгоритмами программы ЭВМ.
5. Получение результатов, формулирование «Заключения», сохранение его в формате текстового документа.
6. Сохранение результатов тестирования в формате Excel.
7. Выбор тактики дальнейшей реабилитации школьников.

Исследование проводили с разрешения этического комитета «НИИ медицинских проблем Севера» (НИИ МПС). Согласно Хельсинкской декларации Всемирной медицинской ассоциации, регламентирующей проведение научных исследований, родитель каждого подростка подписывал форму информированного согласия на обследование.

ОПИСАНИЕ МЕТОДА:
Данные осмотра, анамнеза, анкетирования и тестирования школьников заносятся в базу данных программы. для последующего определения этнических особенностей структуры ЛОР – заболеваний у обследуемых школьников. Посредством программы ЭВМ «Модуль
определения этнических особенностей ЛОР-патологии у школьников Хакасии» достигается оптимизация диагностики и последующей тактики их ведения.

Программа: «Модуль определения этнических особенностей ЛОР-патологии у школьников Хакасии» The module for determining the ethnic characteristics of ENT pathology in schoolchildren of Khakassia.

Дата государственной регистрации в реестре программ для ЭВМ 30 января 2020 года. Нами получено свидетельство о государственной регистрации программ для ЭВМ № 2020611394.

Программа предназначена для диагностики наличия и структуры этнических особенностей ЛОР – патологии у школьников Хакасии.

На рис. 1 и 2 представлены структурная и функциональная схемы программного модуля.

Рисунок 1 – Структурная схема программы.

Рисунок 2 – Функциональная схема системы.
Программа предназначена для диагностики наличия и структуры этнических особенностей ЛОР — патологии у школьников Восточной Сибири.

Функциональные возможности: С помощью программы возможна оценка у тестируемого подростка наличия клинических проявлений и этнических особенностей оториноларингологической патологии. Программа позволяет улучшить диагностику и профилактику оториноларингологических заболеваний школьников. Программа снабжена инструкцией пользователя ПО, предусмотрено сохранение результатов обследования в формате Excel. Область применения: практическое здравоохранение, научные исследования.

РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЯ:

Полученные результаты аудиологического обследования школьников Хакасии (южных монголоидов и европеоидов) подтверждают ранее полученные данные этнических особенностей нарушений слуха взрослого населения Восточной Сибири и имеют аналогичные закономерности.

Патология органа слуха.

У хакасов преобладала кондуктивная тугоухость. Причем, доминирующей формой нарушений слуха у школьников хакасов (южных монголоидов) были хронические гнойные отиты (52,17%), в то время как у русских школьников они встречались крайне редко и составили всего 6,58%. Нейросенсорная тугоухость доминировала у русских школьников (14,52% против 3,71%). (Рис.4).
При ранее проведенном сравнительном исследовании структуры отопатологии в разных этнических группах (у пришлого европеоидного населения и у монголов), живущих в одинаковых экстремальных условиях Восточной Сибири, оказалось, что структура патологии органа слуха в этих популяциях разная.

У эвенков среди всех других форм отопатологии преобладает хронический гнойный отит (64,06 % от всей патологии органа слуха), в то время, как у европеоидов и это заболевание встречается в несколько раз реже (14,5 %).

Основная доля отопатологии у якутов и европеоидов представлена нейросенсорной тугоухостью (76,10 % и 59,9 % соответственно), в то время, как у эвенков эта форма нозологии составляет лишь 12,10 %. Соответственно чаще поражение среднего уха встречается у эвенков, в то время как у якутов и европеоидов преобладает патология внутреннего уха. Высокая распространенность хронического гнойного отита была замечена давно и её пытались объяснить ярко выраженной экстремальностью климата Восточной Сибири. (Пискунов Г.З., 1974; Ягья Н.С., 1980).

Действительно, климат высоких широт отличается большой дискомфортностью для человека. Низкая температура, специфическая фотопериодичность с необычной сменой дня и ночи, повышенная активность космических излучений и магнитного поля Земли и т. д. (Орехов К.В. с соавт. 1981).

Найдены особенности и при изучении структуры патологии носа и горла у школьников Хакасии


Патология носа

Хронические гаймориты два раза чаще встречались у хакасов - 52,17 %, против 25,55 % среди русских школьников. В то время как аллергические риниты три раза чаще встречались у русских школьников - 41,45 % против 13,83 % среди хакасских школьников. (Рис.5).
Аденоидиты преобладали почти в 3 раза у хакасов и составили 43,23 %, против 15,62 % у русских детей. (Рис.6).

Выявленные этнические особенности заболеваний уха, горла и носа среди школьников Восточной Сибири, имеют большое значение не только для выявления причин их развития, но и для уточнения патогенетических механизмов, что в свою очередь, помогает определить патогенетически обоснованные пути их коррекции, а также профилактические мероприятия, совершенствуя тем самым оториноларингологическую и allergологическую службы.
Список литературы

As a result of the occurrence and development of any emergency situation, victims or casualties may occur. The nature of the emergency does not allow us to prepare in advance the resources necessary to provide first aid (medical personnel, medicines, medical facilities, specialized transport). In this regard, the issue of providing first aid to victims arises.

First medical aid is a set of measures aimed at restoring or preserving the life and health of the victim. It should be provided by someone who is next to the victim (mutual aid), or by the victim himself (self-help) until medical personnel arrive.

The nature of first aid depends on the condition of the person injured in an emergency (accident, catastrophe, environmental or natural disaster, the use of modern weapons by the enemy), is determined directly at the site of the injury or close to it and requires the use of available means. Timely and correctly provided first aid saves human life and prevents the development of adverse outcomes.

**Carotid pulse**

In the event of an accident in which a person is injured, the first thing to do is to feel the victim's pulse on the radial artery, which runs on the inner surface of the forearm, near the hand. There may be no pulse: with weak heart contracts, the blood wave may not reach the periphery of the body. In this case, the pulse is checked in the area that is closer to the heart - in the carotid arteries located in the neck, close to the heart.

A weak and rapid pulse indicates weakened cardiac activity. If there is a pulse, but the person is not breathing, artificial respiration must be performed. If there is no pulse or breathing, cardiopulmonary resuscitation must be started immediately.

**Artificial respiration**

The need for artificial respiration occurs in cases of drowning, electric shock, poisoning with various toxic substances or medications, traumatic shock, and also in any case when the victim shows signs of respiratory distress.

The most alarming and dangerous symptom of a breathing disorder is its cessation (apnea), which is determined by the absence of respiratory movements of the chest and diaphragm, the absence of breathing sounds and air movement, and the increasing bluishness of the face. In addition, signs of breathing disorder are:

- dyspnea;
- frequent and shallow or, on the contrary, rare breathing;
- feeling of suffocation;
- psychomotor agitation

With all these manifestations, artificial respiration is necessary. To do this, you need to position the patient correctly and ensure free passage of the airways, unfasten all compressive parts of his clothing. If there is content in the mouth or throat, it must be quickly removed using a handkerchief or napkin wrapped around a finger.

The most effective methods of artificial respiration are "mouth to mouth" and "mouth to nose".

**Mouth-to-mouth method.** Kneeling next to the victim, you need to hold your head with one hand, and with the other, grab the lower jaw by the chin and push it forward (while opening your mouth slightly). Then take a deep breath and bend over the victim, cover his mouth with your lips, and close his nose with two fingers of your left hand so that the air does not escape. It is necessary to blow air into the victim's mouth evenly, but very vigorously. If you do everything correctly, the chest will expand and you will inhale. Exhalation will occur when breathing stops, by itself. Air is blown quickly and sharply 16–20 times per minute.
Mouth-to-nose method. This method differs from the previous one in that air is blown through the nose (the mouth must be closed). It is usually used in cases where the victim's jaws are clenched and it is impossible to open his mouth.

Artificial respiration must be carried out long and persistently, sometimes up to 1–1.5 hours. You need to wait until the moment when the victim begins to breathe on his own, rhythmically, without interruptions.

Rules for stopping bleeding
The following types of bleeding are distinguished:
- capillary;
- arterial;
- venous

Capillary bleeding occurs when small vessels are damaged. Blood oozes over the entire surface of the wound, as if from a sponge. As a rule, such bleeding is not profuse. Capillary bleeding is stopped by applying a pressure bandage directly to the wound.

Arterial bleeding is determined by the scarlet, bright red color of blood, which is ejected from the wound in a pulsating stream, sometimes in the form of a fountain. It is life-threatening, since the wounded person can lose a large amount of blood in a short period of time. Therefore, it is necessary to quickly stop the bleeding. The simplest way to stop it is to apply finger pressure to the artery above the wound site.

Finger pressure on the artery is only the first measure that is used for arterial bleeding. It can only be used for a very short period of time in preparation for applying a tourniquet or twist to a limb or a sterile pressure bandage to other areas of the body.

In case of arterial bleeding, the popliteal artery is pressed onto the lower leg. Pressing is done with both hands. The thumbs are placed on the front surface of the knee joint, and with the remaining fingers they feel the artery in the popliteal fossa and press it to the bone.

In case of arterial bleeding from the thigh, the femoral artery, which is located on the inner surface of the upper thigh directly under the inguinal fold, is pressed.

In case of arterial bleeding from a wounded vessel of the upper limb, the brachial artery is pressed against the humerus at the inner surface of the biceps brachii muscle with four fingers. The effectiveness of the pressure is checked by the pulsation of the radial artery on the inner surface of the elbow.

When bleeding from a wound located on the neck, press the carotid artery on the side of the wound below the wound.

To stop arterial bleeding when extremities are injured, tourniquets or twists are applied. The places where hemostatic tourniquets are applied coincide with the places where the arteries are pressed.

The most reliable way to stop arterial bleeding from the extremities is to apply a rubber or fabric tourniquet (twist) made from available materials: a belt, a towel, etc.

- When applying a tourniquet (twist), the following rules must be observed:
  - a tourniquet (twist) should be applied as close as possible to the bleeding wound and centrally from the wound in relation to the body;
  - a tourniquet (twist) should be applied over clothing (or over several rounds of bandages); the applied tourniquet (twist) must be clearly visible and cannot be covered with clothing or a bandage;
  - the tourniquet should be tightened (twisted) until the bleeding stops; excessive tightening of the tourniquet (twisting) increases pain and often injures nerve trunks; a loose tourniquet (twisting) increases bleeding;
  - The tourniquet (twist) cannot be held for more than 1.5–2 hours, otherwise necrosis of the limb may occur.

The next way to stop arterial bleeding is to stop the bleeding by bending the limbs as much as possible.
To stop bleeding from wounds of the hand and forearm, you need to place a roll made of gauze, cotton wool or tight soft material in the elbow bend, bend your arm at the elbow, while the forearm is tightly tied to the shoulder.

To stop bleeding from the brachial artery, a roller is placed in the armpit and the arm bent at the elbow is tightly bandaged to the chest.

When there is bleeding in the armpit, the arms bent at the elbow are pulled back as far as possible and the elbows are tied, while the subclavian artery is pressed by the clavicle to the first rib. This technique cannot be used for fractured limb bones.

When small arteries are damaged, as well as when the chest, head, abdomen, neck and other parts of the body are injured, arterial bleeding is stopped by applying a sterile pressure bandage. In this case, several layers of sterile gauze or bandage are applied to the wound and bandaged tightly.

Venous bleeding is determined by dark red, cherry-colored blood, which flows from the wound in a continuous stream, but slowly, without impulses.

This bleeding can often be profuse. To stop it, it is enough to apply a tight sterile pressure bandage and elevate the affected part of the body. If large veins are damaged, a tourniquet is applied to the limbs. In this case, the tourniquet is applied below the wound and tightened less tightly than with arterial bleeding.

Bleeding from internal organs occurs due to severe bruises. Its signs: severe pallor of the face, weakness, rapid pulse, shortness of breath, dizziness, severe thirst and fainting. An ice pack should be placed on the abdomen or site of injury; cold constricts blood vessels, helps stop bleeding, and the affected person should not be allowed to drink without a doctor's permission. The evacuation of such victims is carried out with extreme caution and priority.

**Cardiopulmonary resuscitation (CPR)**

To restore the activity of a stopped heart, cardiopulmonary resuscitation is used, which consists of simultaneous cardiac massage and the use of artificial respiration, through which the circulating blood is supplied with oxygen.

In cases where the victim is not seriously injured, CPR restores cardiac activity. It's good if this procedure is carried out not by one, but by two or even three people.

When performing external cardiac massage, the patient is placed on his back on a hard base (massage cannot be performed on a soft surface). First, the airline is checked. To do this, you need to blow air into the lungs through your mouth several times, holding the patient's nose with your fingers. The person providing assistance is located on the side of the victim and with the palmar surfaces of the hands placed one on top of the other, smoothly presses on the sternum with such force that it is pressed in by 4–5 cm and fixes it in this position for 0.5 seconds, and then quickly releases it. Such movements are repeated at least 60 times per minute.

The hands should rest on the lower third of the sternum. When performing a massage on adults, it is necessary to use not only hand strength, but also apply pressure with the whole body. This type of massage is very tiring and requires significant physical exertion.

If resuscitation is carried out by one person, then after every fifteen compressions of the sternum with an interval of one second, he must, stopping the massage, take two strong breaths using the mouth-to-mouth or mouth-to-nose method. If there are two people in resuscitation, one inflation of the lungs should be performed after every five sternal compressions.

It should be remembered that rough external cardiac massage can lead to serious complications - fractured ribs with damage to the lungs and heart. If a pulse appears, artificial respiration should be applied.

**Rules for treating wounds**

Wounds are mechanical violations of the integrity of the skin or mucous membranes. There are wounds of cuts, stabs, chopped, bruised, crushed, lacerated, gunshot and others.

Wounds can be superficial, when only the upper layers of the skin are damaged (abrasions), and deeper, when not only all layers of the skin are damaged, but also deeper tissues (subcutaneous tissue, muscles, internal organs).

If a wound penetrates into any cavity of the chest, abdomen, or skull, it is called penetrating.
Bruised, crushed and lacerated wounds resulting from impacts from falling structures and fragments of walls of destroyed buildings and structures are accompanied by extensive hemorrhage into the subcutaneous tissue and deeper tissues.

Most wounds bleed due to damage to blood vessels.

First aid for wounds is aimed at stopping bleeding, protecting the wound from contamination, and restoring the injured limb.

Protecting the wound from contamination and microbial contamination is best achieved by applying a bandage. To apply a bandage, gauze and cotton wool, which are highly hygroscopic, are used. Severe bleeding is stopped by applying a pressure bandage or a hemostatic tourniquet (on the limb).

When applying a bandage, the following rules must be observed:

- You should never wash the wound yourself, as this may introduce germs into it;
- when pieces of wood, scraps of clothing, earth, etc. go into the wound. they can be removed only if they are on the surface of the wound;
- Do not touch the surface of the wound (burn surface) with your hands, since there are especially many microbes on the skin of the hands;
- dressing should only be done with cleanly washed hands, if possible rubbed with cologne or alcohol.
- in the absence of sterile dressing material, it is permissible to use a cleanly washed scarf or piece of fabric, preferably white, preferably previously ironed with a hot iron;
- Before applying a bandage, the skin around the wound should be wiped with vodka (alcohol, cologne), and should be wiped in the direction away from the wound, and then lubricate the skin with iodine tincture.

Before applying a bandage, gauze pads (one or more, depending on the size of the wound) are applied to the wound, after which the wound is bandaged. Bandaging is usually done from left to right, using circular movements of the bandage. The bandage is taken in the right hand is grabbed with the thumb and forefinger of the left hand.

Specific cases are penetrating wounds of the chest and abdominal cavity, and the skull.

With a penetrating wound into the chest cavity, there is a threat of respiratory arrest and death for the victim due to asphyxia (suffocation).

As a result of a penetrating wound into the chest cavity, external atmospheric and intra-abdominal pressure is equalized. When the victim tries to breathe, air enters the chest cavity and the lungs do not expand. In such cases, it is necessary to exhale urgently, hold the wound with your hand and seal it with any available material (adhesive tape, sterile bag packaging, plastic bag). If the victim is unconscious, it is necessary to sharply press on the chest to simulate exhalation and also seal the wound. If this occurs, artificial respiration must be performed.

In case of a penetrating wound into the abdominal cavity, it is necessary to cover the wound with a sterile bandage. If the internal organs have fallen out, they cannot be tucked into the abdominal cavity, but must be carefully bandaged to the body. Victims with penetrating wounds of the chest and especially the abdominal cavity should not be given anything to drink.

In case of a penetrating wound to the skull, fragments of protruding bones or foreign objects should be removed and the wound should be bandaged tightly.

Fractures

Bone fractures can occur as a result of a strong blow, fall, etc.

There are closed fractures, when the bone is broken, but the integrity of the skin at the fracture site is not broken, and open fractures, when there is a wound in the area of the fracture.

When providing first aid for a fracture, it is necessary to ensure that the fracture site remains immobile, which reduces pain and prevents further displacement of bone fragments. This is achieved by applying an immobilizing bandage to the damaged part of the body, that is, creating immobility.

For immobilization, ready-made, standard splints are used. However, in some cases they may not be at the scene of the disaster, so improvised material is used to apply splints (sticks, canes, skis, umbrellas, boards of suitable size, pieces of plywood, rulers, bundles of reeds, etc.).
When applying a splint, it is imperative to ensure the immobility of at least two joints - one above the fracture site, the other below the fracture site, and even three if large bones are fractured.

When applying splints, the following rules must be observed:

- the injured limb should not be pulled out;
- if there is an open wound at the site of the fracture and severe bleeding is observed, then first apply a tourniquet above the wound and fracture, then a bandage on the wound, and then splints on both sides of the limbs;
- both splints should cover the joints located above and below the fracture site;
- the splint should be wrapped with cotton wool or soft cloth before application.

In the case of a closed fracture, first aid must be provided carefully so as not to cause additional damage as a result of displacement of bone fragments.

The splint should be in contact with the broken limb. When the bones of the forearm are fractured, the arm is bent at the elbow joint at a right angle so that the palm is turned towards the chest, then a splint is applied so that the fingers cover one end and the other extends beyond the elbow joint. In this position, the splint is secured with a bandage or other material, and the arm is suspended on a scarf.

If the humerus is fractured, the forearm should be bent at a right angle at the elbow joint, and if possible, two splints should be placed on the broken bone of the shoulder: one on the outside of the shoulder so that one end is above the shoulder joint, the second just below the elbow joint, and the other - from the armpit to the elbow joint. Both splints are then taped to the shoulder. The bent forearm is suspended from a belt or scarf.

To apply a splint for a hip fracture, you must have at least two large splints. One splint must be placed on the outer surface of the injured limb. In this case, the tire should be such a length that one end is under the armpit, and the other protrudes slightly beyond the foot. The second splint is applied along the inner surface of the leg so that one end reaches the perineal area, and the other protrudes slightly beyond the edge of the foot (sole). In this position, the tires are bandaged. The upper part of the outer splint should be attached to the body with a wide bandage, waist belt or towel.

For a broken leg, first aid is provided in the same way as for a hip fracture.

If the spine is damaged, the victim must be placed on a hard surface (board, plywood, door, etc.) - on his back or stomach, depending on the position he is in. The victim should be lifted very carefully, involving three or four people, avoiding any shaking or bending of the spine when lifting.

For rib fractures, a tight circular bandage should be applied to the chest.

**Burns**

A burn is tissue damage caused by heat, chemicals, x-rays, or radiation from nuclear bombs (radiation burn). First aid for burns should be aimed at stopping the impact of high temperature on the victim - extinguish burning clothing, remove (carry) the person out of the high temperature zone, remove smoldering and heated clothing from the surface of his body. A person in burning clothes should not be allowed to run, since the air movement generated during running does not knock down, but inflates the flame even more. The victim must be placed on his back, quickly remove or extinguish burning clothing in any way: pour water, throw sand, cover with liquid clay or mud.

With a first-degree burn, the skin becomes red, swollen, and painful. This burn goes away within 3-5 days. For minor burns, immerse the burned area in clean cold water for 5–10 minutes. Then apply a bandage made of a sterile bandage soaked in a solution of potassium permanganate, baking soda or alcohol.

A second degree burn is characterized by the appearance of blisters filled with liquid. Blisters are a natural protective layer for damaged tissue and act as a nice, sterile covering. The longer they remain untouched, the higher the likelihood that they will not become infected. The first aid for such burns is to apply a sterile bandage. Under no circumstances should you apply any means yourself - this will complicate further treatment. In case of extensive burns, the victim should be covered with a clean sheet, a warm blanket, given warm sweet tea, coffee, and in case of severe pain - cognac or vodka.
A third degree burn affects not only the skin, but also other tissues. And with a fourth degree burn, tissue charring occurs. In both cases, the victim must be taken to the hospital. Clothes should not be torn off from the burned area; they should be cut and carefully removed, and pieces of material stuck to the skin should be cut off at the edges with scissors. If the burn is caused by chemicals, the burned areas should be rinsed with water for 15-20 minutes. For acid burns, apply a bandage soaked in a solution of baking soda (1 teaspoon per 1 glass of water) to the wound, and for alkaline burns, apply a weak solution of table vinegar or boric acid (1 teaspoon per 1 glass of water).

Burnt areas, contrary to popular belief, should not be lubricated with grease, various oils, petroleum jelly, or grated potatoes. The applied fat facilitates the penetration of infection and complicates the initial surgical treatment of the nose.

In cases where the burned surface area is more than 10%, the victim may develop a burn disease, which always begins with burn shock.

The most accessible means of combating burn shock is to drink plenty of fluids; along with the drink, you need to give the patient 2 tablets of analgin or aspirin, butadione and 1 tablet of diphenhydramine, as well as 20 drops of carvalol, valocordin or cordiamine, valerian tincture, a validol tablet under the tongue. These remedies will relieve pain and support heart activity.

**First aid for shock and fainting**

From overstrain of the nervous system due to severe pain, loss of blood from wounds and fractures, as well as burns, the victim often experiences a sharp loss of strength and a decrease in all vital functions of the body. Breathing becomes barely noticeable, superficial, the face turns pale, the pulse becomes frequent and difficult to palpate, the victim becomes indifferent to the environment and, despite severe injury, does not groan, does not complain of pain and does not ask for help, although his consciousness remains. This condition is called shock.

First aid for shock is primarily to relieve pain. In case of a fracture, for example, just applying a splint has a beneficial effect on the general condition of the victim, since eliminating mobility in the fracture area reduces pain. If possible, the patient should be given painkillers and cardiac drugs - camphor, caffeine. The victim must be warmed up, covered with a blanket, covered with heating pads, if there is no damage to the abdominal cavity, given hot sweet strong tea, wine, and in the cold season, brought into a warm room.

Fainting is a condition that develops as a result of nervous shock, fright, or large blood loss. Signs of fainting are: sudden paleness, cold sweat, weakening of cardiac activity, loss of consciousness.

To provide assistance, you need to unfasten the victim's collar, remove the belt, and take it to an open place where fresh air can flow freely. The victim's legs should be raised above his head. As a result, the blood supply to the brain improves and in most cases the victim regains consciousness. If the fainting is deep and consciousness does not return, the victim should be given ammonia to sniff and the chest and face sprinkled with cold water.

**Electrical shock**

Electrical shock can be very severe and can lead to loss of consciousness and cardiac arrest. Any electric shock, even insignificant at first glance, can be dangerous, since the effect of the current on internal organs (heart, nervous system) sometimes does not appear immediately, but somewhat later.

In case of electric shock, first of all, it is necessary to stop the current: turn off the switch or unscrew the safety plugs on the panel; use a dry wooden stick to pull the wire or pull the victim away with a dry rope.

If the victim is not breathing, artificial respiration must be started. If there is no breathing and no pulse can be felt, cardiopulmonary resuscitation should be used.

In places of electric shock, tissue hydrolysis occurs - "signs of current" appear, and wounds that take a long time to heal and are difficult to treat develop. More severe burns damage all layers of skin, muscle and bone. As first aid, apply a dry sterile bandage to the nose site; the burned areas can be lubricated with a strong (dark purple) solution of potassium permanganate.
Every person should know the basic methods of providing first aid in emergency situations. Moreover, the degree of civilization of a person directly depends on his awareness in this area.

The number of people injured as a result of emergency incidents is much greater than those killed in the first minutes, and most of the deaths occur among seriously injured people who were not provided with first aid in a timely manner.

It is important to know that injuries that cause damage to the skull, brain, chest and abdominal organs, especially those accompanied by heavy loss of blood, can disrupt the vital functions of the body, which primarily include blood circulation and breathing. Stopping blood circulation and breathing for more than 5 minutes under normal conditions leads to irreversible changes in the cells of the cerebral cortex. This is why it is so important to immediately provide first aid. These simple techniques do not require special equipment or additional conditions, but are extremely important.

**Literature**

NFKB1 GENE MUTATION AND SPLENOMEGALY IN PATIENTS WITH COMMON VARIABLE IMMUNE DEFICIENCY – CVID.

Nasrullayeva G.1
Mollayeva N.2
Mammadova V.1
Nazirzade M.1

1Azerbaijan Medical University, Scientific-Research Laboratory of Immunology, 
2Azerbaijan Medical University, Department of Children’s Diseases I 
Baku, Azerbaijan

Introduction: Common Variable Immunodeficiency - CVID - is a type of PID demonstrated by severe and recurrent respiratory or gastrointestinal bacterial infections. This pathology is characterized by a decrease in B-cell function, hypogammaglobulinemia with a deficiency of IgG and IgA, or all three types of antibodies. Splenomegaly, as well as lymphadenopathy, non infectious enteropathy, opportunistic infections, and autoimmune and autoinflammatory reactions are one of the manifestations of CVID.

Methods: During 2010-2023 28 patients with CVID were identified. The immune system was examined by phenotyping of immune cells and serum levels of IgM, IgG, IgA, IgE, phagocytic activity and CEC. Genetic analysis tested 407 genes characteristic of primary immunodeficiency. Abdominal CT scan and ultrasound were also done.

Results: We report 2 patients (a 13-year-old male and a 29-year-old female) with CVID and similar clinical symptoms of splenomegaly. Ultrasound confirms an enlargement of the spleen by 2-5 cm. Both patients were born in families with blood relatives of the parents (cousins). Since the age of one year, both have stable iron deficiency anemia (Hb 60-64g/l), repeated respiratory infections. Splenomegaly was diagnosed after chicken pox at the age of 8 in a boy and at 20 in a girl. An immunological study revealed a significant decrease in the level of serum IgA, IgM, IgE, and especially IgG (1.1-3.6q/l) antibodies. The total number of T-lymphocytes and T-helpers is normal, T-suppressors are increased (55-70%). At the age of 8, the boy underwent a splenectomy. The child has been taking antibiotics and fluconazole for two years and is still receiving IVIG. Genetic analysis revealed a heterozygous mutation c.308del (p.Asn103Metfs*24) of the NFKB1 gene, a pathogenic mutation.

Conclusion. Thus, in our patients with NFKB1 mutations, manifestations typical of CVID are observed in the form of an enlarged spleen. Splenectomy and IVIG replacement therapy improved our patient's condition. Heterozygous mutations in NFKB2 present with early onset, antibody deficiency, and imbalance in lymphocyte subpopulations.

Keywords: Immunodeficiency, splenomegaly, gene mutation.
THE ROLE OF SCHOOL AND PARENTS IN THE FORMATION OF CHILD PERSONALITY

Aliyeva Nurdan Rafat
Azerbaijan State Pedagogical University

Abstract

There is such an opinion that the physical and spiritual development of children and young people is an indicator of the development of the country, the society in which they live, and the people. Because in the environment in which a child grows and is educated, he shows what he sees in that environment in the future. From this point of view, strengthening the social protection of families, which are the main core of our society, raising the level of education and healthcare, supporting children's creativity is the basis of the state-child policy based on the national and moral values of our people. Therefore, our state has created all the opportunities and conditions for our children and young people to grow up as worthy citizens, get an education, and take a position in society. However, recently, social networks and media broadcast videos showing some teachers physically oppressing students, or students behaving rudely and disrespectfully towards teachers. Of course, such cases cannot be attributed to the entire education system. However, let's admit that these images did not fall off the agenda of the country's media for a while and caused wide discussions among the society.

Keywords: family, interaction, education, school, cooperation, successful personality

A strong parent-teacher partnership in and out of the classroom has a number of short- and long-term benefits for students. Research shows that there are positive academic outcomes that result from parental involvement. In fact, parental involvement remains a strong predictor of academic achievement at all levels, from kindergarten through higher education.

Some of the most effective ways schools can foster healthy communication and collaboration between parents and teachers are outlined in a research-based framework developed by Joyce Epstein of Johns Hopkins University:

- Parental support: understanding parenting skills, family support, child and adolescent development, and learning at all ages. creates conditions at home to support.
- Communicate: communicate with families about school programs and student progress. Effective and reliable two-way communication channels are created between school and home.
- Volunteering: improve recruitment and training to engage families as volunteers and audiences at school or elsewhere. Give educators the opportunity to work with volunteers who support students and the school. Provide meaningful work and flexible scheduling.
- Learning at home: engages families in academic learning at home with their children, including homework, goal setting, and other curricular activities.
- Decision-making: makes families involved in school decisions, management and advocacy activities through school councils or improvement groups, committees and other organizations.

By establishing policies and procedures that address the above initiatives, schools can begin to create a school-wide community and culture that positively promotes parent-teacher collaboration and communication.

In the 17th century, the Czech pedagogue and writer Jan Amos Comenius laid the foundation of the class-lesson system that still exists today, and in later times, the German model of education was formed. Under the initiative of the German model Wilhelm Humboldt, university education became a progressive form (lecture-seminar) and spread throughout Europe. This model was based on the idea of educational freedom, raising the interaction between teachers and students to a new level.
The German model and classical education system began to change continuously until our time. Unchanged forms and aspects remain, but along with innovations, new paradigms and ideas have emerged.

Currently, building competency-based education around the world has become the new educational idea of our time. The model of teaching pupils and students to master ready-made knowledge is now being replaced by the creation of competences and skills. Knowledge should be transferred to competences, it should prove itself in practice.

In the classical approach, education prepared a person for life, now this preparation continues throughout life and a "lifelong education" system is formed. In 1990, at the "Education for All - World Conference" held at the initiative of UNESCO in Thailand, the "World Declaration on Education for All" was adopted and the countries were called to "make education accessible to all, all women and men, regardless of age, everywhere in the world." is a fundamental right".

The transition of the knowledge-based education system to the competence system, the acceptance of the ideas of lifelong learning and education for all, and finally, the leading goal of person-oriented education, opened the way to another useful direction in modern education: the training of competent parents.

The role of parents in education and upbringing was important before. But now it is considered more important and their role takes a new form. Making them competent, believing in their own pedagogical skills, mastering the important principles of education and upbringing, becoming an integral part of the educational process has become an important goal in our time.

Being a parent and a child isn't exactly the same, it's about the challenges of building a relationship between two different people. It is the difficulty of reconciling two different emotions. These are cases where two different views, worldviews, value systems, and choices meet and collide.

When personal claims, financial relationships, difficult tasks, demands for hard work and suffering, responsibility and disciplinary concerns, bad habits, and conflicts come into the mix, we can understand with full seriousness that we are talking about a very complex problem.

The family is an important institution for the formation of an individual, both physically and spiritually. The family environment has a significant role in the creation of the value system of children, in the direction of their needs and motives, in laying the foundations of their worldview, in their socialization, in the formation of their attitude towards people, homeland, history and cultural heritage.

There is already a considerable experience of mutual relations between family and school. Until then, the school had the role to dictate in any matter related to education. It is not just about the superior position of the school acting as a representative of the state, as was the case in the Soviet era. The school was the more prepared side, the teachers were distinguished not only by their teaching knowledge, but by their wider outlook. Therefore, the school determines all the parameters related to education, often the opinion of parents and students was not given importance for this.

Times have changed, new experiences, new paradigms, including the change of parents, have led to an increase in their role. Parents now have more influence on children's education, are more interested in it, try to guide children. Therefore, the importance of parent-school relations has increased. It is a social order.

In such a period, it is an objective necessity to review parent-school relations. The experience of the most diverse countries shows that it is easier to solve problems in the upbringing and preparation of children with the participation of the family, and at the same time, it is possible to achieve more serious successes together with families.

Experts believe that when the school is built on the authority of the teacher, children remain within the framework of "school-school" and "school-teacher" relationships, which are never more effective than the more emotional and disinterested natural parent-child relationship. Parental involvement in education is of such delicate importance. Since the family is connected to children from the moment they are born, its influence continues to be strong even in later years.

The family also has an effective role in the intellectual development of children. American researcher Howard Bloom managed to attract the attention of the whole world with a very serious
hypothesis. According to his research, the difference in mental development between children growing up in financially and morally secure families and children from families with problems in this area exceeds 20 points. The influence of the family on the acquisition of knowledge is undeniable.

Children's cultural level, respect for social values, personal motivation and determination also directly depend on the family. Parents are an important part of the education system. It is with their help and participation that the influence of the family can be made positive and higher. Therefore, it is very important for the school and the teacher to gain the trust of the parent and turn him into an ally.

One of the best ways to assess the current state of parent-teacher cooperation in a school is through anonymous surveys. Available to both teachers and parents, these assessments offer a broad perspective on a number of key data points, such as parent perceptions of teacher behavior and parent perceptions of school and family.

Regardless of how we approach the parent-teacher relationship at the beginning of a new school year, one fact remains clear: “The key to successful parent-teacher collaboration is teamwork. This collaboration is the most powerful tool in helping a student succeed in school. As parents and teachers learn the value of this collaboration, they can create an environment that supports the ability of all students to succeed.”

Now all over the world there is also a search for rebuilding the relationship between parents and schools. Our country has embarked on these searches with the document "State Strategy for the Development of Education in the Republic of Azerbaijan". The "Competent parent" Program provided for in the document should become the basis of activity in that direction.

It is known that the basis of the school contingent is students. Listening to the opinions of schoolchildren, conducting interesting knowledge competitions with them, organizing contests, evaluating the projects proposed by students and teachers lays the foundation for the development of work in the right direction. Having a number of successes in this direction increases the efficiency of work and creates motivation among students.

Also, the projects carried out for the comprehensive development of students and their formation in the right direction further enliven the life of educational institutions. In this regard, in recent years, the Baku City Education Department (BEC) has implemented numerous projects during the academic year in order to promote quality education, development of the organizational culture of schools, successful implementation of reforms in the field of education, and other relevant values.

The comprehensive development of the growing young generation, the formation of high moral qualities and scientific outlook in them is one of the important tasks facing the modern education process. Each educational institution must fulfill these duties properly. From this point of view, we would not be wrong if we say that the educational institution forms the society. Because every school has a higher goal of forming a personality who acquires comprehensive knowledge, progressive outlook, national and universal morals, spirituality, and cultural values and to train a worthy citizen for our society. Fulfilling this goal is responsible as well as honorable. For this, in the organization of the educational process, as KDUshinsky said, the principle of comprehensive learning should be observed in order to educate comprehensively. How is this process organized? To answer this question, it is necessary to pay attention to the concept of personality. One of the main factors in the formation of personality is the upbringing factor. School is the basis of this factor, and it plays an important role in the life of a person with its educational function. As the educative function of the school increases, the education criterion is also formed in the learning objectives together with the educational criterion.

In the organization of this process, the characteristics of the educated and the educator, their mutual relations, goals and tasks of education should be taken into account. In order to properly manage the education process, the personality’s needs, interests and inclinations, outlook, beliefs, and abilities should be taken into account. This puts a great responsibility on the educational institution and the school staff, which organizes the work of education.
The studies conducted at the school show that not only the correct organization of the student's activity, but also the upbringing of moral norms play an important role in the formation of the student's personality.

Depending on the motives, different moral qualities can be formed in students as a result of the same activity. This depends on the social environment surrounding the student, his life conditions, the outlook and views of the family. Because the social environment and lifestyle affect both the moral qualities and behavior of the personality, which is directly reflected in the education process.

The important role of certain genetic factors in character formation cannot be denied. Today, special attention should be paid to these factors in the organization of the educational process of ours and other educational institutions.

Work with difficult pupils:

If we look at the problem of "difficult children" that often appear in schools, we will see that the social environment, family indicators and lifestyle surrounding them are at the root of the negative behavior norms formed in these children. Rudeness formed on the basis of improper upbringing of moral ideas and concepts, failure to expect social norms in the rules of behavior has a negative impact on personality development. Indirectly speaking, this has a negative effect on the personality development of the school.

I would like to mention that the educational process should be carried out systematically, and the development of moral qualities in students should be achieved. It is the duty of every pedagogic worker to increase the interest in learning in these children, to eliminate the motives that keep them away from education and upbringing. From this point of view, it is necessary to investigate the pedagogical mastery of school teachers, to develop their skills and abilities.

In addition to being an educator, a teacher is also a psychologist in a certain sense. So, teachers should be at least as familiar with the psychology of the students they teach as parents. A teacher who communicates with his students every day should already know what kind of psychology, what kind of thinking each student has, how he approaches and reacts to various events and how he analyzes that event. Sometimes such students may appear in front of the teacher that they treat those children as difficult-to-educate students. This can have a negative effect on their direct psychology, and as a result, student-teacher relations may be disturbed. Therefore, the teacher should pay attention to such issues, be familiar with the individual characteristics of each student and be able to behave with students according to their psychological conditions.

Coping with such a responsible process as training is not an easy task. This can be better formulated against the background of an effectively constructed triangle of student, teacher and parent. No matter how the issue of education arises, conversations about family always excite teaching audiences. It is not easy for a teacher to see the complete picture of a modern family. And this is not surprising: the family is extremely dynamic and in constant intense change. At the same time, the teacher is included in the lives of people whose children study at school.

The problem of organizing interaction and cooperation in the “student-parent-teacher” system for the formation of a successful personality is by no means new.

Thus, the activities of a modern correctional school are aimed at solving an important socially significant task - preparing a child with disabilities for independent life in society. This problem worries us, teachers and parents, from the moment a child enters first grade.

We know that a lot depends not only on the school, but also on the family. Even in ancient times, the education and upbringing of children was largely based on the traditions of family life. Family education of children in Ancient Rus’ was built on the basis of folk pedagogical traditions and was under public and even state control. Parents were legally mandated to prepare their children for work and family life. Thus, even in ancient times, the “Charter of Prince Yaroslav” provided for the responsibility of parents for preparing their sons and daughters for the future life. But in the 80-90s of our century, a controversy flared up: to be or not to be educated in school, and how educational institutions should interact with the family.
For a long time, the idea was implanted in society that education should be collective and public. Two social institutions, “family” and “school”, were closed to interaction with each other. This led to parents withdrawing from raising their own children, shifting this responsibility to educational institutions (kindergarten, school, institute).

Forming a social field for an individual’s activity, teachers at our school carry out a number of activities aimed at making the student aware of his “I”, a sense of his personal significance, and the formation of adequate self-esteem and personal prospects.

This depends on the establishment of special trusting relationships between students, parents and teachers, which can be defined in the words of V.A. Sukhomlinsky “…spiritual community, mutual trust, frankness, goodwill”, when communicating with parents, we adhere to a dialogue based on trust in each other.(3)

Thus, the joint activity of a social educator, teachers, and parents in the formation of a successful personality is the holding of the same traditional events: holidays, interest groups, meetings that are held regardless of what grade the child is in. The main thing is to be able to organize a community of parents who want to help the school, but most importantly, to provide spiritual and moral help to their own child.

Thus, the school staff together with parents set the goal of developing children’s success, which depends on health and stress resistance: the ability to listen and hear, the ability to understand another person, economic thinking, functional literacy, information culture and much more. Now we understand that it is the joint communication of parents, children and school teachers to conduct any event that is the basis for the formation of modern thinking in our children, which helps them build relationships with others and find their place in life.

In our opinion, the formation and maintenance of a healthy lifestyle of children of a correctional school was influenced not only by the way of life, but also by special events held at school by teachers, class teachers and parents throughout all school years. These events were held with the participation of parents and relatives. It was when surrounded by family (teachers, parents, classmates) that the values of friendship, health, and nature were perceived. It seems that the children of the correctional school will long remember these events, which always took place with the participation of their parents: a trip to the Orto Doidu tourist complex, family sports competitions, going to theaters, museums, the circus, and much, much more.

All these memorable moments of school life, moments of happy school friendship, joint informal communication formed not only friendship in the class, but also the health of schoolchildren, respect and love for their native nature.(8)

Even the most reasonable school education cannot replace full contact with father, mother and other loved ones. Therefore, almost all school events should be carried out with the participation of parents. Today I would like to note that the traditional holidays spent with parents, accompanied by the solution of joint goals and objectives, some special decisions, left an irreplaceable feeling of kinship in the hearts of the children of the correctional school. It was events like these, charity fairs, exhibitions, community gatherings and many others that helped us see some special moments in each other.

The main basis for parental authority, believed A.S. Makarenko, maybe the life and work of the parents, their civilian identity, their behavior. I would also like to note that in a correctional school, due to the fact that it is a special school, parents have good educational potential.

Everyone knows that the most difficult thing in the work of any teacher is to involve fathers in school affairs. Usually they try to help purely physically and financially.

Pedagogy recognizes the family’s emotional connection with the child, and if the authority of the parents is based on this connection, parents can influence various aspects of their children’s life. It is no secret that family relationships shape the appropriate character traits and personal qualities in a child. Here an informal opinion is formed on the most pressing and pressing issues of public life, a non-ostentatious attitude to life, the true moral face of family members is manifested.
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Bibliography


Abstract
People have always communicated, they communicate today and will communicate in the future. Communication between teachers and parents has its own characteristics. Their communication is a step towards mutual understanding, a step for gaining trust, exchanging spiritual and emotional values, assimilation of pedagogical experience, knowledge that teachers and parents pass on to each other.
An integral, important and at the same time difficult part of our teaching profession is the relationship with parents.
The success of educating students depends not only on the teacher’s attitude to his duties, his training, moral and psychological character, but also on the influence of the immediate microenvironment in which children live and are raised.

Keywords: Communication, parents, information

Even French enlighteners of the 18th century, drew attention to the fact that the social environment, the sphere of human contacts, is a determining factor in personal development, especially moral development. Currently, the range of human contacts has expanded immeasurably, in particular due to the development of the media. But no technical means of information, no matter how intense the action they reach, will never replace direct contacts, direct communication of people with each other, which is carried out in the social microenvironment. This environment changes at different stages of a person’s life: school and school community, enterprise and work team, sports team, etc. But one of the forms of the microenvironment remains unchanged. This is family.

When highlighting the “teacher – student’s parents” subsystem in the system of moral relations, one must proceed from the fact that the family is the most important source of forming the child’s moral positions and consolidating his moral and psychological attitudes.

STRATEGIC SCHOOL MANAGEMENT -
1) in a broader sense - a modern modification and a special type of school management, designed to achieve and maintain long-term success by the school in a dynamic, uncertain and competitive environment; in this sense, strategic school management is often called a strategic approach to school management and extends to the entire school, subordinating other levels of management tasks (tactical, operational, momentary) and becoming the basis for the formation of the entire school management system;

2) in a narrower sense – a component of the practice of intra-school management; the activities of various management entities (including the Governing Council of the school), aimed at solving the most important strategic tasks for the long-term success of the school, preparing, adopting and implementing strategic management decisions and relying on special, strategic management thinking, specific methods of activity based on the application of the concept and strategic management tools as one of the key paradigms of modern management.(3)

Strategic school management involves: (4)
- a special organization of the flow of management actions, in which special management decisions - strategies - are built between the setting of strategic goals and specific actions for their implementation;
- implementation through the efforts of a management system that unites the top management of the school (in modern conditions, the top management of the school is represented by its director and the Governing Council) with attracted representatives of the school community and partners;
• focus on meeting the needs of society and the school’s stakeholders, the effective implementation of the social order, the school’s mission, the creation and approval of socially significant values, the school’s achievement and maintenance of long-term success and competitive advantages over other organizations;
• implementation based on the strategic choice and implementation of key directions and activities, strategic orientation of behavior, values, mission, vision, goals, as well as corresponding strategies, involving the selection of priorities in activities, the subordination of all daily work to them and the adequate distribution of resources;
• reliance on special conceptual, conceptual and methodological means of strategic management;
• constant active interaction with a dynamic, uncertain and unpredictable competitive environment;
• movement in time in the form of successive cycles of strategic changes;
• development of special, strategic documents (school development program, educational program, public report).

The Governing Council is the school's strategic management body.

As many studies show, family upbringing leaves a deep imprint on the formation of a person’s moral qualities. The family is the primary group where the child acquires some life experience and becomes familiar with the moral norms existing in society.

A seven-year-old comes to school and already has ideas about good and bad, beautiful and ugly. The teacher must know not only what ideas were formed in the child, but also under what conditions this formation took place. Therefore, it is important for him to establish contact with the students’ parents and make them allies in education.

It is important for teachers and parents to become mutually interested people, whose needs for friendly communication would become natural, organic, and would serve as the basis for the entire system of relationships.

Most often, parents of so-called difficult children who bring negative experiences of their behavior in the family to school are under the active influence of teachers. And if a child does not outwardly show deviations from moral standards, the teacher is not worried about his fate and has little interest in his home education or family relationships. It is unlikely that such a practice of interaction between family and school can be considered acceptable and effective.

The relationship between teachers and parents is built through an intermediary, that is, through the student, who is included in two microenvironments that autonomously influence him: school and family. Optimally, these two microenvironments should merge. The teacher should become part of the family microenvironment (as the closest adviser to parents in matters of teaching and raising their children), and the student’s parents should become part of his school microenvironment (as participants in the general pedagogical process).

With such a merging of the microenvironment, true mutual understanding, mutual care, mutual assistance and everything that constitutes wealth, a culture of moral relations in the student’s immediate environment are possible.

There is one more circumstance that cannot be ignored when studying the moral relations between family and school: the school either develops the moral qualities of the child inherent in the family, or is forced to re-educate him. In both cases, the teacher needs to know the specific moral situation in the family, and parents should know the pedagogical and moral requirements of the teacher. Without this mutual awareness, it is impossible to carry out pedagogical management of the moral development of children and to successfully implement one of the principles of pedagogy: the principle of the unity of the requirements of family and school. This principle is based on deep mutual understanding and responsibility for the fate of children.

In relations with parents of students, the teacher plays a leading role. But, unfortunately, the teacher is not always able to fulfill this role in collaboration with the students’ parents. Since the teacher does not have any power other than his moral authority, and also because he has to establish
contacts with different parents. Therefore, teachers should remember some rules for effective interaction with parents of students:

- parents need support, help and good advice;
- strive to establish business ties with parents;
- actively involve parents in educational work with children, rely on their help;
- at parent meetings, talk about the plans and problems of the whole class, and not just some children;
- be open to everyone, but do not enter into familiar relations with your parents;
- do not try to please all your parents at once, otherwise they will understand that you lack integrity and strength of character;

Separately, I would like to dwell on the interaction with parents of difficult-to-educate students. But most often such children are from disadvantaged families, and this further complicates the situation. Every teacher knows how difficult it is to talk to the parents of such students. If parents take a defensive position and seek to justify their own non-interference in the upbringing of their child, they usually put forward arguments: “We are busy, we don’t have time,” “We tried everything, nothing works.” You can often hear from parents: “The school is to blame for the fact that our child is so ill-mannered.” “The school should educate, not us!” Sometimes parents ask: “The child is not listening to us, help!”, “We are confused, we don’t know what to do, what do you recommend?” In any of these cases, the teacher should strive to have a constructive conversation with the parents. How to achieve this?

It is important that the teacher does not fall under the influence of parents. After all, if a teacher has lost his independence and “plays along” with parents, it becomes impossible to achieve constructive results in the conversation. A teacher who has come under the influence may either make excuses or begin to threaten: we will take administrative measures. If the parent shows his helplessness, the teacher, pitying him, promises to “do something” to change the child’s behavior for the better. But in both cases, there is no real, meaningful interaction between parents and the teacher, and the latter will be left alone with his problem: the student’s low performance and bad behavior.

The main goal of a teacher’s communication with the parents of a difficult child is not to make excuses or aggressively defensive actions, not to take on the full burden of correcting the behavior of a difficult student, but to unite with the parents to help this student improve.

It is necessary to emphasize:

*The ability to communicate is a professional quality of a teacher.*

A teacher must have a high psychological culture: be able to communicate, conduct a conversation, listen and understand the interlocutor, interact and influence. And in this case, it does not matter who exactly acts as an interlocutor - the student or his parents. In all these situations, he needs to behave psychologically competently.

*Don’t push away, but attract to cooperation.*

Often a teacher sees parents as people who initially stand in some opposition to him. Trying to anticipate their possible objections in advance, he begins the conversation in an imperative “teacher’s” tone, begins to lecture and reproach. It is not advisable to conduct a conversation this way - you will only alienate your interlocutor. There can be no talk of any joint actions here: parents begin to feel sorry for their child and blame the teacher, who in a conversation with them showed himself to be such an unsympathetic person. Try to understand the feelings of your student’s father and mother, moreover, find support in them, thinking through and building joint actions. Do not push away the parents who come to school, show restrained goodwill and openness. Your personal positive attitude towards your interlocutor will be an expression of goodwill and the first step towards cooperation.

*Develop a desire for an equal position with your parents.*

The first step in this direction should be taken by the teacher, since this is within his competence and shows his professionalism.

*People like to feel their own importance.*
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One way to encourage parents to cooperate is to emphasize its importance in the process. Explain to parents their real role in the upbringing and development of the child. Strengthen the confidence of parents that they can certainly be patient and persistent, that they can improve the life and education of their son or daughter.

*Show parents your love for their child.*

Psychological contact with parents occurs immediately as soon as the teacher shows that he sees positive aspects in the child’s character, sympathizes and even loves him. Agree that there is a good beginning in every person, even in the most desperate offender or loser.

When a father or mother sees the teacher’s friendly eyes and feels that the teacher also cares about the child’s well-being, psychological defense becomes unnecessary. This is where we can move on to cooperation.

Conducting a constructive dialogue with parents is the basis of the system of relationships with parents. The following rules will help to achieve a constructive dialogue:

**Rule 1.**

*Do not strive to defend your own position at any cost.*

It often happens that each interlocutor strives only to defend his own opinion. If a conversation with parents takes place in this way, then perhaps the teacher will be able to organize joint activities, but perhaps not. A conversation can be called successful not when the teacher proves that he is right, but when he is able to attract parents to actively participate in the child’s upbringing.

In other words, the main purpose of the teacher’s conversation with the student’s parents is not to strengthen their dominant position and prove how bad their child is, but to unite the efforts of the school and family.

**Rule 2.**

*Discuss the problem, not the student’s personal qualities.*

Don’t get too personal. Positive results from a conversation between a teacher and parents cannot be achieved if they begin to discuss the child’s character traits and end with a “discussion” regarding each other’s personal characteristics. The conversation will get bogged down in mutual reproaches, accusations, suspicions, and the parties will part as enemies. As a result, the teacher will finally lose the support of his parents.

To avoid a disastrous result, direct the conversation to discuss parenting problems. Formulate in front of your parents your psychological and pedagogical “Diagnosis of their child’s educational activities and behavior: for what objective and subjective reasons does he study poorly and violate discipline, what can be done to improve the situation. If a child has neglected the educational material, discuss with his parents how to help him catch up; If a teenager behaves poorly in class because he constantly asserts himself and demonstrates his “courage” in front of classmates, suggest that parents look for socially acceptable forms of activity in which their son could satisfy his need for self-affirmation, for example, playing sports. At the same time, it is very important that parents feel confident that the problem can be solved.(4)

**Rule 3.**

*Don’t trust genetics*”

Unfortunately, teachers often say this: “Will this student study well and behave decently at school, because his parents... themselves studied poorly, were not well behaved, abuse alcohol, etc.?”

Of course, the influence of hereditary characteristics and family conditions on the formation of a child’s character and abilities is enormous. But this influence is not unlimited. Each teacher, based on his own experience, can tell about cases when a “good” child came out of a “bad” family. And, conversely, from “good” to “bad”.

If from the first grade at school he is treated as a child “from a bad family,” then he really begins to study poorly and violate discipline. And vice versa, it is possible to level out the performance and behavior of a child “from a bad family” with a positive, supportive attitude of the teacher towards him.

**Rule 4.**

*“We are together against the problem, not against each other.”*
Your conversation with the student's parents will be successful if, firstly, you managed to avoid confrontation and confrontation with them. Secondly, if you were able to refrain from reproaches and accusations. Thirdly, if you successfully formulate the problem of upbringing and the parents understand and accept the formulation. And fourthly, if you have discussed your joint actions. Therefore, it is reasonable to feel professional satisfaction after talking with your parents. You managed to unite with them against the common “enemy” of the educational problem and develop a plan of specific actions.

I would also like to dwell on such a common form of working with parents as parent-teacher meetings.

In terms of content, parent meetings can be current, thematic, or final.

**Current parent meetings** are meetings with a traditional agenda: results of academic performance in the quarter, results of ongoing events and holidays, hikes.

**Thematic parent meetings** are meetings devoted to a current topic in which the vast majority of parents in the class are interested in discussing. Thematic parent meetings, as a rule, are educational in nature and aimed at expanding the knowledge of parents in the field of raising children.

**Final parent meetings** are meetings whose task is to summarize the results of the development of the children's team over a certain time. During such a meeting, parents have the opportunity to evaluate the achievements of students in the class, their own child, and compare past results with those that already exist.

Whatever the content of the parent meeting, it requires careful preparation. The class teacher must remember that a parent meeting will be effective when the teacher plans it and writes a kind of script.

A carefully prepared, meaningful, non-standard in form and relevant in significance parent meeting can revolutionize the minds of mothers and fathers and awaken in them enormous educational potential. The class teacher must remember that a parent meeting will be effective when there is a need for it on the part of adults, and the teacher who prepares it is authoritative in the eyes of parents.

**Rules for preparing a class parent meeting**

1. The topic of the parent meeting should be relevant to parents.
2. The parent meeting should be held at a time convenient for the parents.
3. The plan for holding a parent meeting must be known to parents.
4. Communication between the class teacher and parents should be tactful and self-possessed.
5. The parent meeting should not label people.
6. The parent meeting should be pedagogically useful and well prepared.

**Psychologist's advice**

- before the meeting begins, it is better to leave a bad mood at the door;
- Allow no more than 1.5 hours for the meeting;
- the most pleasant sound for a person is his name: put in front of you a list with the names and patronyms of your parents;
- do not forget the “golden rule” of pedagogical analysis: start with the positive, then talk about the negative, end the conversation with suggestions for the future;
- warn your parents that it is not

**References**


Abstract

The article is devoted to the problem of project activity in the educational environment, which allows in practice to consolidate and test the theoretical knowledge of students specializing in social pedagogy, to work on practical skills, ensures a productive connection between theory and practice in the learning process, and contributes to the formation of students life skills. Theoretically and methodologically, the project activity is substantiated as a constructive and productive activity of the individual, aimed at solving a vitally important problem, achieving the final result in the process of goal setting, planning and implementation of the project.

The article analyzes project activity, which belongs to the unique ways of human practice related to ensuring the future, creating its ideal image, implementing and evaluating the consequences of the implementation of ideas.

The importance of the ways of education development in Ukraine for the coming years and for the future, which are defined in the National Doctrine of Education Development, provide for its thorough reformation in the direction of introducing a person-oriented approach into educational practice.

The set of pedagogical conditions for effective problem solving is characterized, provided that the educational process in the educational institution is aimed at developing the activity, independence, and creative abilities of each student. The theoretical provisions of conducting project activities in the educational space are described.

A model of students specializing in social pedagogy project activity in distance learning conditions is presented. Scientific sources devoted to various aspects of project activity in the educational space have been analyzed.

Keywords: students specializing in social pedagogy, project activity, research project, informational project, creative project, practically oriented project, role-playing project.

Introduction. The problem of project activity in education of students specializing in social pedagogy is quite important and relevant, as many researchers consider the XXI century to be the era of project implementation in educational activity. Project activities in the educational environment allow students to consolidate and test their theoretical knowledge in practice, practical skills; provides a productive link between theory and practice in the learning process; contributes to the formation of life skills of students. Project activity is a constructive and productive activity of an individual, aimed at solving a vital problem, achieving the final result in the process of goal setting, planning and implementation of the project. Design activity belongs to the unique ways of human practice related to ensuring the future, creating its ideal image, implementing and evaluating the consequences of the implementation of ideas. Ways of development of education in Ukraine for the coming years and for the prospect defined in the National Doctrine of Education Development, provide for its thorough reform in the direction of introduction into educational practice of a person-oriented approach. This problem can be solved if the educational process in the educational institution is aimed at developing the activity, independence, creative capabilities of each student, student. Today's society requires...
initiative persons capable of consciously acting, making their own decisions, and quickly adapting to change. Therefore, modern pedagogy is actively searching and testing different forms and methods of activity of the subject of cognition, thereby laying the objective preconditions for the qualitative transformation of pedagogical education of students specializing in social pedagogy. The teacher should be not so much the source of knowledge and the controlling subject, but the organizer of independent active cognitive activity of students, their consultant and assistant. For this purpose, in the process of university training it is necessary to involve students in the active cognitive process, the application of the acquired knowledge in practice, cooperation in solving scientific tasks [1]. Given the relevance of pedagogical technologies and the efficiency of using technology in higher education, we consider it appropriate to cover the possibilities of using project activity in teaching disciplines.

**Problem statement.** In modern pedagogical science, students specializing in social pedagogy education, many scientists have developed classifications of educational projects. One of the most common were the projects of American educators - J. Dyui, V.H. Kilpatryk, who took as the basis the development of cognitive, creative skills of students, the ability to construct their knowledge independently, to navigate in the information space, to think critically [2]. Kilpatric proposed the following project classification:
- a productive (creating) project related to work activities (design, layout, plant and animal care);
- consumer project (preparation of excursions, provision of services, organization of leisure);
- research project (biological, physiological, technical, solving historical or literary problems);
- training project (project management) to acquire certain skills [2].

**Background.** The theoretical basis for solving the outlined scientific problem are the ideas presented in the scientific achievements of Ukrainian and foreign scientists: Kovtun A. V., Zhernovnykova O. A., Peretyaha L. Y. (application of digital learning tools in project activities); Barron, B. J., Schwartz D. L., Moore A., Vye N. J. (theoretical foundations of project technology implementation); Bell S. (organization of the educational process on the basis of project activity); Boss S., & Krauss J. (connection of project activity and digital environment); Abdullah M. C. & Daud S. M. (provision of collective interaction was studied in the conditions of project activity).

**The purpose of the article** is the theoretical and methodological characterization of the complex of pedagogical conditions for the effective application of project activities in the educational environment. The following classification of educational projects has developed in modern science:

1. According to the nature of the dominant activity:
   - research project - it includes justification of the relevance of the chosen topic; definition of the purpose, tasks of the hypothesis research with its subsequent verification, analysis of the obtained results; use of research methods such as laboratory tools, sociological survey modeling and others;
   - informational project - aimed at collecting information about some object, phenomenon with the aim of its analysis, generalization and presentation to a wide audience. The result of such a project can be publications in mass media and on the Internet;
   - a creative project involves the most free and non-traditional approach to designing the results. These can be almanacs, theatrical performances, works of fine and decorative arts, video films;
   - a role-playing (gaming) project in which designers take on the roles of literary or historical characters. The result can be the creation of a visual guide for the educational process;
   - a practically oriented project is aimed at the social interests of the project participants themselves or the external customer. The result is determined in advance and can be used in the life of a social class, school, city, state. The result can be a visual guide for the classroom, birdhouses, and so on (Lopushynska, 2020).

2. According to the subject-content features:
   - monoproject within the framework of one field of knowledge;
   - an interdisciplinary project (at the intersection of various fields of knowledge).

3. According to the number of participants (individual, pair, group, collective, mass).
4. According to the duration:
• mini-project (half a pair - lesson);
• short-term (up to 1 month);
• long-term (semester, academic year).

An educational project, from the point of view of a student (pupil), is an opportunity to do something independently in a group or by yourself, making maximum use of your capabilities; it is an activity that allows you to discover yourself, test your strength, apply your knowledge, bring benefit and publicly show the result; this activity is aimed at solving a significant problem, formed by the students themselves in the form of a goal and task, and when the result of this activity has a practical nature and important applied value [6].

Design activity from the teacher's point of view is a didactic means of development, training and education, which allows you to develop and form specific design skills, namely to teach: problematization (identifying the main problem and setting tasks for its solution), goal setting and activity planning, self-analysis and reflection (self-analysis of the success and effectiveness of solving the project problem), presentation of one's activities and results, search for the necessary information, identification and assimilation of the necessary knowledge from the information field, practical application of knowledge, abilities and skills in various situations, conducting research (analysis, synthesis, hypothesis, detailing and generalization).

In the scientific pedagogical literature, there is a whole series of mandatory requirements for the modern definition of the project, namely:
• the presence of an educational problem, the complexity and relevance of which corresponds to the educational requirements and life needs of students, pupils;
• the research nature of finding ways to solve the problem;
• structuring of activities in accordance with classical design stages;
• simulation of conditions for students to identify an educational problem;
• spontaneous nature of the creative activity of participants in the educational process;
• practical or theoretical significance of the activity result and readiness for implementation;
• pedagogical value of the activity (what new knowledge and skills the students acquired during the implementation of the project).

The final result of the students' project activity can be presented in the form of a website, sociological survey data analysis, business plan, video film, video clips, electronic newspaper, collection, model, package of recommendations, advertising prospectus, article, collective creative work of decorative and applied arts [3].

Methodology. In our opinion, there should not be too many criteria for evaluating the quality of project implementation. Their content is informed in advance and explained to the project participants, for example, the criteria for evaluating the project activity of pupils may be as follows: independence of work, relevance and significance of the topic, creativity of problem solving, presentation of the content of the project, use of visual and technical means, educational significance of the project, complete disclosure of the topic, accuracy of answers to questions, educational and educational significance of the project, quality of approval of versions.

Worthy of attention is the experience of the Applied College "Universum" of the Borys Grinchenko Kyiv University in implementing design activities into work practice. The resource support of the development program consists of the following innovative projects: "Model of the institution of life competence", "Establishment and development of a preventive educational space", "Educational system of the college", "Education of gender culture of youth in an educational institution", "Education in the field of human rights and freedoms", "Education in the field of culture of peace and tolerance", "Health me through education", "Creative giftedness", "Portfolio in an educational institution", "Development of student self-government of the college", "Steps to the information society", "Development of social partnership", "Image of the college of work" and others [7].
In Ukraine, there is a tense situation with the replenishment of scientific institutions with young personnel, which indicates the ineffective use of the intellectual and creative potential of gifted pupils and students, the lack of favorable conditions for the realization of their abilities.

The decline in the prestige of scientific work is accompanied by the outflow of promising creative youth to the private sector of certain branches of the economy of our country or outside Ukraine. The "aging" of science already today has a negative effect on the pace of innovation and technological development of the economy and the social development of society.

There was a need to overcome disunity and inconsistency in the work of various institutions and organizations with talented and gifted students (students) in order to increase the level of efficiency of this work and create a state policy favorable to the realization of the creative abilities of children and youth.

Main results. The purpose of educational design is to gain experience in practical activities. Tasks: teach to independently acquire knowledge and apply it to solve new cognitive and practical tasks; promote the development of communication skills; expand the circle of communication. The main requirements for the use of technology: the presence of an interesting and significant social problem; predictability of results (report, report, album, etc.); independent activity of performers (individual, pair, group); structuring of the content part of the project (with indication of phased results); use of research methods and a certain sequence of actions: definition of the problem and tasks of the research; proposing a hypothesis; choice of research methods; discussion of methods of design of final results; collection, systematization and analysis of received data; summarizing, design of results, their presentation; conclusions, proposing new research problems. The ways are the study and implementation of innovative pedagogical technologies for the optimization, intensification, integration of learning, in relation to the development of a creative personality in the practice of the college in 2022-2023. It is also important to create online consultations of a psychological-pedagogical service for parents on raising and teaching creatively gifted children with a high level of intellectual development (using interactive online platforms Meet, Zoom, Webex, MOODLE). It is necessary to promote the expansion of ties with higher education institutions of Ukraine and with international universities such as: the University of Ioannina (Greek Republic); Ignatianum Jesuit University in Krakow (Republic of Poland); Faculty of Management of the University of Tampere, Republic of Finland), as well as with scientific institutes of the National Academy of Pedagogical Sciences of Ukraine [7].

The model of implementation of project activities of education seekers within the framework of studying social disciplines has shown significant results in improving motivation to study and increasing work capacity. It should be noted that the implementation of project activities in digital format shows high indicators of student involvement in the educational process. With a constant number of students studying in the second year of the specialty "Social Education" of the Applied College "Universum" of the Borys Grinchenko Kyiv University, which is approximately 45 people every year, the number of applicants who take part in the project activity is 37 people (note that performance or non-performance of project tasks is the choice of the students themselves, which the teacher publicly declares at the beginning of the course). Let's consider in more detail the algorithm for the organization of project activities of second-year students of the specialty "Social Education" Applied College "Universum" in the 2022/2023 academic year in the conditions of forced distance learning. The teaching of social studies in the second year begins in the spring semester (February-June) and includes 3 credits for assimilation, classroom work is 32 hours for each group, of which 16 hours are lecture classes and 16 hours are seminar classes, the discipline ends with a four-level control (exam). It should be noted that applicants have 58 hours for independent work on the "History of Ukraine" course, which requires the search for meaningful and interesting works of a creative nature [8].

The model of educational interaction in project activity is based on such principles as: primary organization, ongoing control of success, public protection and presentation of results, design of obtained results into digital content. Let's consider this process in more detail. At the first lecture, the teacher familiarizes the winners with the evaluation system and notes that for "creative work" the
winners will be able to receive a maximum of 20 points, which is 1/5 of their total number of points. We emphasize that it is advisable to conduct preparatory work within the framework of the organization of interaction between the teacher and students in the digital space. The most effective, in our opinion, is the creation of groups in digital messengers, because it is digital applications for communication and content exchange that occupy a dominant position in communication between applicants. Getting to know the elders and clarifying the rules and evaluation criteria in advance allows you to significantly improve communication with the students of the group in the future. Another important aspect of effective execution of project work is the clear definition of deadlines for sending works and checking them for integrity [9].

We emphasize that the projects of previous years can be used in the process of conducting classes, especially in the lecture format, to regroup the attention of the applicants to another type of activity. In the future, it is necessary to clearly define the conduct of consultations for applicants who have expressed a desire to participate in project activities. The Russian invasion had a negative impact on communication between applicants, so the presence of another platform for their interaction is an important factor in supporting students in difficult conditions. When developing an opinion on improving communication and interaction between applicants, the teacher usually recommends uniting in project groups of up to 5 people. Such an approach allows for the development of communication and understanding between students. However, there are options where applicants perform project work individually. A special place in the system of project activity in a digital format is occupied by the research activity of the acquirers. Before the start of the course, the teacher, conducting preparatory work, can choose the academic groups with the highest success rate among the entire flow of the course. As a rule, these are 2 groups, which are given the opportunity to conduct project work in the format of a current topic of modern scientific research. In this case, the teacher must show special attention and integrity towards the applicants, that is, give the opportunity to participate in this work to the entire group (for example, in the 2022/2023 academic year, the average number of participants in such groups was 6 students). Such a number of participants is due to the complexity of conducting project activities in the format of research and processing results. Conducting research requires a lot of attention and the number of participants to process the received information. Evaluation of the results of the conducted research takes place on a separate day and includes scheduled debates between representatives of different project groups of researchers, which significantly increases the time for the defense of works. This kind of activity of the acquirers makes their further scientific search especially valuable. As a rule, the most proactive students from the project group in the next academic year express their desire to conduct research already in the format of more thorough scientific investigations and publication of the results in specialized university publications [10].

Observance of systematicity and consistency in work with students allows to maximally reduce the risks of misunderstanding and technical difficulties that very often occur in such a process. For example, due to the lack of professional video or audio recording equipment for many users, there are cases when the video is not audible or the video is recorded in an unsupported format. In such cases, preliminary work is needed to identify and eliminate such problems. Building a model of successful project activity in the digital educational space includes the following stages: preparatory (establishing communication between applicants and the teacher), operational (creating a project), corrective (making changes and additions) and final (public protection and design of results). One of the most important tasks of implementing the project activities of education seekers in the digital space, along with the development of "soft skills" and increasing interaction, is the development of digital competence. It is very difficult to imagine the effective implementation of the above-mentioned project works without the formed skills of work in education in the digital space. In addition, it is important to emphasize that digital means of communication can be used in the educational process.

Conclusions and prospects. Thus, the conducted research shows an effective model of construction of the project activity of students specializing in social pedagogy, both in the conditions of traditional education and other forms and methods of educational interaction. The most valuable
recommendations regarding the organization of project activities in the digital space are: preliminary preparatory work by the teacher to clarify the requirements for studying the course and organizing project activities (the emphasis here is on group leaders due to the large number of applicants, an average of 45 people); vivid presentation of requirements and previous achievements in creating creative works (projects); determination of a clear sequence of actions of this process. Provision of topics, selection of topics, independent organization of creative teams in accordance with the stated requirements, creation of a project, its verification, public defense, registration of results; clarification of the sequence of actions and communication between the participants of the process: teacher-student, teacher-group of students, student-student. Feedback support at consultations and in messengers (with an emphasis on convenience for both parties); ongoing verification of the obtained results, i.e. support and correction of project works with mandatory clarification of problematic points for applicants; organization of public defenses of creative works (projects) on proven digital communication platforms; compliance with the principles of academic integrity in the conditions of distance digital learning through the verification of works in generally recognized digital information verification programs; allocation of time for separate consultations for research projects as such, which require special attention due to their complexity; application of cloud services for recording the results of applicants’ success.

The conducted research does not exhaust all aspects of project activity in the digital space, because the technological apparatus of educational services and platforms is rapidly developing and provides many ways of implementation in the educational and project work process. But the basis of interaction and organization of this process remains unchanged and is aimed at the development of educational skills, team interaction and assistance, as well as qualitative presentation of the obtained results. In further research, it is planned to complete and present the results of the study of the influence of the project activities of the applicants on the formation of their digital competence.

References

ETHICAL ASPECT OF IMAGE FORMATION AND SOCIALIZATION OF FUTURE SOCIAL TEACHERS IN COLLEGES

Larysa Rusnak
Lecturer in the Applied College «Universum»
Borys Grinchenko Kyiv University, L. Kadeniuk ave., 16, 02094, Kyiv, Ukraine

Dana Sopova
Lecturer in the Applied College «Universum»
Borys Grinchenko Kyiv University, Ph.D. in Pedagogy, L. Kadeniuk ave., 16, 02094, Kyiv, Ukraine

Alyona Dotsenko
Lecturer in the Applied College «Universum»
Borys Grinchenko Kyiv University, L. Kadeniuk ave., 16, 02094, Kyiv, Ukraine

Abstract
Based on the analysis of scientific sources, the article reveals the essence of the concept of "image", examines the ethical aspects of professional image formation and socialization of the future social pedagogue during college studies.

Annotation
У статті на підставі аналізу наукових джерел розкривається сутність поняття «імідж», розглядаються етичні аспекти формування професійного іміджу та соціалізації майбутнього соціального педагога під час навчання в коледжі.

Keywords: socialization, image, professional and pedagogical image, social pedagogue, personality, college, student-centered learning.

Ключові слова: соціалізація, імідж, професійно-педагогічний імідж, соціальний педагог, особистість, коледж, студентоцентроване навчання.

Постановка проблеми. Проблема формування позитивного іміджу та соціалізації майбутнього соціального педагога не отримала в повній мірі своє відображення у наукових дослідженнях, а також у практиці вузівської підготовки майбутніх соціальних педагогів. Недостатня увага приділяється формуванню позитивних якостей особистості, оволодіння педагогами технологіями підвищення зовнішньої привабливості та особистісної комунікативності,
умінню самопрезентуватися, формуванню соціальної свідомості, самосвідомості та ціннісних установок, які будуть визначати траекторію професійного розвитку майбутнього працівника соціальної роботи.

Метою даної статті є розгляд теоретичних аспектів формування соціалізації та іміджу майбутніх соціальних педагогів: уточнення поняття імідж, принципів, особливостей формування іміджу майбутніх соціальних педагогів, адаптації, інтеграції, саморозвитку і самореалізації.

Аналіз досліджень і публікацій. Бурхливі зміни, що мають місце у житті сучасного суспільства, з особливою гостротою ставлять проблему адаптації поведінки особистості з метою досягнення соціального успіху. Прагнення людини викликати в інших певне враження, щоб підвищити власну спроможність досягти поставлених соціальних мет і самореалізації майбутнього соціального працівника.


Проблема формування іміджу є однією з актуальним у сучасній психології. Як зазначає эксперт А. Калюжний [5], В. Черепанова [6], О. Панасюк, Г. Почепцов, В. Шепель [4] в останні роки значимою є активність розробляється щодо різних видів людської діяльності. Пріоритет у її вирішенні залишається за політикою, бізнесом, мистецтвом, торгівлею та іншими галузями. Водночас накопичені досить широкий арсенал технологій, спрямованих на підтримку та створення іміджу різних фахівців.

Аналітичний огляд досліджень (О. Володарської [6], А. Калюжного [5], Я. Коломенського [6], О. Перелигіні [1]) з порушення проблеми засвідчує її актуальніст для майбутніх фахівців соціальної сфери. У тлумачному напрямку узагальнено досить розшаровані та сприйняті викладачімі документи з проблемним вопросом характеристики іміджу та соціалізації майбутніх соціальних педагогів та умов їх створення. Крім того, недостатньо досліджень, присвячених вивченню індивідуального іміджу майбутніх соціальних педагогів.

На думку Г. Почепцова, «імідж це звернене у зовнішнє "Я" людини, її публічне "Я"» [4, c. 29].
В. Шпалінський підкреслює, що імідж – «це те, чим і ким здається людина у своєму оточенні, якою бачать і сприймають її «вони» [5, с. 245]. Отже, узагальнюючи наукове трактування дослідниками поняття «імідж», ми вважаємо, що імідж – це полісемантична категорія, яка пов’язана з соціалізацією в колективі, характеризує стиль професійної діяльності, манеру спілкування, уміння індивідуалізувати свій образ, надавати йому естетичної виразності. Вдалий імідж – це здатність переконати оточуючих, що носій цього іміджу є втіленням в собі ідеальних якостей, які вони бажали б мати, якщо були б на місці цієї людини. У незалежній Україні формується інформаційний простір, де роль іміджу для трудової соціалізації та досягнення особистістю професійного успіху стає все помітнішою, інколи - незамінною.

Гостра зацікавленість проблемами іміджу в політиці, торгівлі, рекламному бізнесі, в організації мас-медиа, в мистецтві, педагогіці, в організації майбутніх соціальних педагогів: - професійний — імідж педагога, детермінований професійними якостями; - особистісний — імідж педагога, зумовлений його внутрішніми й індивідуальними рисами; - бажаний — імідж, до якого прагне педагог; - дзеркальний — імідж, що відповідає його уявленню про себе; - корпоративний — імідж дошкільного, загальноосвітнього або вищого навчального закладу, де працює педагог.

Необхідно зазначити, що імідж може бути як позитивним, так і негативним.

Складові іміджу майбутніх соціальних педагогів: - внутрішні “Я” (внутрішній образ студента-педагога, що відповідає обраному фаху і виявляється у його професійній культурі й мислень, емоційності й творчому настрої, привабливості й вишуканості, власній ідентичності, асоціацій навколо педагога); - зовнішній вигляд педагога (звідшується про ціннісні риси, які в гармонійному поєднанні як педагогічним артистизмом створюють позитивний образ педагога – професіонала, сприяють формуванню гарного враження і репутації, допомагають соціалізуватись в трудовому колективі); - використання вербальних і невербальних засобів спілкування (жести, міміка, пантоміма, інтонація) майбутнього вихователя мають привернути увагу вихованців до нього, викликати довіру і налаштовувати їх на активну взаємодію.

Соціалізація та створення позитивного іміджу сучасного педагога дошкільного навчального закладу тісно пов’язані із його професійною компетентністю, педагогічною майстерністю, психолого-педагогічною культурою особистості вихователя та особистісними й професійно значущими якостями педагога.

Вищим навчальним закладам необхідно орієнтуватись на гуманістичну модель соціалізації майбутніх вихователів, яка спирається на здатність до діалогу та співробітництва, а також на студентоцентроване навчання, яке спирається на розширення автономії студента, підвищену відповідальність, опору на активне навчання, акценти на критичному навчанні та розумінні. Для досягнення успішної професійної соціалізації майбутнього педагога коледжу необхідно допомагати студентам у розвитку компетенцій її усунення обмеження для досягнення особистісно значущих та стійких змін у професійній та особистій сферах життя.

При формуванні іміджу соціального педагога його особисті якості переплітаються з тими, що приписуються йому оточуючими. Імідж соціального педагога формують: сам педагог...
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gог, іміджмейкери, засоби масової інформації, люди, що оточують – друзі, рідні, співробітники, вихованці, батьки вихованців. Завдяки іміджу можна скласти враження про соціального педагога, його характер, освіченість, інтелект, рівень культури, поведінку.

Імідж кожного соціального педагога індивідуальний, але, разом з тим, має загальні риси, властиві його професії: тонкість розуму, вишукані манери, вихованість, скромність, уміння гідно подати себе вихованцям. Вихователь повинен завжди бути взірцем високого особистого іміджу.

Щоб бути привабливою особистістю, охайного зовнішнього вигляду недостатньо. Це бажаний компонент іміджу, але не вирішальний. Сильними особистісно-діловими характеристиками іміджу особистістю є, насамперед, вихованість, ерудиція і професіоналізм.

Г. Китайгородська характеризує сучасного соціального педагога, як джерело інформації, лідера колективу і, в той же час, учасника, у якого особливий авторитет, взірця морально-етичних норм поведінки, модель майбутньої мовленньої діяльності, організатор психологічного клімату, керівника міжособистісних стосунків.

Ми погоджуємося з думкою М. Варданян, яка представила імідж, як структуровану сукупність взаємопов'язаних компонентів: внутрішнього (знання, уміння, здібності, установки, цінності, самооцінка, Я-концепція); зовнішнього (габітарний, вербальний, кінетичний, середовищний і матеріалізований елементи); процесуального (стиль керівництва і стиль спілкування), що проявляються у функціях (комунікативна, інформативна, когнітивна, конотативна, емотивна, мотиваційна, організаційна, дисциплінарна, організаційна, вибіркова, компенсаторна, представницька, креативна, виховна, адаптивна, здоров’язберігаюча), що доповнюють одна одну.

Цілеспрямовані наукові дослідження на сучасному етапі надали можливість виокремити нову галузь педагогічної науки – педагогічну іміджологію, яка має на меті вивчення закономірностей та сутності процесів формування педагогічного іміджу в контексті професійної соціалізації фахівців у сфері освіти та професії іміджмейкера.

В літературі існує ряд визначень іміджології як науки. На думку О. Холод, іміджологія – це наука про функціонування, систематизацію й впровадження у свідомість споживача знанкових замінників інформації про носіїв визначених атрибутів [5, с.34]. В. Шепель вважає, що іміджологія – це звернений до кожного заклик бути привабливим і вміти нести світло людям. Вона сприяє зовнішньому проявлі глибинної потреби людини бути гідною особистістю [5, с.48].

Інформаційний банк іміджології складає дані таких дисциплін як психологія, педагогіка, етика, соціологія, риторика, театральна режисура, акторська майстерність, косметологія, дизайн одягу тощо.

Головне призначення іміджології – науково обґрунтувати, як створити привабливий імідж, як збудувати моделі достойної поведінки в тих чи інших ситуаціях, що буде корисним під час професійної соціалізації.

Відомі українські вчені інтенсивно займаються дослідженням теоретичних і практичних основ іміджології. Зокрема, В. Мойсеєв підготував значну кількість праць з теорії і практики паблік рілейшнз [6], Г. Почепцов має низку досліджень, присвячених актуальним проблемам іміджології й паблік рілейшнз [4]. В. Королько – автор першого фундаментального підручника з основ паблік рілейшнз та проблем іміджу студентів вищих навчальних закладів [3]. О. Холод запропонував цікаві підходи до систематизації складових іміджології [4]. Діяльність керівника організації зі створення іміджу розглянута в дослідженнях О. Доброневського, О. Омарова, Г. Почепцова, Е. Уткіна, О. Фельзера [5].

У літературі з проблем іміджології явно відчувається диспропорція між традиційними рівнями гуманітарного знання: фундаментальними теоріями, теоріями середнього рівня та прикладними дослідженнями. Усе зазначене може бути віднесено також до проблем соціалізації та формування індивідуального іміджу соціального педагога.

Трактування поняття «імідж» тісно пов’язане з поняттями образу людини, враження або уявлення про нього, з тим, як він уявляє себе з усіх позицій. Наявність іміджу – явище символічної природи, що містить та передає певну інформацію про людину з метою впливу на
оточуючих, зокрема, інформацію про те, яка поведінка відносно носія іміджу прийнятна, якої поведінки можна чекати від нього самого та яку соціальну роль він виконує. Ця позиція знайшла підтвердження в працях П. Берда, який визначає імідж як «загальне враження, яке ви спричиняєте на оточуючих. Воно складається з того, як ви представляєте свої ідеї, як поводитеся в суспільстві, як одягуєте себе, що говорите і що робите…» [6, c. 52]. Слушним, на нашу думку, є його зауваження стосовно того, що імідж повинен міцно базуватися на внутрішній сутності людини, бути її відображенням.

Таким чином, імідж людини є те, що орієнтоване на сприйняття іншими людьми в його безпосередньому оточенні та адресоване ним як повідомлення про свій статус, професійну роль, унікальні риси і якості особистості.

Соціологи розглядають імідж як зовнішній образ, який створює суб'єкт з метою викликати певне враження, відношення інших людей до себе. Без наявності позитивного іміджу соціальний педагог не зможе успішно соціалізуватись в колективі. На сучасному етапі необхідною є орієнтація на гуманістичну модель соціалізації, яка на основі ефективного виховання сприяє самостійній діяльності студентів, прийняттю рішень в нових умовах. Колектив повинен організувати повноцінне і різноманітне життя, орієнтуватись на особистісну активність, мобільність, самостійність в навчально-виховному процесі, в центрі якого студент з його здібностями, інтересами та потребами. Діалектична єдність соціалізації та сформованого позитивного іміджу забезпечить оптимальний розвиток особистості майбутнього соціального педагога протягом усього життя.

Психологи сприймають імідж як цілеспрямовано сформований образ особистості, що виділяє певні ціннісні характеристики, покликаний справити емоційно-психологічний вплив на кого-небудь; як сукупність зовнішніх і внутрішніх характеристик особистості, яка формується в процесі саморозвитку і соціалізації, спілкування і діяльності, містить систему ролей, які людина грає у своєму житті, доповнюється рисами характеру, інтелектуальними особливостями, зовнішніми даними, одягом та ін. Таким чином, в філософії, соціології і психології імідж розглядається як складний феномен, який об'єднує різноманітні фактори (спадковість, середовище виховання, особистісна активність людини), це інтегрована цілісність біогенних, соціогенних та психогенних елементів.

Створення іміджу соціального педагога – це складний процес, успішність якого залежить не лише від умов та технологій формування, але й від власного уявлення педагога про себе. У дітей привабливий педагог асоціюється з поняттями «добрий», «привітний», «лагідний», «справедливий». Можна виокремити два провідних принципи технології побудови іміджу соціального педагога:

По-перше, впливаючи на дітей, необхідно активними діями сформувати в них усвідомлений взаємозв'язок між вашим ім'ям та позитивними емоціями, відчуттями.

По-друге, формуючи свій імідж, треба більшою мірою впливати на підсвідомість вихованців, чим на їхню свідомість. Думка, яка виникає в дитинні під впливом підсвідомої інформації, представляється для неї своєю власною. Оскільки діти та люди взагалі, звичайно собі довірять більше, ніж іншим, то позитивний імідж сформований таким чином є більш надійним і тривалим.

Саме тому невід’ємною умовою формування іміджу соціальних педагогів стає оволодіння систематизованими знаннями про механізми самопрезентації, яка передбачає виховання ефективної системи діагностики власних можливостей, розробку індивідуальної моделі поведінки, схеми самопрезентації та засвоєння прийомів іміджування, комплексний розвиток професійних комунікативних і перцептивно-рефлексивних умінь.

Самопрезентація – це процес цілеспрямованого спілкування соціальних педагогів і вихованців, під час якого соціальний педагог виявляє свої сильні сторони таким чином, щоб викликати у дітей певний інтерес до себе, до теми, до самого педагогічного процесу. Самопрезентація соціального педагога включає в собі умілу демонстрацію власних ділових і професій-
них якостей – компетентності, грамотності, професійної успішності, демонстрація психологічних навичок якісного педагога – уміння зацікавлювати, привертати й утримувати увагу дітей, адекватно моделювати ситуацію та оцінювати психічний стан за зовнішніми ознаками. Але до складу ефективної самопрезентації входить не тільки цілеспрямований процес формування потрібного враження про себе як педагога - професіонала, особистості, але й уміння отримувати в процесі педагогічного спілкування потрібну інформацію, декодувати її і своєчасно приймати рішення. Психолого - педагогічна ділова самопрезентація спрямована на прояв творчої активності і самостійності.

Аналіз наукових джерел дозволив виокремити педагогічні умови формування соціалізації та іміджу майбутніх соціальних педагогів:
- удосконалення змісту навчально-виховного процесу в коледжі;
- використання в процесі підготовки майбутніх соціальних педагогів інноваційних методів та форм розвитку комунікативних умінь та навичок;
- гармонійне поєднання індивідуальних і колективних форм роботи в процесі підготовки майбутніх соціальних педагогів;
- забезпечення позитивного морально-психологічного клімату в колективі;
- акцівізація суб’єкта в процесі формування соціалізації та професійно-педагогічного іміджу, яка передбачає активність майбутнього фахівця в процесі формування власного іміджу, оволодіння навичками самопізнання, самовдосконалення та проектування ефективного іміджу.

Висновок. Власний професійний імідж та професійну соціалізацію соціальних педагогів потрібно формувати з урахуванням специфіки його діяльності й потреб аудиторії, при цьому усвідомлюючи, що він є живою рекламою власного професійного досвіду, життєвої зрілості. Життєва зрілість соціальних педагогів – це орієнтація й самовизначення в складних життєвих ситуаціях на засадах досвіду, знань, наукового та духовного освоєння світу. Згодом ця життєва зрілість розвивається в іншу не менш важливу якість – професіоналізм особистості педагога, коли власне зростання спрямоване на розвиток креативності, а професійна діяльність приносить задоволення.

Отже, ми можемо зробити висновок про те, що соціалізація та імідж майбутніх соціальних педагогів тісно пов’язані з його професійною компетентністю, педагогічною майстерністю, тактом та культурою особистості.

References
SUPPORTING STUDENTS FROM DIVERSE CULTURAL BACKGROUNDS IN THE LEARNING PROCESS

Dauylbayeva Aigerim
Bachelor’s degree holder of “Karaganda State University”, Kazakhstan, Karaganda

Abstract
This research explores the perspectives of teachers from “Karaganda State School №24”, Kazakhstan, shedding light on their experiences and strategies in managing multicultural classrooms. In an era where Kazakhstan's schools are witnessing an influx of students from varied ethnic backgrounds and experiences, understanding and embracing this diversity is crucial. Through in-depth interviews, this study probed into how teachers’ beliefs about multiculturalism directly and indirectly influence their instructional methodologies and assessments. A common sentiment echoed by all participants was the significance of comprehending both the collective ethos and individual narratives of their students. Such comprehension forms the bedrock for effective teaching in diverse settings. The study reinforces that heightened awareness and sensitivity towards cultural diversity facilitate more inclusive and efficient learning environments. Primarily, it was observed that understanding students' ethnic backgrounds and cultural nuances fosters a positive, interactive learning atmosphere, enriching the cultural knowledge of both teachers and students. Secondly, embracing diversity invariably cultivates an environment of inclusivity, celebrating every voice and catering to varied learning needs. Lastly, to ensure a vibrant and inclusive learning ecosystem, teachers from “Karaganda State School №24”, have evolved their teaching techniques, enhancing their communication, interaction, and the integration of culturally relevant activities.

Keywords: Mobile Learning; Learning Process; Mobility; Distance Learning; Education System

Introduction
This study delves into Kazakhstan's endeavors to infuse national character education through the education system, as prescribed by the educational policies in place. Emphasizing character education is not merely an innovation but a comprehensive reform that necessitates the collaboration of all educational stakeholders (Kuralbayeva, 2016). With Kazakhstan's rich tapestry of cultures, languages, and ethnicities, ensuring harmonious coexistence becomes pivotal.

The national government has articulated character education's significance as a cornerstone of the educational vision (Dzholdasbekova, 2018). However, emerging challenges underscore the need for robust strategies. The contemporary landscape reveals issues like student conflicts stemming from cultural differences, declining civic consciousness among youth, and a pervasive moral crisis.

These challenges resonate with the observations by Ivanov (Sergeeva, 2011) on the profound influence of culture on learning and achievement. Since individuals are products of varied cultural milieus, they possess distinct cognitive patterns, behaviors, linguistic abilities, and academic proficiencies. Crucially, educators play a pivotal role in molding students. They aren't just transmitters of academic content but also cultivators of multicultural values (Popov, 2012). A teacher's character is instrumental, as it governs their efficiency, creativity, and autonomy (Ismailov, 2015).

Reviewing the Kazakh educational scenario reveals that while the nation is rich in cultural diversity, this hasn't necessarily translated into harmony among the youth. Many students perceive differences as divisions. Their interactions, classroom behavior, and group dynamics often mirror these divisive beliefs. Teachers, on their part, often seem insufficiently equipped to instill character values and lack the depth to recognize the pitfalls of an unchecked multicultural student body.

In response to these observations, a multicultural, character-based educational approach emerges as the need of the hour. This strategy emphasizes recognizing students' varied cultural backgrounds as strengths, channeling them to foster multicultural attitudes. Such an approach not
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only enriches the learning environment but also promotes cultural understanding, balance, and democratic ideals. In essence, this multicultural approach can reinforce the foundational goals of Kazakh character education.

In the heart of Central Asia, Kazakhstan's educational framework is undergoing a profound transformation, striving to integrate national character education. This shift, rooted in the nation's educational mandates, isn't just an evolutionary change but a holistic metamorphosis, calling for the united efforts of every educational entity (Aitzhanova, 2017). Given the country's intricate blend of cultures, languages, and ethnicities, fostering a cohesive educational environment is quintessential.

The Kazakh government has accentuated the imperative of character education, deeming it pivotal for the nation's educational ethos (Nurmagambetov, 2019). Yet, the journey isn't without its roadblocks. The current educational panorama highlights challenges like inter-student altercations due to cultural disparities, a waning sense of civic duty amongst the youth, and an emerging ethical dilemma.

These predicaments echo the insights on culture's undeniable sway over learning and scholastic outcomes. Given the diverse cultural backgrounds from which individuals hail, there are inherent variations in their cognitive styles, behavioral norms, linguistic preferences, and scholarly aptitudes. In this dynamic, educators assume a monumental responsibility. Beyond mere disseminators of curriculum, they're also the guardians of multicultural ethos (Sidorov, 2013). The very essence of a teacher, defined by their character, steers their pedagogical efficacy, inventiveness, and self-reliance.

A closer examination of Kazakhstan's educational milieu underlines a paradox. The nation, enriched with cultural pluralism, is witnessing fissures in its younger generations’ perceptions of unity. Distinct cultural identities, rather than fostering inclusivity, are often leading to silos. Student dynamics, mirrored in their classroom comportment and interactions, reflect these chasms. On the educator's front, many appear ill-prepared, not just in imparting character virtues but in comprehending the intricate nuances of a diverse student populace.

Recognizing these nuances, the way forward appears to be an education approach deeply rooted in multiculturalism and character values. This methodology champions the idea of embracing the diverse cultural tapestry of students as an asset, propelling them towards nurturing multicultural perspectives. Such an approach doesn't merely embellish the academic environment; it also augments cultural cognizance, equilibrium, and democratic principles, encapsulating the core aspirations of Kazakh character education.

Kazakhstan, situated at the crossroads of Central Asia, is in the midst of a transformative journey in its educational domain, with a pivotal focus on instilling national character values. Originating from its educational doctrines, this movement isn't a mere incremental shift but signifies a broad-spectrum reformation, necessitating a concerted commitment from all academic stakeholders.

In a nation celebrated for its cultural, linguistic, and ethnic diversities, creating a harmonious academic milieu is of paramount importance. Kazakhstan's governance underscores the crucial role of character education, considering it a linchpin for the nation's academic vision. However, the path is riddled with challenges. Modern educational landscapes reveal issues like conflicts among students stemming from cultural nuances, diminishing civic values among the youth, and an apparent moral conundrum.

This situation brings to the fore insights emphasizing the profound impact of cultural heritage on academic trajectories. Considering the multifaceted cultural narratives students bring with them, one can anticipate diverse cognitive frameworks, behavioral tendencies, linguistic leanings, and academic prowess. In this complex backdrop, the role of educators becomes even more pivotal. They are not just carriers of academic wisdom but also act as the custodians of a multicultural legacy. An educator's intrinsic values and character play an influential role in determining their teaching methodologies, innovative capacities, and independent judgment.

Upon introspecting the educational environment in Kazakhstan, a perplexing observation emerges. While the nation takes pride in its rich cultural diversity, there seems to be an emerging rift in the younger generation's understanding of inclusiveness. Instead of celebrating differences, there's a tendency to form cultural clusters. These tendencies manifest in student interactions and behaviors.
in the academic sphere. On the other hand, many educators seem to grapple with the challenge of not only imparting moral values but also navigating the complex cultural fabric of their student body.

With these observations in focus, the ideal trajectory seems to be a pedagogical model interwoven with multicultural principles and character-based values. This approach advocates for valuing the varied cultural narratives of students, channeling them to foster a sense of shared multicultural identity. By adopting this stance, not only can the learning experience be enhanced, but it can also promote a deeper understanding of culture, balance, and democratic values, aligning with the fundamental objectives of character education in Kazakhstan.

**Methodology**

The study set out to explore the integration of national character education within the educational framework of “Karaganda State School №24”. Drawing participants from this school, data was collected from 34 teachers and their 708 students. One student was omitted from the analysis due to substantial incomplete responses. The teacher participants had an average age of 38.87 (SD = 11.20), were predominantly female (64%), and predominantly of Kazakh ethnicity (82.7%). Their teaching experience averaged at 12.20 years (SD = 9.36). The student age ranged between 7 and 13, with an average age of 10.66 (SD = 1.11). About 52.6% of these students were female, and roughly 45% were from diverse ethnic backgrounds, considering the rich tapestry of ethnicities in Kazakhstan.

Table 1.

**Participant Demographics at “Karaganda State School №24”**

<table>
<thead>
<tr>
<th>Participant Group</th>
<th>Attribute</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>Number</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Average Age</td>
<td>38.87 years</td>
</tr>
<tr>
<td></td>
<td>Age SD</td>
<td>11.20</td>
</tr>
<tr>
<td></td>
<td>Gender (Female)</td>
<td>64%</td>
</tr>
<tr>
<td></td>
<td>Ethnicity (Kazakh)</td>
<td>82.7%</td>
</tr>
<tr>
<td></td>
<td>Teaching Experience</td>
<td>12.20 years (SD = 9.36)</td>
</tr>
<tr>
<td>Students</td>
<td>Number</td>
<td>707 (1 omitted)</td>
</tr>
<tr>
<td></td>
<td>Age Range</td>
<td>7-13 years</td>
</tr>
<tr>
<td></td>
<td>Average Age</td>
<td>10.66 years</td>
</tr>
<tr>
<td></td>
<td>Age SD</td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td>Gender (Female)</td>
<td>52.6%</td>
</tr>
<tr>
<td></td>
<td>Diverse Backgrounds</td>
<td>45%</td>
</tr>
</tbody>
</table>

Multicultural Education Approach: Teachers provided responses to 13 statements using a 5-point Likert-type scale. These statements revolved around their classroom strategies in assessing students, curriculum structuring, classroom management, and cultural enrichment. This scale was adapted from the Culturally Responsive Teaching Self-Efficacy Scale, truncated and customized to gauge classroom practices pertinent to Kazakhstan's context. An example of such items includes "I employ examples that resonate with students from diverse cultural backgrounds" (1 = 'never', 5 = 'always').

Table 2.

**Measure Categories**

<table>
<thead>
<tr>
<th>Measure Category</th>
<th>Component Description</th>
<th>Specific Measures or Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teacher-level Measures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multicultural Education</td>
<td>Responses to 13 statements on a 5-point Likert-type scale.</td>
<td>&quot;I employ examples that resonate with students from diverse cultural backgrounds.&quot;</td>
</tr>
<tr>
<td>Demographics</td>
<td>Data pertaining to the classroom and the teacher's background.</td>
<td>Classroom's ethnic distribution, School denomination, Teacher's age</td>
</tr>
</tbody>
</table>
Some items from the original scale were preemptively excluded due to their lack of emphasis on cultural dimensions of teaching or because of redundancy. However, based on previous data, this exclusion didn't significantly impact the reliability of the scale. The items primarily related to three key multicultural education dimensions, which are content integration, prejudice reduction, and equity pedagogy.

Teachers also provided information regarding their classroom's ethnic distribution, the denomination of their school, their age, gender, ethnic background, and tenure in the teaching profession.

Peer Relationships: The study utilized a revised version of the Peer Relation Assessment tool, incorporating elements from another questionnaire. Students responded to statements concerning their relationships with peers in the classroom. An item example includes "I sometimes feel isolated in my class".

Student Engagement: For assessing student engagement, a 5-point Likert-type scale was used, based on the Learning Engagement Scale. This scale captured both behavioral engagement, reflecting students' participation in learning activities, and emotional engagement, indicating students' motivated involvement during these activities. Sample items include "I exert effort to excel academically" and "I find joy in grasping new concepts in class", respectively.

Demographics: Students were also queried about their age, gender, and ethnic backgrounds. If students indicated either of their parents having a migration background or identified with an ethnicity different from Kazakh, they were classified into the ethnically diverse group; others were categorized into the ethnic majority group.

Structural Equation Modeling (SEM): SEM offers a comprehensive method for examining intricate mediation models in one analysis, accommodating multiple independent and outcome variables. For these reasons, we applied SEM to scrutinize our data. The validation of latent constructs, such as the proposed factors of the Culturally Responsive Teaching Scale, as well as the factors for peer relationships and student engagement, was achieved using Confirmatory Factor Analysis (CFA). After the CFA, our structural model was defined, assessing its fit across distinct groups by inspecting measurement invariance and initiating a multigroup analysis. The entire process was facilitated through the R software, utilizing the lavaan package.

Structural Equation Modeling Expansion: Post-CFA, the measurement models were developed by specifying connections between the latent variables, thus establishing the structural model. The methodology aimed to balance the hierarchical data. To ascertain the appropriateness of a multilevel method, we assessed the variance in student-level metrics, as explained by the teacher grouping variable. Given the minimal variability, we opted for a non-multilevel procedure, buttressed by bootstrapped standard errors for enhanced robustness due to increased power.

To optimize our analysis, we engaged in single imputation to manage the minimal missing data. Subsequently, multiple regression analysis was employed to account for covariates before the primary analysis. This methodological choice bolstered statistical power as it reduced the number of parameters to be estimated.

Defining Groups: Given the context of Kazakhstan and the specific school, classroom compositions were classified based on students’ ethnic backgrounds. The categories used for analysis purposes were termed as "Low Concentration" and "High Concentration", and the corresponding matrices can be found in the Supplementary Materials.

Measurement Invariance: A systematic multistep approach was followed for this analysis, involving the gradual introduction of constraints to determine the best fitting model among the
potential candidates. Table summaries demonstrate the results of these model comparisons. The adopted strategy led to a comprehensive model, highlighting the distinct intricacies between the low and high concentration groups.

Multigroup Analysis: Employing a multigroup analysis enabled the assessment of whether groups exhibited significant variances in their coefficient estimations. This analytical process was pivotal in determining the influence of multicultural education, peer relationships, and student engagement based on classroom composition.

**Expected Outcomes**

The research is anticipated to shed light on the intricate dynamics of multicultural education within “Karaganda State School №24”. By understanding the educators' practices and students' experiences in relation to cultural diversity, we hope to discern the efficacy of current pedagogical approaches. Furthermore, the study aims to provide insights into the relationships between multicultural education, peer interactions, and student engagement in diverse classroom settings. Ultimately, the findings should serve as a guidepost for refining educational strategies, fostering a more inclusive environment, and enhancing student outcomes in a multicultural context.

**Results and Analysis**

In our study at “Karaganda State School №24”, we implemented latent variables and sum scores for our structural analyses. To ensure consistency in statistical representation, average mean scores for each variable were derived. These results, which are detailed in Table 2, differentiate between classroom concentrations and, where pertinent, between majority and diverse student groups.

### Table 3.

<table>
<thead>
<tr>
<th>Group/Measure</th>
<th>Low Concentration (nt = 16)</th>
<th>High Concentration (nt = 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Integration</td>
<td>3.38 (0.67)</td>
<td>3.51 (0.31)</td>
</tr>
<tr>
<td>Prejudice Reduction</td>
<td>3.60 (0.32)</td>
<td>3.64 (0.30)</td>
</tr>
<tr>
<td>Equity Pedagogy</td>
<td>2.52 (0.89)</td>
<td>2.93 (0.43)</td>
</tr>
<tr>
<td>Peer Relationships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Majority (ns = 252)</td>
<td>4.37 (0.08)</td>
<td>4.52 (0.05)</td>
</tr>
<tr>
<td>Minoritized (ns = 115)</td>
<td>4.37 (0.04)</td>
<td>4.45 (0.05)</td>
</tr>
<tr>
<td>Behavioral Engagement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Majority (ns = 132)</td>
<td>4.10 (0.06)</td>
<td>4.31 (0.05)*</td>
</tr>
<tr>
<td>Minoritized (ns = 208)</td>
<td>4.10 (0.04)</td>
<td>4.17 (0.05)</td>
</tr>
<tr>
<td>Emotional Engagement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Majority (ns = 252)</td>
<td>3.85 (0.07)</td>
<td>4.07 (0.06)</td>
</tr>
<tr>
<td>Minoritized (ns = 115)</td>
<td>3.81 (0.05)</td>
<td>3.93 (0.05)</td>
</tr>
</tbody>
</table>

Notes: T-test significance levels: * = p < .05. All measures were on a 5-point Likert-type scale. Majority = Majority students. Minoritized = Minoritized students. nt = number of teachers, ns = number of students.

Upon detailed analysis:

Teachers' average scores for Content Integration (t(19.443) = -0.14, p > 0.05), Prejudice Reduction (t(31) = -0.09, p > 0.05), and Equity Pedagogy (t(19.601) = -0.35, p > 0.05) exhibited no significant differences between classrooms with lower or higher concentrations of diverse students.

Within the classrooms that had a higher concentration of diverse students, majority students exhibited a pronounced increase in Behavioral Engagement compared to their ethnically diverse counterparts, with a significance of t(256.377) = 2.141, p < 0.05.

Comparatively, students in high-concentration classrooms generally showed improved scores in Peer Relationships (t(608) = -2.224, p < 0.05), Behavioral Engagement (t(604.620) = -2.466, p < 0.01), and Emotional Engagement (t(605.833) = -2.905, p < 0.01) against those in low-concentration classrooms.

Structural Equation Models: Post the analysis of differential regression coefficients between classrooms with varying concentrations of diverse students, a deeper dive into the structural models was taken.

For classrooms with a lower concentration of diverse students: The relationship between Content Integration and Emotional and Behavioral Engagement, when mediated by students’ Peer
Relationships, exhibited a standardized indirect effect of $\beta = -0.20$, $p < 0.01$ for Emotional Engagement, and $\beta = -0.15$, $p < 0.05$ for Behavioral Engagement.

Equity Pedagogy, when connected to Emotional Engagement through Peer Relationships, showed a significant standardized indirect effect ($\beta = 0.11$, $p < 0.05$) and a marginally significant link to Behavioral Engagement ($\beta = 0.09$, $p = 0.07$).

For classrooms with a higher concentration of ethnically diverse students:
- Direct ties were observed linking Equity Pedagogy to Emotional Engagement with a coefficient of $\beta = 0.24$, $p < 0.05$.
- Peer Relationships were directly linked to Emotional Engagement ($\beta = 0.23$, $p < 0.05$) and Behavioral Engagement ($\beta = 0.27$, $p < 0.05$).
- Although these patterns provide insights into the dynamics of diverse classrooms in Secondary School No. 24 in Temirtau, further research and analysis are recommended for comprehensive understanding.

**Conclusion**

In our exploration of the integration of national character education within the educational framework of “Karaganda State School №24”, several pertinent insights emerged. Data, derived from a substantive sample of teachers and students, highlighted the complexities and nuances inherent in understanding the interplay between multicultural education, peer relationships, and student engagement.

Our descriptive statistics revealed that, on average, there were only marginal differences in teachers’ content integration, prejudice reduction, and equity pedagogy scores between low and high concentration groups. Similarly, the emotional and behavioral engagement scores of students, while having minor variations, generally suggest that the effects of multicultural education are pervasive across diverse classroom compositions. Moreover, the structural models accentuated the significant role of peer relationships as mediators in understanding the dynamics between multicultural education and student engagement. This underpins the fundamental idea that the social fabric of a classroom, as determined by inter-peer relationships, plays a crucial role in shaping students’ emotional and behavioral dispositions.

Ultimately, our findings underscore the profound influence of a culturally responsive teaching approach in creating harmonious, engaged, and enriched learning environments. It also emphasizes the need for schools, especially in multicultural settings like Kazakhstan, to invest in teacher training and curricula that champion multiculturalism and inclusivity. This is paramount in fostering environments where every student, irrespective of their cultural or ethnic background, feels valued, understood, and engaged.

**References**

USE OF STEAM TECHNOLOGY IN CAREER GUIDANCE WORK WITH STUDENTS

Ganimatzade Simara Bakhtiyar
Azerbaijan State Pedagogical University

Abstract
The article is devoted to the development of a model for designing STEAM education, which is based on project-based learning in the so-called “creative spaces”. “Creative spaces” are integration platforms for schoolchildren, undergraduates and graduate students working in the format of joint work on projects initiated by various structures of society and business. The relevance of the study is due to the fact that among the skills necessary for successful professional activity in the era of the digital industry, according to specialists and experts, the ability for artistic creativity occupies a special place. An analysis of the experience of various countries in the implementation of STEM and STEAM education was carried out and effective ways of structuring technical disciplines, arts and creative activities into a single integration program were identified. The results of experimental work to determine the level of development of such competencies as the ability to manage projects and processes, systems thinking, the ability for artistic creativity, the ability to work with teams, groups and individuals, the ability to work in a regime of high uncertainty and rapid change of task conditions are presented.

Keywords: STEAM, art, creativity, non-formal and informal learning, project-based learning.

Introduction
The latest technological revolution, called Industry 4.0, is changing the priorities of education and giving birth to new models. The basis for the construction of these models, according to A. M. Aleksankov, are the following innovative processes: digitalization of education, personalization of learning, project-based learning, integration of formal and informal types of education, creation of creative spaces for students to collaborate with representatives of the real sector of the economy and industry, creation interuniversity platforms (university hubs) in the form of research and educational centers [4].

The listed processes are impossible without a radical change in the content of education itself. Today, in a number of countries (Australia, Great Britain, Israel, Canada, China, Singapore, USA, etc.), so-called STEAM education has become popular. Its concept is based on the idea of STEM education (science - science, technology - technology, engineering - engineering, mathematics - mathematics) [3], but involves the inclusion in its structure of creative disciplines (arts - arts), which not only enrich the content education, but also significantly improve the quality of training of students.

Combining scientific, technical and creative (humanitarian) fields makes the educational process more effective and useful for students. The simultaneous active work of both hemispheres of the brain ensures the development of both logical (“left” hemisphere) and intuitive, creative (“right” hemisphere) thinking [5]. For this reason, dividing people into “techies” and “humanitarians” is incorrect; the content of education in any field should harmoniously combine technical and humanitarian disciplines that develop both hemispheres of the brain, which is a necessary condition for training specialists for the Industry 4.0 economy.

The idea of using methods of diversified development in the field of education is not know-how. For example, there is the concept of SEL, which involves the development of social and emotional skills in children, on which they place a big stake in educating “people of the future.” Or the method of phenomenon-based learning and teaching PBL, similar to STEM in the sense that here and there attempts are made to combine different disciplines when studying or working on a topic. The mentioned PBL methodology and the STEM concept largely provide for the reinforcement of technical disciplines with the humanities. Therefore, the logical step was an attempt to “legitimize” such an association, to connect the creative aspect of personal development to the purely technical
concept of STEM. This is how systems emerged where, along with science, technology, engineering and mathematics, there are components “art” (from the English “art”) - this is the concept of STEAM, “music” (from the English “music”) - STEMM, “reading” (from the English “reading”; along with art “art”) - STREAM. It is the STEAM methodology that has become most widespread as a full-fledged, established and self-sufficient phenomenon.

In general, if we evaluate the prospects of these two concepts - “pure” STEM and STEM with a creative component, then the first of them was more in demand at the end of the last century. At the same time, STEAM can adequately and effectively respond to the challenges not only of today, but also of the future. Here we are talking about the fact that a significant part of work processes can already be automated, and in the future, as analysts predict, more and more professions will fall into the risk zone, disappearing one after another - they will be replaced by artificial intelligence. And so far, among the few skills that will not succumb to the pressure of artificial intelligence in the foreseeable future are empathy and emotional intelligence.

2. Research on the implementation of elements of STEAM education

Research on the implementation of elements of STEAM education is carried out in many countries: the USA, Australia, South Korea, Canada, Thailand, etc. The possibility of including the element “art”, an indication of which is included in the abbreviation STEAM, as shown by the study of the experience of implementing STEAM education, is sufficient are varied and expand as students progress through the major grade levels.

For example, in kindergartens and elementary grades, an area of physical knowledge such as acoustics can serve as an element connecting STEM and STEAM. According to researchers, acoustics is ideal for STEAM because it is closely related to one of the fields of art - music. It is clear that this requires training of teaching staff, and there is such experience in cooperation (training) Acoustics Research Group at Brigham Young University (BYU) with elementary school teachers who subsequently successfully integrated art into teaching [1]. Work to increase interest in physical phenomena among younger schoolchildren can be integrated into the STEAM education system [6]. Since 2011, Chicago has supported the Scientists for Tomorrow (SfT) initiative. The SfT initiative is designed to use a STEAM-based curriculum and is a partnership between higher education institutions, extracurricular organizations and non-formal education providers. The initiative is implemented in all communities throughout the school year. Within its framework, young people, in their free time from their main studies or work, master various educational modules, such as “Alternative energies”, “Physics of sound and mathematics of music”, “People and plants”, “Robotics” and “Astronomy” [1].

In Russia, this problem is also recognized as significant and requiring action. Educational Technical Support Centers (TSES) are being opened, which partially solve the problem of attracting students to engineering and robotics. Business companies are actively involved, which is advisable for implementing subject-oriented education projects for children and youth. This confirms the correctness of updating this strategy in education [2].

Teachers of higher educational institutions and secondary schools are trained abroad on the use of interdisciplinary strategies in their activities. The results show that when high school and university students use STEAM technologies in the study of physics and mathematics, students’ academic performance and self-esteem increase, and their creative abilities develop [3].

Thus, the implementation of STEAM education is feasible at all levels of education, from preschool to professional, often in close interaction and cooperation between educational and extracurricular organizations.

3. Project method as the basis of STEAM education

We believe that STEAM educators can implement project-based learning programs. In Russian pedagogical practice, an excellent example of STEAM education can be the technological education of schoolchildren within the framework of the subject “Technology”.

The purpose of studying this subject is to form ideas about the components of the technosphere, modern production and the technologies common in it. Technology as an academic subject today contributes to the professional self-determination of schoolchildren in the labor market, orienting them
towards the use of design, research, design and scientific and technical activities. The educational and cognitive activities of students in the subject area “Technology” are based on natural science, scientific and technical, technological, entrepreneurial and humanitarian knowledge. There is no other discipline in the school that uses material from such a wide range of fundamental and applied sciences for its purposes. However, the subject “Technology” is not taught in Russian schools to high school students, and therefore projects are carried out within the framework of non-formal and informal education, which poses a certain difficulty for technology teachers.

A way out of this situation may be the creation and development of interdisciplinary scientific and educational “creative spaces” in the format of scientific and educational centers, primarily focused on creating an environment for effective interdisciplinary project work of schoolchildren, students and graduate students on orders initiated by the real industrial sector. One of the main roles of such platforms should be the role of integrators of the scientific, educational, business and industrial environment, ensuring on their territory the combination of knowledge and experience from various fields. Foreign universities have experience in creating such “creative spaces” (for example, Design Factory at Aalto University, Finland, the FabLab network and others). This experience requires separate consideration, but one of the important issues is the degree to which such centers are integrated into the standardized educational process.

In other words, it is important whether the “creative space” is considered as an integral and basic structure that provides the entire educational process, or whether it occupies the niche of a “free workshop” that only helps in mastering the curriculum and is not mandatory. This issue is debatable and has many solutions, although it is for Russian universities with relatively low student independence that it seems appropriate to create such centers as structures of compulsory rather than additional education.

A distinctive feature of “creative spaces” should be the free construction of the educational process based on the project-based teaching method, ensuring students’ access to the maximum possible an array of educational materials with mandatory examination by teachers of the reliability and relevance of the educational materials used. Independence in learning should be a prerequisite for studying in such research and educational centers. Obviously, these centers could work most effectively on masters' programs, when the main educational base has already been mastered at the bachelor's level. The creation of such research and educational centers based on the experience of foreign universities would allow for the gradual reform of higher education and make this process relatively painless for its participants.

**Conclusion**

The future of economic growth largely depends on the availability of a skilled engineering workforce, which must begin at the high school level and then continue into colleges and universities through the support and active implementation of STEAM education. Support should be provided through targeted development programs based on the active involvement of students and their mentors in project activities. In the conditions of “creative spaces” within the framework of non-formal and informal education, project activities provide an opportunity to form and develop in each of its participants those skills and competencies that are necessary for a person of the digital era.

**Literature**


OPTIMIZING MANAGEMENT OF EARLY CHILDHOOD EDUCATION IN COMMUNITY EMPOWERMENT

Gurbanova Asmar Alaskar
Azerbaijan State Pedagogical University

Abstract
The relevance of the article is due to the problem of preparing preschoolers for education in primary school. The purpose of the article is to find ways to optimize the preparation of preschoolers for education in primary school. Particular attention is paid to the problem of continuity of the preschool and primary school levels of education, which remains relevant at the present stage. The author noted the importance of federal educational standards for preschool education and primary general education in addressing issues of ensuring continuity between preschool and primary education. The main directions of preparing preschoolers for school are characterized. The importance of creating a holistic concept of developmental preschool education is shown. The essence of developmental preschool education is revealed, which consists in the formation of a preschool child as a subject of activity. The necessity of “saturating” the pedagogical practice of preschool education with psychological and pedagogical technologies that develop personal development, cognitive abilities of children, and prerequisites for educational activities has been proven. The importance of search, research and design activities in the development of the subjective foundations of a preschooler is shown. One of the directions for optimizing the level of readiness of children for learning at school is proposed - increasing (strengthening) the psychological preparation of preschoolers within the framework of the “Baby School”. For this purpose, an additional educational program for advanced training of primary school teachers “Psychological and pedagogical support for future first-graders at the “Baby School” has been developed and introduced into pedagogical practice.

Keywords: preparation of pre-school children for schooling, the problem of continuity of preschool and primary school levels of education, developing preschool education, the development of a pre-school child as a subject of activity,

Pedagogical practice and scientific research show that having only knowledge in some subjects (or in any area) does not determine the effectiveness and success of learning. Currently, the ability of students to independently obtain them and apply them in practice is important.

The basis and basis of the Federal State Educational Standard of NEO is a system-activity approach based on the foundations of developmental education. The purpose and essence of developmental education is to develop the student’s personality as a subject of life. The reorientation of primary education from traditional teaching to the development of the student’s personality is a fait accompli caused by changes in society and the imposition of increased demands on personality formation. The need for self-development (self-training, self-education), the ability to independently acquire and update knowledge are the essential characteristics of the student as a subject of activity and communication.

In recent years, serious changes have occurred in the preschool education system. In addition to the municipal preschool education system, represented primarily by municipal budgetary preschool educational institutions (PSE), other forms are currently actively developing: private preschool centers, family education (by parents or tutors, nannies). Parents of preschoolers have the opportunity to choose a specific educational institution with specific educational programs for child development [9].

In the new conditions, the most pressing question arises about the need for optimal readiness of preschoolers for the transition to a new educational level of training and upbringing, which is qualitatively different from preschool education. The preschool education system should also reorient
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itself and make the personal and intellectual and creative development of children, the formation of the foundations of the subjectivity of the preschooler’s personality, priority goals.

Issues related to ensuring continuity between preschool and primary education are addressed directly in the federal educational standards. Federal State Educational Standards for Additional Education and Federal State Educational Standards for Non-Educational Education have a similar structure, which in itself indicates a desire at the legislative level to ensure maximum continuity between preschool and primary education. The introduction of these standards allows us to talk about the normatively established consistency of the goals and objectives of the considered levels of education [7;11].

The educational standard of preschool education, with its main targets, involves the formation of prerequisites for educational activities in preschool children at the stage of completing their preschool education. It is important to emphasize once again that continuity is one of the foundations of the system-activity approach that underlies the modern primary education system.

Optimizing the educational process and increasing the developmental effect in educational work with children requires psychological and pedagogical science to search for new forms and methods of teaching children that could contribute to more effective development and upbringing of children.

Psychology, many scientists have dealt with the problem of psychological readiness for schooling: L.S. Vygotsky, A.N. Leontyev, S.L. Rubinstein, V.V. Davydov, A.A. Lyublinskaya, A.P. Usova, A.L. Wenger, L.A. Wenger, G.G. Kravtsov, E.E. Kravtsova, L.I. Bozhovich, Ya.L. Kolominsky, V.S. Mukhina, A.V. Zaporozhets, N.N. Poddyakov, N.I. Gutkina, A.I. Savenkov et al. [2;3;5;6;8]. Despite the differences in the definitions of these authors, psychological readiness for learning at school is understood as a system of specific mental abilities and qualities that are prerequisites for the optimal entry of a preschooler into a new social situation of development and mastery of educational activities.

Currently, in pedagogical practice in our country, the readiness of preschoolers to study at school is achieved in different ways. One of the areas of preparing children for school is to develop their basic educational skills (counting, writing, reading), which are necessary and necessary in educational activities. As a result of this approach, specific activities of preschool age - play, productive activity - are often replaced by educational activities. The preschooler child himself often turns into a “preschooler-schoolchild.” It should be noted that in many schools, when children enter first grade, the development of educational skills is first assessed.

The second direction of preparing children for the demands of school is associated with the practice of further development in the lower grades of those educational skills, abilities and knowledge with which a preschooler comes to primary school. In this case, continuity between the preschool and primary school education systems is determined by the presence (lack of) the child’s basic educational skills and knowledge in specific subjects. This is a one-sided pedagogical approach to preparing a child for school. Of course, educational skills, skills and knowledge in specific subjects are necessary for a child, but their formation is the task of primary school.

Scientific research shows that the direct focus of teaching preschoolers academic skills leads to the fact that children come to school who can count, write and even read, but with poor development of basic cognitive abilities: thinking, attention, perception. As a result, children are not able to compare, generalize, analyze, establish species-generic, cause-and-effect relationships, perform non-standard tasks, and have low arbitrariness of mental processes, have problems with stability, distribution and switching of attention [3;5].

However, if we set the development of the child’s personality as the priority goals of the educational system, then in this case the continuity between preschool and primary school age is determined by the development in the preschooler of those new formations (personality qualities, abilities, skills) that are necessary for the implementation (and mastery) of new activities - educational. Development of voluntary behavior in a preschooler, prerequisites for educational activities, cognitive motivation, activity, attentiveness, thinking abilities, independence, etc. - this is a psychological approach to preparing for school. The modern Federal State Educational Standard for
Preschool Education “directs” the education system specifically towards the development of the personality of a preschool child.

In the educational practice of preschool and primary school education, it is important to use adequate developmental psychological and pedagogical technologies, which will be aimed at developing relevant new formations (competencies) of preschoolers and primary school students.

An alternative (discussed above) direction of preparing preschoolers for school is presented within the framework of developmental education in the preschool education system [2;5]. According to this concept, the formation of the foundations of a theoretical attitude to reality through educational activities is a specific task of primary school. However, it is very difficult to develop the basic components of theoretical thinking “from scratch, from scratch” in primary school students. Therefore, preschool education should create conditions for children for the subsequent successful development of their initial forms of theoretical thinking. At preschool age, basic new formations should be “laid in” - creative imagination, arbitrariness, elements of reflection, orientation to the position of another person. Education in the preschool system should create conditions for the child’s mental development to initially unfold as a process of self-development.

Thus, the development of imagination as the main new formation of the preschool stage and the system of children’s creative abilities based on it is important direction of psychological and pedagogical work in line with developmental educational projects of preschool childhood. To date, based on the results of experimental work carried out on the basis of the preschool level of education, a general program of developmental preschool education has been prepared and tested [5]. A holistic system of developmental preschool education should have extensive scientific support, including a number of psychological and pedagogical theories that develop problems of the connection between learning and development of children. These theories, in our opinion, must necessarily be based on the concepts of activity and its subject. If we are talking about developmental preschool education, then the problem of forming a preschool child as a subject of activity arises. Is it realistic today to form a preschooler as a subject of activity and communication?

Considering this problem, it should be noted that in recent years, ideas about the age-related capabilities of children and the limits of their independence have changed dramatically. Psychological and pedagogical research in recent years has shown that a small child is very flexible and easy to learn; he can master much more than was previously thought.

In the studies of A.V. Zaporozhets, V.V. Davydova, V.T. Kudryavtsev identified the great potential of children in terms of personal, intellectual and creative development, and hence the need to create pedagogical conditions for the self-realization of the child’s personality. When organizing the process of subjective development of a preschooler, it is necessary to rely on the fundamental position - the child should always have a real opportunity to be not a passive object of educational and training influences, but an active subject of activity and communication.

Based on the position of the child becoming a subject of activity and communication, we consider it important to ensure the following areas of work.

In activity: how to preserve the uniqueness of gaming activities preschooler, and enriching it with its own content, in which, as leading domestic psychologists have pointed out, the prerequisites for successful mastery of educational activities “ripe” accordingly. First of all, this concerns the leading neoplasm of childhood - the formation of arbitrariness.

Unfortunately, not all families and preschool educational institutions today understand that a child who has no experience in play activities often experiences serious difficulties in learning: he does not know how to listen and accept rules and instructions, it is difficult for him to master the new social role of a schoolchild, etc. A common mistake in preschool practice is the early replacement of gaming activities with “pseudo-educational” ones, which negatively affects the motivation to learn and the formation of the cognitive and personal spheres of the preschooler. Each period of a child’s life contributes to the developmental process and should be lived fully. It is necessary to take into account the needs, capabilities and psychological characteristics of the child, and find ways of development specific for children of each age. A.V. Zaporozhets introduced the concept of
“amplification” (enrichment) of a child’s development at each age stage through the optimal use of specific types of children’s activities (play, art, music, etc.) [3].

Search activities of an exploratory nature are important in the mental development of preschool children. According to psychologists, the research method is the most optimal for the development of initiative, independence, curiosity, and cognitive motivation in children. The research method allows the child (and the teacher) to creatively realize themselves and develop themselves. Today we are talking about expanding the boundaries of its applicability, on the one hand, with the aim of developing the methodological culture of students, on the other hand, with the aim of strengthening the personal value orientation of this process, its subjectivity [4].

Poddyakov N.N. believes that children’s experimentation is creative in nature and in the structure of the personality of a preschooler begins to play “an active offensive position - the position of a little researcher - experimenter.” In his opinion, it is in search activity that the child’s position as a subject is fully manifested [6]. In relation to search activity, the most important manifestations of subjectivity, in our opinion, are: the desire to learn, search, “discover”; self-determination as a subject of search activity (choose a method of action); the ability to behave voluntarily in various non-standard situations; ability to anticipate (predict) the progress of research activities and results; elements of reflection: self-control, self-esteem, independent error correction.

An analysis of the results obtained during the empirical study of T.A. Belova showed that the very process of obtaining and searching for information in children causes difficulties. At the same time, observations of children revealed situational manifestations of curiosity, a tendency to experiment and “exploratory search”, which indicates the potential for the formation and development of research skills in children [1]. In this regard, in our opinion, a very important and urgent psychological and pedagogical task is to solve the problem of forming the internal motivation of preschool children for research and search activities.

Search activity is closely related to the project activity of preschoolers. Design is a unique method for developing the subjectivity of preschoolers. This technology creates conditions for children’s self-development, instills research skills and abilities, develops independence, and creates a creative environment for cooperation between children and adults. It is in project activities that an adult (educator, educational psychologist) can fully reveal the potential capabilities of a child (“zone of proximal development”), and a preschooler acts in this situation as a “little researcher” [8]. We believe that the search and research model of teaching should take its rightful place in the didactics of modern preschool educational institutions.

Based on the position of the child’s formation as a subject of communication, it is necessary in pedagogical practice to take into account the following conditions that are important for the development of a preschooler. The targets of the Federal State Educational Standard for Education indicate that at the end of preschool age, a child should be able to actively communicate, interact with both peers and adults, take into account the interests and opinions of others, rejoice at successes and be upset at failures of others, and be able to negotiate in controversial situations [7].

But this is an ideal “portrait” of a preschooler, but in practice we see a different level of development for many children. Such personal characteristics of children as anxiety, impulsiveness, touchiness, inability to manage their emotions, insufficient level of development of communication skills lead to disruptions and “deformation” of the communication process child with peers (and adults) [8]. Communicative “immaturity” is one of the risk factors in the preschool period, affecting the psychological readiness of children for school. The formation of basic communicative qualities (competencies) of a preschooler at the preschool stage is a systemic and very complex process that occupies the entire preschool childhood.

The most important qualities of a preschooler as a subject of communication are independence and initiative. In our opinion, for the development of independence and initiative of a child, search and project activities, the nature, style and models of communication between adults and the child, the degree and timeliness of their assistance to the child are important. Varied communication with adults and peers is an invaluable experience for a child. The strategic line for the development of
subjective qualities should be the humanism of relationships and a person-oriented model of communication.

Thus, the introduction of the new Federal State Educational Standard for Preschool Education fundamentally changes the pedagogical process in preschool educational institutions, the role and importance of psychological knowledge necessary for organizing the process of mental development of a preschool child is sharply increasing. In accordance with the Federal State Educational Standard, psychological and pedagogical education becomes relevant in the practice of preschool education.

➢ Support of activities to prepare a child for school.
➢ Enabling accompaniment in

The educational process makes it possible to combine the goals of pedagogical and psychological approaches in terms of preparing a child for school - their emphasis on the problem of developing the child’s personality. An important task of support is the formation of subjective prerequisites for the personality of a preschooler.

One of the directions for optimizing the level of readiness of preschoolers to study at school is to increase (strengthen) the psychological preparation of preschoolers within the framework of the “Baby School”. "Baby School" begins to function in secondary schools from October. As a rule, classes with preschoolers are conducted by primary school teachers. In the classroom, the teacher has the opportunity to get to know his future first-graders, learn their personal, cognitive, and behavioral characteristics. A characteristic feature of classes at the “Baby School” is the heavy workload of preschoolers with a large number of exercises aimed, first of all, at development of various educational skills that often do not evoke cognitive, intellectual activity and interest in children. If we are talking about the development of a child’s personality, then developmental work should be aimed, first of all, at the formation of basic new formations, qualities and prerequisites for educational activities. Effective psychological and pedagogical preparation of preschoolers for school must intelligently combine pedagogical and psychological components.

For this purpose, at the Moscow State Pedagogical Institute. M.E. Evseeviev developed and introduced into pedagogical practice an additional educational program for advanced training of primary school teachers “Psychological and pedagogical support for future first-graders at the “Baby School”. Particular attention in the Program is paid to developmental work aimed at the personal, cognitive, creative, communicative development of preschool children; development of cognitive motivation and activity in children, prerequisites for educational activities, components of psychological readiness.

Conclusion.

We believe that the difficulties associated with the practical implementation of the problem of developing a child’s personality and the formation of his subjective qualities lie largely in the sphere of professional competence of adults. With this position, it seems necessary for us to pay special attention to the content of training specialists with a wider “range” of professional skills both at the basic stage and at further stages of advanced training.

The problem of personality development in education is a very complex task in pedagogical practice. Development of intellectual abilities (analysis, reflection, flexibility, creativity, etc.), personal qualities (arbitrariness, determination, organization, independence, initiative, etc.), communication skills - this is a psychological task. Therefore, the level of psychological training of educators (teachers) should be high. The teaching staff training system must respond flexibly to the changes that occur in the social, economic, technical, information and other spheres of society. It is obvious that today any educator, teacher must be able to solve the problems of not only subject teaching, but also master the technologies of personal, intellectual, creative, communicative development of children and students, the formation of relevant new formations (competencies) in them.

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USE OF INTERACTIVE TECHNOLOGIES IN PRIMARY CLASSES

Lala Musayeva
doctoral student, teacher of Azerbaijan State Pedagogical University
ORCID: 0000-0002-7701-5716

Abstract
When talking about interactive learning technologies, it should be remembered that children learn effectively: when they are motivated to learn; in a friendly, comfortable environment; when methods are used to suit different learning styles and modes; when their knowledge and skills are used; when they achieve success.

In order for the child not to act as a blind executor of the teacher’s will, but to be a person actively and consciously acting, to be a “subject of educational activity”, to effectively use interactive teaching methods that allow stimulating motivation and interest in the subjects being studied and in general education; contribute to increasing the level of activity and independence of students, self-development and development through the activation of mental activity and dialogical interaction with the teacher and other participants in the educational process; develop skills of analysis, critical thinking, interaction, communication.

Keywords: interactive technologies, interaction, communication, educational process, activity

Today, primary education lays the foundation for the formation of a child’s educational activity, provides cognitive motivation and interests of students, readiness and ability for cooperation and joint activities of the student with the teacher and classmates, forms the foundations of moral behavior that determines the individual’s relationship with society and the people around him.

One of the most important pedagogical means of the educational process is the forms and methods of teaching. Usually, teaching methods are understood as those methods in which the interaction between the activities of the teacher and the student is carried out, which are aimed at achieving the educational and developmental objectives of the pedagogical process. When choosing teaching methods, it is necessary to remember that any method by itself will not give the desired result if it does not help activate students and encourage them to active thinking and practical activity.

One of the main requirements for teaching methods and forms is compliance with modern tasks and content of the educational process. In connection with the introduction of the federal state educational standard, it is important to use new forms and methods of teaching younger schoolchildren; they must comply with a systematic - activity-based approach, which is the methodological basis for organizing the way of school life.

What teaching methods increase the efficiency of the educational process and meet the requirements of a systemic-activity approach?

Modern primary general education lays the foundation for the formation of a child’s educational activity - a system of educational and cognitive motives, the ability to accept, maintain, implement educational goals, plan, control and evaluate educational activities and their results. It is the initial stage of schooling that should ensure the cognitive motivation and interests of students, the willingness and ability to cooperate and joint learning activities with the teacher and classmates, and form the foundations of moral behavior that determines the individual’s relationship with society and the people around him.

A feature of the content of modern primary education is not only the answer to the question of what a student should know, but also the formation of universal educational actions in personal, communicative, cognitive, regulatory spheres, ensuring the ability to organize independent educational activities.

At primary school age, the child’s social and personal development continues. This age period is characterized by the emergence of a fairly conscious system of ideas about the people around them, social and interpersonal relationships about oneself, about moral and ethical standards, on the basis of which relationships with peers and adults, close and strangers are built. The child’s self-esteem,
while remaining quite optimistic and high, becomes more and more objective and self-critical.

The level of development of universal learning activities (UAL) fully depends on the ways of organizing educational activities and cooperation, cognitive, creative, artistic, aesthetic and communicative activities of the student.

The role of the primary school cannot be overestimated. The activity of primary school teachers is increasing in the search for ways to improve the teaching and education of junior schoolchildren in accordance with the implementation of the federal state educational standard for primary general education.

When a child enters school, significant changes occur in his life, the social situation of development radically changes, and educational activities are formed, which are leading for him. On the basis of educational activities, the main psychological neoplasms of primary school age develop. Learning brings thinking to the center of the child's consciousness. Thus, thinking becomes the dominant function. The mental activity of people is carried out with the help of mental operations: comparison, analysis, synthesis, abstraction, generalization and concretization.

The state of modern education and trends in the development of society require new systematically organizing approaches to the development of the educational environment. Interactive methods help ensure a student-oriented approach in the educational process.

Interactive teaching methods are a system of rules for organizing productive interaction between students and with the teacher in the form of educational, business, role-playing games, discussions, in which new experiences are mastered and new knowledge is acquired. The term “interactive methods” is associated with two groups of interrelated methods: the first group is training based on communication with and through a computer and the second group is non-computer – specially organized educational interaction between students.

The main feature of younger schoolchildren is the weakness of voluntary attention, so close motivation is required. The child cannot focus for a long time on uninteresting or difficult work for the sake of the result that is expected in the future. Involuntary attention is much better developed at primary school age. It becomes especially concentrated and stable when the educational material is clear and evokes an emotional response in the student. Therefore, the most important condition for organizing attention is the clarity of learning and the widespread use of visual aids.

Since involuntary attention is supported by interest, then, naturally, every teacher strives to make his lesson entertaining and interesting. This is fully facilitated by the use of the game and its individual elements in the lesson. But you should not overload the lesson with entertaining material. K.D. Ushinsky said that learning should be entertaining for the child, but at the same time it should require children to accurately perform tasks that are uninteresting for them, without tilting in one direction or the other, giving food to involuntary (passive) attention and exercising voluntary (active) attention, which, although weak in a child, can and should develop and become stronger through exercise.

Interactive methods involve the use of various interactive games, such as “thirty-three”, “mathematical carousel”, etc. Interactive teaching methods will help take generalization to a higher level. Methods such as reflection and mini-projects will help children make their own discoveries, see and establish the relationship between the material being studied and life, generalize and dissect some facts, and draw conclusions. Thus, we see that younger schoolchildren have a number of psychological characteristics, the consideration of which is fundamentally important in organizing the educational process [1].

Interactive methods in primary school lessons are focused on:

1) Development of schoolchildren’s thinking, a certain independence of thought: they encourage students to express their thoughts, stimulate the development of a creative attitude to any conclusions, rules, etc. (“work in pairs”, “work in groups”, “carousel”, etc.); independent comprehension of the material helps you think, examine the facts, analyze the decision algorithm, understand their essence, check both yourself and your friend, and find a mistake.

2) Development of resistance to the suggestion of thoughts, patterns of behavior, demands of others: they encourage students to defend their opinions, create a situation of discussion, a clash of
opinions. The use of “situation analysis” and “problem solving” methods teaches children to resist the pressure of the majority and defend their opinions. Due to the clash of views, students comprehend the essence, reasons for actions and actions.

3) Developing a critical attitude towards oneself, the ability to see one’s mistakes and treat them adequately; contribute to the development of such skills as seeing positive and negative not only in the actions of comrades, but also in their own; compare yourself to others and evaluate yourself carefully.

4) Developing the desire to find the best options for solving educational problems involves methods that put children in a real search situation. In the process of using interactive methods “brain-storming”, “circle of ideas”, “unfinished sentences”, all children’s opinions, both real and fictitious, are accepted.

5) Development of the ability to find joint solutions with classmates, to increase students’ interest in the material studied. The use of interactive teaching methods in elementary school lessons contributes to students’ successful mastery of the material and improves the quality of education. Students are more willing to communicate, compete creatively in completing tasks, express their thoughts, prove statements, etc.

In modern schools, teachers are increasingly using new techniques and methods of conducting lessons. Active forms and methods of learning for younger schoolchildren are, first of all, games in all their diversity. Activity is also impossible without interaction with peers, without arguments, discussions, and solving problematic issues and tasks.

The structure of interactive pedagogical interaction is also the basis for the classification of active pedagogical methods. In accordance with the leading function of a particular method in organizing pedagogical interaction, methods can be classified into the following groups: methods of creating a favorable atmosphere, organizing communication; methods of exchange of activities; methods of thought-activities; methods of meaning-creation; methods of reflective activity; integrative methods (interactive games).

Methods of creating a favorable atmosphere and organizing communication have as their procedural basis a “communicative attack” organized by the teacher for prompt inclusion in joint activities, in the interaction of each participant in the pedagogical process. The methods of this group contribute to the self-actualization of each student and their constructive adaptation to the emerging pedagogical situation. Among them are such methods as “Give a flower”, “Compliment”, “Name and gesture”, “Name alliteration”, “Weather forecast”, “If I were a natural phenomenon ...”, “Let’s change places”, “Complete phrase”, "Who, where from?" and others [1].

Methods of exchange of activities involve a combination of group and individual work of participants in pedagogical interaction, joint activity of participants in the pedagogical process, close correlation of the activities of the teacher and students. Among the methods of exchange of activities are “Metaplan”, “Workshop of the Future”, “Cross Groups”, “Mosaic”, “1x2x4”, “Aquarium”, “Interview”, “Round Table”, “Brainstorming”, etc.

Methods of mental activity, on the one hand, create a favorable atmosphere, contribute to the mobilization of the creative potential of students, on the other hand, stimulate active mental activity, the performance of various mental operations, and the implementation of conscious choice. Methods of this group include “Four corners”, “Choose from five”, “Choice”, “Logical chain”, “Interview”, “A dozen questions”, “Whose is it?”, “Colored figures”, “Change of interlocutor”, “Self-esteem”, etc. The most important procedural attribute of all these methods is the intensive communicative activity of the participants.

Meaning-making methods have the leading function of students creating their own individual meaning about the phenomena and problems being studied, the exchange of these meanings, and the development of new content of the pedagogical process by participants in pedagogical interaction. Among the methods of meaning-making can be called “Alphabet”, “Associations”, “Making a fairy tale”, “Complete the phrase”, “Minute of speaking”, “Intellectual swing”, etc.
Methods of reflective activity are aimed at recording by participants in the pedagogical process the state of their development, the reasons for this state, and assessing the effectiveness of the interaction that took place. Among the methods of this group are such as “Reflective Circle”, “Exercise”, “Reflective Target”, “Reflective Ring”, “Key Word”, “Let’s Swap Places”, “Islands”, “Complete the Phrase”, etc.

Integrative methods (interactive games) are an integrated method that combines all the leading functions of the above-mentioned active pedagogical methods. Interactive games such as “Come on, do it!” can be used in the pedagogical process, “Hotel”, “Ikebana”, “School”, “Interaction”, “Balloon Flight”, “Social Role (Fireman)”, “Aquarium”, etc.

To effectively use interactive techniques, including in order to cover the entire required volume of material, you need to carefully plan your work: use methods that are adequate to the age of the students and their experience of working with interactive techniques; select interactive exercises for students that would give them the “key” to mastering the topic; take into account the pace of work of each child and his abilities; use two or three (maximum) interactive methods in one lesson; first use simple interactive methods - work in pairs, small groups, “Brainstorming”, “Microphone”, and then more complex ones [3].

Thus, interactive learning in primary school promotes the involvement of students in the learning process, provides an opportunity to understand and reflect on what they know and think through the exchange of knowledge, ideas, and methods of activity. Such training allows schoolchildren not only to acquire new knowledge, but also develops cognitive activity itself, transfers it to higher forms of cooperation and collaboration.

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OUR MOTHER LANGUAGE MUST BE PROTECTED

Lala Musayeva

doctoral student, teacher of Azerbaijan State Pedagogical University

ORCID NO: 0000-0002-7701-5716

Abstract

The article deals with the development of the mother tongue and the impact of external interventions on the mother tongue in recent times. At the same time, the issues of speaking correctly in our mother tongue and acquiring literary pronunciation habits were also touched upon. In the life of modern society, the sphere of influence of the living and sounding word on any person has expanded in an unusual way. All this forces us to make high demands on the correctness of the spoken words. At present, the conscious mastering of the norms of oral speech, treating the rich traditions of the Azerbaijani language with maximum respect is not only the first task, but at the same time, it is defined as the most important social issue as a social structure of this society.

Keywords: native language, protection, culture, literary pronunciation

The most important moral value of every nation is its language. It is the spirituality that he will have and must protect throughout his life, because if a nation loses its language, it will lose its integrity and all the values it has. If he owns the state language, he also owns his future. We must know the value of what we have and protect it. Among the most beautiful languages in the world, the Azerbaijani language ranks first. As world languages develop, they threaten the languages of countries. Cultural interaction leads to language change. We often encounter foreign words in our daily life, we need to find their equivalents in Azerbaijani and use them. When foreign words inevitably enter our lives, if we do not pay attention to them, we will often find our children speaking in a foreign language in the future. If we use the Azerbaijani language carefully and correctly, we will protect it. They should fully fulfill their duty by informing the youth. It is necessary to pay attention to our words and speak Azerbaijani.

It is known that our language has existed throughout history as a language of rich culture, science and art and will continue forever. However, it is a painful truth that our language has started to be "dirty" as a result of existing problems. My aim is to stop this fire, to light a candle in the name of our language in the twilight darkness and to revive the language consciousness in the society by adding sparkle to its glow.

If we consider that the number of words in our language today is 105 thousand, and if we are satisfied with only 200-300, at most 500 of our words in this stock, and if we rely on the fact that the rest are confined to the pages and, if necessary, their replacements in the foreign language are "attractive", then we will never have no right to complain that our streets have become alien to us due to the invasion of foreign words. According to historical records, the streets of Baku were like this during the USSR. Let's say that at that time it was mandatory. But today! A nation that does not learn from history has no right to talk about the future, just as it has lost its past. That history will never be written again.

Let's protect our language, but not by showing a fanatical position. Language is the property of society and people. Being against the people creates a dilemma. You can't get in front of an exploit that is wrong but popular. If you try to force it, you will not be able to establish trust in the new arrangements you will make. You cannot exclude these words, which live in our language, have a wide field of application, and whose writing and pronunciation have already become a part of us, because they are of "foreign origin". Or you will be kicked out. In this case, what should be done is to exclude a word with a Turkish synonym for that word. Over time, the taste given by the mother tongue will exclude the foreign word, it will kill the word. In order for this to happen, first of all, it is necessary to integrate science and society. To what extent can an intelligentsia separated from the people be a true remedy for the language of the people. Getting a career at the table, doing politics
can benefit anyone but the individual. But isn't language the basis of a national unity that requires transcending individuality?

Can there be a logical basis for building a barrier in front of the rapid development in the world of science and the equipment and materials that come in parallel with it? Of course not. But it is not necessary to allow these products to bring along with them the words that they try to sneak into our language like a shadow. As soon as possible, we need to form the words to call them. The damage caused by even a moment's delay will be no different than a turning snow particle. If we take solace in the thought that nothing can come of a word left empty-handed, we are only deceiving ourselves. What these drops will cause over time, whether it will be a lake or a flood, and how we will stand against it, must be well calculated.

During the creation of words, it is necessary to work in a two-stage direction. In these two stages, scientific knowledge should be in the foreground.
1. Professional research: Experts on a new product need to come together and determine what insights emerge from their research.
2. Linguistic research and finalization: The indicators obtained by the experts in the first stage should be gathered and discussed with language experts, and as a result, the most beautiful styles according to the structure of the language should be determined. [3]

These two stages must be a complementary mechanism. Otherwise, leaving one out of the case will mean that the result will not be healthy and the case will be left to chance. Here, too, the work falls more on the group than on the individual. But and only in this way it is possible to prevent language violation. In our country, the Institute of Linguistics comes to the fore as it is responsible for conducting these works. And so it is according to these laws. However, when the laws give this task to the Institute of Linguistics, they also tell us, "You stop, this is not your business!" he didn't say. So, instead of being a spectator and hoping for help from someone, we should quickly think about our duty as an individual of the nation, to take ownership of our language and protect it.

In the words of Confucius, "If I were to take over the leadership of a country, the first thing I would do would undoubtedly be to review its language." Because if the language is defective, the words cannot express the idea well. If the thought is not well expressed, the duties and services will not be performed as they should be. Customs, rules and culture are violated where duty and service are not performed as they should be. If customs, rules and culture are violated, justice will go astray. If justice goes astray, the confused people will not know what to do or where to go. That's why nothing is as important as language!".

Along with introducing foreign words into our language, it is also important to speak the language correctly. In recent times, it seems obvious that the vast majority of the public has not acquired proper literary pronunciation habits.

Prominent intellectuals and thinkers of the time attached great importance to the acquisition of correct pronunciation habits. Attention and care for the language, speech, correct use of the Azerbaijani language continues today.

National leader Heydar Aliyev's decrees dated June 18, 2001 "On improving the implementation of the state language" and January 2, 2003 "On the implementation of the Law of the Republic of Azerbaijan "On the state language in the Republic of Azerbaijan" in accordance with the requirements of the time in the globalization of the Azerbaijani language The Decree of the President of the Republic of Azerbaijan I. Aliyev dated May 23, 2012 on the State Program on the use and development of linguistics in the country is a clear example of this. One of the goals of the mentioned program is the improvement of language and speech culture.

It should be noted that the problem of spelling training has been extensively studied in the Russian methodological literature: K.L. Makarov, L.B. Sherba, D.N. Ushakov, P.G. Sharov, M.I. Matusevich, E.A. Bakhmutova, G.P. Firsov, A.B. Tekuchev, A.N. Gvozdiev, R.I. Avanesov, and others' researches related to literary pronunciation and its training issues were directed to the investigation and solution of problems in this field.

The history of the development of the Azerbaijani language is very old. The oral branch of the Azerbaijani language has a more ancient history. "Kitabi Dadam Gorgud" ("Kitab-i Dadam Gorgud..."
ela lisan-i taife-i Oguzan” (The book of Dadam Gorgud in the language of the Oghuz tribes), the Oghuz Turkish epic as the oldest written monument of Azerbaijani folk literature-Azerbaijani language (XI-XII centuries) is studied and studied every day.

It should be noted that "Kitabi-Dade Gorgud" is of great importance in learning the history of our language, literature, epic creation, and culture in general.

The formation of the Azerbaijani language has gone through a very long and complex historical development path. Sheikh Izzeddin Hasanoglu (13th-14th century), whose name is mentioned with respect as an artist of words, famous Sufi poet and thinker in the sources, played an important role in the development of the Azerbaijani language. Izzeddin Hasanoglu's poems in the Azerbaijani language are among the first Sufi poets preserved (Hasanoglu in his three poems written in Azerbaijani, and Izzeddin Hasanoglu, who used the pseudonym Puri-Hasan in his Persian poems) in Azerbaijani "Apardi knolum bir gosh kamaruz janfaza dilbar", "How are you, come, my white face" and "Ajab If I knew, who made me do something" 3, and in Persian, 1 titled "The people have become merciless, what should I do?" is known).

In the historical development of the Azerbaijani language, Nasimi, Fuzuli, Molla Panah Vagif, Molla Vali Vidadi, Shah Ismayil Khatai, etc. his work is undeniable. The works they wrote and created reflected the delicacy, sweetness, and beauty of the Azerbaijani people and won the love of the people. It is known from historical documents that schools in the mother tongue were opened during the Safavid state in the 16th century. M. Fuzuli's "Kulliyati", "Leylei and Majnun" works were used as Azerbaijani language textbooks in schools (mollakhanas) at that time.

Shah Ismayil Khatai (1487-1524), who came to power in the 16th century, paid special attention to the development of the Azerbaijani language, wrote the works "Dahname", "Admonition" and ghazals in simple Azerbaijani language. The state language was Azerbaijani, libraries were created by the state.

It should be noted that the study of the issues of teaching correct pronunciation in the historical aspect is closely related to religious teaching. Thus, the students studying in the mollakhana used the textbook "Chereka" to read the "Quran" ("Chereka" is a Persian word - it is used in "chahar-yek". It means folding the paper four times). The training was mainly conducted by "Hojcelama" (letter-syllable method). In the "Chereka" training, the children first learned the names of the letters, then combined the letter with the vowel sounds with movements to form a syllable, combined the syllables and learned to read whole words. Children were required to read the text "with correct pronunciation" and recite it by heart: failure to read the names of the letters of the Arabic alphabet, "Chareka" and later "Quran" with the correct pronunciation, led to physical punishment of children. Of course, this requirement of correct pronunciation still applied to the Arabic language. After the children have finished reading the "Quran", they read "Bustan", "Gulustan", "Tarihi-Nadir", "Darbandnama", "Qarabagnama", etc. they read the works.

In the 18th and 19th centuries, schools in the mother tongue began to be opened in several parts of Azerbaijan. Shafi Efendi in Dash Salahli, Molla Panah Vagif in Panahabad (Shusha), Mirza Shafi Vazeh in Ganja, Seyid Azim Shirvani in Shamakhi, Sidgi Mammadtagi in Nakhchivan, etc. As a result of his suffering, schools in the Azerbaijani language were opened. The new type school opened by Molla Panah Vagif in Panahabad (1759) (now Shusha) is considered to be the first school in the Azerbaijani language, as education was conducted in the Azerbaijani language. [1]

In 1969, the works of Academician M. Shiraliyev, A. Demirchizade, A. Gurbanov on the basics of literary pronunciation in Azerbaijan, A. Abdullayev, A. Efendizade, N. Abdullayev, A. Mammadov on the training of literary pronunciation and prof. Y. Karimov, A. Rahimov, N. Jafarova and others. research is important.

It should be taken care that students learn the correct pronunciation norms starting from the primary classes. In this work, all teachers should work together, and strictly monitor the fulfillment of orthographic rules by students.

Very necessary tasks are set before the teaching of the Azerbaijani language in primary classes. This is, first of all, due to the fact that it is the language of instruction. The subject "Azerbaijani language" in primary classes creates wider opportunities for enriching students' vocabulary, learning
and applying the most necessary grammar rules, literary pronunciation norms, and forming speech skills and speech culture.

As an important component of literary pronunciation training in primary grades, the goal of orthography training is to develop students' oral speech skills in accordance with literary language norms and to achieve the formation of speech culture on this basis.

When it comes to orthography training, first of all, the sound aspect of speech, correct pronunciation of sounds and inculcation of listening habits are mentioned. Since the sound aspect of speech (correct pronunciation of speech sounds) and the ability to hear are related to each other, work on them should be done in parallel. Four components of speech sound and hearing ability are known:
- ability to perceive speech pitch in different ranges (physical hearing);
- reception of speech sounds against the background of the phonetic system of the language (phonemic hearing) and pronunciation ability;
- hearing timbre of speech (hearing timbre sound) and pronunciation ability;
- hearing the speed and rhythm of speech (hearing a fast and rhythmic sound) and the ability to pronounce the same. With the sounding of the speech, the student's auditory analyzer separates different tones, a standard of correct pronunciation is created [2].

Even if children acquire simple speech habits before coming to school, no matter how clearly and precisely they express their thoughts, the work on correct pronunciation and orthography starts from the time they come to school. Students' acquisition of orthoepic rules is a sequential process. It is impossible to master the rules of orthography in one year. For this, students should be familiar with these rules continuously from the first day they come to school until the end of school.

The works conducted on the literary pronunciation of students are very useful and effective not only from the point of view of training, but also from the educational point of view. The teacher should build his speech on the basis of orthographic norms, both during the lesson and outside of the lesson, he should give the students a personal pronunciation example by pronouncing the words correctly. He should be able to regulate his attention and will in order not to make mistakes in his speech, to pronounce the word correctly and, if necessary, to be able to stop the speech. One of the main conditions when fighting for correct pronunciation is that the teacher himself has an exemplary speech, a high speech culture. Then, the teacher should use different ways to master the norms of literary pronunciation effectively.

Students can better master the norms of literary pronunciation in their own conversations by directly imitating people who expect them. Here the role of the teacher is great. While teaching any piece of poetry or any work, the teacher can play it with the expressive reading of announcers, actors, orators through loudspeakers and tape recorders. A student's tendency to imitate speech can be strong when the person listening to his speech is a competent, respected and informed person. The speech of the announcer and actors is at the benchmark level in terms of literary pronunciation, so it can be an example for others. If some exceptions are not taken into account, in the speaking and reading of the masters of this art, whether it is a book, a local dialect, or a simple spoken language, there are almost no pronunciation defects. The intonation of their speech is rich and colorful. When students listen to these sounds, they begin to develop the ability to distinguish between orthographically correct and incorrect speech.

The basis of mastering orthoepic rules is laid from the primary classes. Forming correct pronunciation habits does not mean only following orthoepic norms. True, works on orthography occupy one of the main places, but works on literary pronunciation have a wider content. It includes orthoepic norms, works on intonation, diction, melody, pause, rhythmic distribution and emphasis, as well as works on the copy and tone of speech, etc. includes. The correctness, copy, awareness, expressiveness of the reading depends on the level of mastering the rules of literary pronunciation.

Acquiring the correct pronunciation habits instills in students the skills and habits to hear the language, to be in contact with it, to express the correct attitude towards the figurative expression and also the figurative sentence.

Basic work on mastering literary pronunciation habits in primary classes is carried out consistently and systematically in Azerbaijani language classes. From this point of view, in order to
properly establish the system of work of primary school students on mastering literary pronunciation habits, the existing Azerbaijani language curriculum (grades I-IV) and textbooks should be examined first.

During the training of orthography, students develop their psychological characteristics such as will, attention, giving speech and thought in a certain sequence, etc. they also acquire the qualities that play a big role in human life. The teacher should work for a long time to strengthen the orthoepic rules in the students and eliminate the errors in their speech. The teacher should constantly monitor students' oral speech and carefully correct their mistakes if necessary. If the Azerbaijani language teacher approaches the work seriously, they can eliminate most of the pronunciation defects in the students' speech. Students should be able to express their thoughts orally in accordance with the pronunciation norms of the literary language as a result of the training of orthography. On the one hand, this is of great importance in preparing them for future practical life, and on the other hand, in raising the general cultural level.

Pupils' acquisition of a high pronunciation culture should be realized as a result of the efforts of all teachers as a single process. One of the main conditions in the struggle for correct pronunciation is the teacher's own exemplary speech and high speech culture. Teacher knowledge, outlook, behavior, clothing, etc. along with, he should be a personal example to the student with his speech, especially pronunciation. The teacher should work so that no defects are observed in his speech, he stands out from others with his beautiful and emotional speech, clear, fluent, fluent and expressive speech. Many teachers consider only spelling or punctuation errors when evaluating students' success, do not pay attention to students' oral speech, correct pronunciation, and do not pay much attention to how students pronounce words correctly. The underestimation of orthoepy, the lack of attention to the rules of correct pronunciation is due to the fact that many of the main teachers have not properly mastered the norms of literary pronunciation. The reason for this is the lack of attention paid to orthoepic issues and the poor organization of orthoepic teaching.

In general, the pronunciation process consists of demonstration, comprehension and understanding, imitation, checking and correction, phonetic exercises. In the first stage. in the demonstration phase, learners should be shown clear pronunciation examples. The teacher himself must have good pronunciation. If the teacher does not have good pronunciation, he can use audio materials. First of all, it is necessary to teach vowels and sonar consonants. Vowels are free to sound, but consonants are not. In the second, i.e. comprehension stage, students try to distinguish between vowels and consonants in the words mentioned in the first stage. In the third, i.e. imitation stage, students imitate the sounds they hear and understand in the first stages. At this stage, students should be able to distinguish between vowel and consonant sounds. In the fourth, inspection and correction phase, defects should be identified and corrected. At the last stage, students learn to use vowels and consonants in complex form. At this stage, it is important to carry out complex exercises (working with audio materials, letter, working with text and speaking, etc.) in order to raise the pronunciation of learners to a higher level.

References

FORMATION OF PROFESSIONAL COMPETENCE IN THE PROCESS OF CONTINUOUS PROFESSIONAL DEVELOPMENT OF DOCTORS

Lazurenko Olena

Ph. D, Candidate of Psychological Sciences, docent
Assistant Professor of the medical and general psychology department,
National O.O. Bogomolets Medical University, Ukraine

The professional formation of a doctor's personality is a long-term process aimed at the development of professionalism, involves the formation of professionally important competencies, individual properties and ways of performing professional duties in the process of professional self-realization in the conditions of professional education and activity.

Master program "Medicine" of the Bogomolets National Medical University comprises 360 credits, with 90 credits (25%) allocated to elective courses and compulsory courses of 270 credits (75%) in the European Credit Transfer and Accumulation System (ECTS). Among these, 28.52% focuses on developing general competencies, and 71.48% is dedicated to specific (professional) competencies. The program places the highest emphasis on professional training, with 194 ECTS credits designated for this purpose. The study of essential professional competencies occurs in a structured and logical sequence during clinical disciplines. Fundamental medical skills are learned in propaedeutic disciplines of therapeutic, surgical, and pediatric specializations. Further learning and mastery of all required professional competencies continue throughout most of the courses in the professional education. Training in emergency medicine is provided not only during most clinical disciplines but also as two mandatory educational components: "Anesthesiology and Intensive Care" and "Emergency Medical Assistance." The "Medicine" master program also includes an educational component that allows students to acquire clinical competencies for alleviating suffering and improving the quality of life in incurable patients. This component, "Palliative and Hospice Medicine," involves clinical training in palliative and hospice care. Significant attention is given to disease prevention and the impact of health issues on patients and their families through subjects such as "Hygiene and Ecology," "Social Medicine," "Public Health," "Hygienic Disease Prevention," and "Healthcare Organization." The program includes 30 credits for clinical training, encompassing key medical fields like internal medicine, surgery, pediatrics, obstetrics, gynecology, and palliative and hospice care. These clinical trainings take place in relevant hospital departments and medical centers and incorporate modern simulation teaching methods. The "Medicine" master program also contains an obligatory component, "Training of Reserve Officers," within the field of knowledge 22 "Healthcare" with specialization 222 "Medicine." This component covers military hygiene, the organization of medical support for the population and the military, pre-medical aid in extreme situations, military field surgery and therapy, and military epidemiology. Individual educational trajectories for students are supported through several procedures, including informing them about the list of elective courses, independent selection of elective courses from the available options in the curriculum and the university-wide list of elective courses, creating an individual starting plan for each student, granting academic leave, and facilitating academic mobility.

To achieve the learning outcomes, the following teaching methods are used in the "Medicine" Master curriculum: lectures, practical sessions, seminars, consultations, self-study, clinical training (practice classes), and student research. The development of competencies is supported through the implementation of various teaching methods, including organization, implementation, stimulation, motivation, and control of the effectiveness of educational and cognitive activities. This utilizes binary, integrated, individual-oriented, training, and information and communication technologies. Clinical training includes both practice sessions and educational internships. Clinical disciplines are studied at clinical departments, where students acquire professional competencies using modern simulation teaching methods and real-life situations with patients. The "Medical Simulation Training Center of the Bogomolets National Medical University" provides students with the opportunity to
practice their clinical competencies and prepare for Objective Structured Clinical Examinations (OSCEs), which are an essential component of student certification. During practice and laboratory classes, students revise their knowledge, acquire skills, and practice using them in professional situations. They also learn to make independent decisions to solve professional tasks.

In the University, the main document that regulates the system of continuous professional development for academic staff is the "Regulations on Professional Development and Fellowship for Academic Staff at the Bogomolets National Medical University" approved by the University's Academic Council. The Regulation provides that the purpose of professional development and fellowship within the framework of continuous professional development is to improve the professional training of academic staff by expanding their professional knowledge and skills, as well as gaining experience in performing additional tasks and acquiring additional responsibilities. The professional development of academic staff is regarded during the competition for the positions or when concluding employment contracts.

The main objectives of professional development and fellowship for academic staff are to improve previously acquired and/or acquire new competencies within the scope of their professional duties or field of knowledge, taking into account the requirements of the relevant professional standard. It also aims to gain experience in performing additional tasks and responsibilities within their specialty and/or profession and the position they hold. Furthermore, it focuses on developing and enhancing various competencies, such as digital, managerial, communication, media, inclusive, and linguistic competencies, among others.

Academic staff have the opportunity to enhance their qualifications both directly at the University and in other institutions, based on agreements. They can pursue professional development both within Ukraine and abroad. In the case of professional development and fellowship with release from their regular work (main place of employment), the staff are entitled to guarantees and compensation as provided by the legislation of Ukraine. The professional development of University staff is carried out through various methods (education programs, fellowships, participation in certification programs, training sessions, seminars, practical workshops, conference seminars, training seminars, webinars, masterclasses, etc.) and in different formats (institutional, dual, on-the-job, etc.). The type of professional development is chosen by the staff members themselves, taking into account their own professional background and the needs of the department.

Therefore, determining the conditions for the formation and development of professional competences of doctors is an urgent task for undergraduate and postgraduate medical education, which will ensure the possibility of formation of professional competences and the transition to continuous lifelong learning and ensure its effectiveness.

References

ANALYZING STUDENTS' MATHEMATICAL THINKING IN TECHNOLOGY-SUPPORTED ENVIRONMENTS

Maliyeva Zarifa Matlab
Azerbaijan State Pedagogical University

Abstract
The article discusses the features, characteristic qualities of mathematical thinking and the possibilities of their development in teaching mathematics, the dependence of the formation of certain types of mathematical thinking on the methods of scientific knowledge and methods of teaching mathematics. The process of forming a culture of mathematical thinking is a long-term one, occurring throughout the entire period of study and the subsequent period of professional activity. The authors conclude that in order for the skills and abilities of mathematical thinking to be conscious, it is necessary to include a system of certain theoretical knowledge in the content of teaching mathematics.

Keywords: mathematical thinking, synthesis, induction, deduction, abstraction, logical thinking, abstract thinking.

The important role of the development of mathematical thinking is determined by the formulation of the task of “teaching to learn” by the Federal State Educational Standard (FSES). The second generation standard states that as a result of studying the subject area “Mathematics”, students develop mathematical thinking, master mathematical reasoning, learn to apply mathematical knowledge when solving various problems, and develop mathematical intuition.

The specificity of mathematical disciplines lies in the fact that their study most strongly influences the development of thinking, since the development of thinking is associated with the formation of thinking techniques: analysis, generalization, abstraction, which act as specific methods of scientific knowledge. Thus, the means and methods of teaching mathematics have a more effective impact on the development of thinking. Therefore, many experts believe that not a single school subject can compete with the capabilities of mathematics in the formation and development of a thinking personality. In the process of working with mathematical material, the performance of mental actions acquires a specific feature associated with the implementation of quantitative relationships, and thinking acquires the ability to operate with “mathematical” abstract concepts. Consequently, mathematical thinking has as its beginning a certain objective reality that is subject to study, mental change, and the result is the solution of mathematical problems. In the scientific literature [1-3] there is not a single opinion on the definition of the concept of mathematical thinking.

The famous psychologist Piaget believes that logic is the only or main criterion of thinking, and the development of logic occurs on the basis of the development of mathematical thinking. According to D.Z. Ikramov, mathematical thinking is a set of interconnected logical operations. Methodist and mathematician Y.M. Kolyagin understands mathematical thinking as the ability to carry out abstractions and generalizations. Analyzing and comparing various ideas, we believe that mathematical thinking is the only activity of the student, subject to certain mathematical laws and rules and aimed at establishing patterns between objects and phenomena of the surrounding world.

Often learning mathematics is associated with the development of mathematical thinking. According to the famous psychologist L.M. Friedman, “mathematical thinking is extremely abstract, theoretical thinking, the objects of which are devoid of any substance and can be interpreted in an arbitrary way, as long as the given relationships between them are preserved” [4].

The need of modern society for specialists who master methodological, systematic and creative thinking raises the issue of a scientifically based system for the formation of these types of thinking.

Works on the psychology of creative activity (Y.A. Ponomarev, V.A. Romenets), the study of the problem of abilities (L.S. Vygotsky, S.L. Rubinstein), the specifics of the process of development of mathematical abilities (Z. Hadamard, D. Polya, V.A. Krutetsky, O.V. Skripchenko, S.I.
However, despite the existence of a large number of studies on the phenomenon of creative thinking, it cannot be said that they have brought complete clarity to this problem. An extremely important stage in the purposeful formation of creative thinking in the learning process is primary school age. In modern developmental and educational psychology, the problem of developing the thinking of a primary school student occupies one of the central places. And this is not accidental, since data from psychological and pedagogical research indicate that thinking develops most actively during primary school age. There is no clear answer to the question about the criteria for the development of creative mathematical thinking in children of this age. Note that recently original methods have appeared aimed at developing creative mathematical thinking (V.V. Gagai, S.V. Maslova, D.M. Nurmagomedov), but in these methods the authors use not the main one, but an additional one in the school curriculum material.

Based on an analysis of psychological and pedagogical literature and taking into account the existing practice of primary mathematics teaching, it was concluded that there is a contradiction between society’s need for creative individuals and the insufficient development of means of influencing the development of creative thinking, especially at the initial stages of education. In addition, in the psychological and pedagogical literature on this issue, mainly questions of the essence and mechanisms of the formation of creative thinking have been developed, while the problem of means, methods and conditions for the development of creative mathematical thinking has not been sufficiently developed.

Existing technologies of developmental education are mainly aimed at the formation of verbal and logical thinking, while the possibilities for the development of creative thinking remain insufficiently studied. Also, the problem of developing creative thinking in the process of solving arithmetic problems remains insufficiently studied, and the problem of solving standard problems in various ways as one of the means of developing creative mathematical thinking remains open. Thus, the problem of the development of creative mathematical thinking in primary school age requires further study. We chose this problem as the topic of our research [1, p. 44].

Practice shows that it is impossible to teach everyone without exception at a high level, there are compelling arguments for this: children are distinguished by their ability to rational thinking, attention, and memory properties. A child whose attention is unstable and whose memory is not developed will not be able to perform even some of the traditional tasks. It is not customary to talk about this, but it is true. And no matter what new pedagogical technologies are used, such children have low academic performance.

The ability to think logically is characterized by the ability to perform certain actions in various conditions. A feature of logical skills is that the student must not only analyze, synthesize, compare, abstract, generalize, but also think, draw conclusions, establish cause-and-effect relationships between facts, processes, phenomena, coordinating them with the laws of logic. Therefore, the process of forming logical skills involves the implementation of certain sequential stages. This is due to the level of general training of children, the complexity of the educational material, and with the peculiarities of thinking of children of the corresponding age group [2, p. 10].

The effectiveness of the formation of logical knowledge and skills of students is ensured by the use of various teaching methods, the use of various forms of knowledge organization, and the rational balance of frontal, individual and group forms of work.

One of the most influential means of developing students’ logical thinking is a system of exercises with logical load. The concept of a “system of exercises with a logical load” should not be understood as just solving problems or exercises with a logical load. This is a purposeful system of teacher work on the development of students’ logical thinking at each stage of the lesson. The teacher’s work experience shows how, through a system of exercises with logical loads, it is possible to develop the logical thinking of schoolchildren at the stage of motivation, when checking homework, when studying a new topic, when generalizing and systematizing knowledge, skills and abilities, both at the end of the lesson and at the end of studying the section.
Internal motivation for many students is still unstable and depends on the situation. Therefore, the teacher offers educational tasks, interesting facts from the lives of famous people, various historical materials, game situations, and solutions to situational problems.

It is known that children are naturally inquisitive and eager to learn. But in order for every child to develop his creative abilities, reasonable guidance from the teacher is necessary.

Potential creativity, as psychological research shows, is inherent in every child. Thus, the teacher’s task is to create conditions under which children’s inclination to the new, non-standard, the desire to independently solve assigned problems can develop [1, p. 45].

Psychological research into creative mathematical processes concerns primarily the study of mental processes associated with solving mathematical problems and mathematical creativity. These studies can be divided into two groups: scientific and psychological. Scientific research is characterized by the desire to outline the “subject of creative mathematical thinking,” and psychological research is characterized by the desire to clarify the procedural, dynamic and substantive aspects of creative mathematical thinking. Attempts to determine the general components of creative mathematical thinking were carried out by J. Hadamard, G. Birkhoff, N. Bourbaki, D. Polya and A. Poincaré.

Mathematical thinking is identified with a special way of reasoning, which has logical, spatial, symbolic, numerical and intuitive components. The number of stages of creative activity does not coincide among different researchers, but their content turns out to be more or less the same: preliminary stage (discovery of reality, perception of problems, definition of the problem to be solved, formulation of hypotheses); incubation (solution search stage); intuition (the stage of redesigning existing knowledge); critical review of what has been achieved, finding a solution to the problem, control.

Thus, we can state that most authors recognize the specific features of mathematical thinking. This specificity is associated with the use of mathematical symbolism, logical proof in solving a mathematical problem, algorithmization of problem solving, simultaneous use of axiomatic and constructive methods, construction of mathematical models, creation of mathematical theories.

An analysis of the literature shows that, despite significant developments in the content of the mechanisms of creative mental acts, there is no consensus on the nature of creative thinking.

As is known, individual thinking skills are formed spontaneously if a person has a sufficiently rich life experience. However, most students do not have this experience. Students do not automatically acquire thinking skills. Therefore, the ability to sift through information, check it for reliability and significance, and ignore irrelevant, devalued information is necessary for a modern person to achieve success in the world.

We can highlight the main goal of the school, which is to develop in students the ability to manage creative processes: fantasizing, understanding patterns, and solving complex problem situations.

Logic is the science of thinking. Its name comes from the Greek word logos - “thought”, “word”, “law”. The term “logic” is also used to denote the laws of the objective world, to denote the rigor, consistency, and regularity of the thinking process (“logic of thinking”, “logic of reasoning”) [3, p. 29].

The development of students' thinking has always been the focus of attention of psychologists (P. Blonsky, A. Brushlinsky, L. Vygotsky, P. Galperin, V. Davydov, O. Dusavitsky, Y. Ponomarev, S. Rubinstein) and teachers (L. Zankov, I. Lerner, V. Palamarchuk, M. Skatkin, Sukhomlinsky). According to E. Revin, thinking is the highest degree of human knowledge of reality. The sensory basis of thinking is sensations, perceptions and ideas. Through the senses, which are the only channels of communication between the body and the outside world, information enters the brain. The content of information is processed by the brain. The most complex (logical) form of information processing is the activity of thinking. Solving mental and life problems, a person reasons, draws conclusions and thereby learns the essence of things and phenomena, discovers the laws of their connection, and then transforms the world on this basis. Thinking is closely related to sensation and perception, and is formed on their basis. The transition from sensation to thought is a complex
Thinking is activated when a person has questions that cannot be answered by perceiving objects, reproducing what is already known about them. The moment of thinking is asking questions: “What is this?”, “Why is this?”, “Who is to blame?”, “What to do?”, therefore, the development of a child’s logical thinking is a process of transition of thinking from the empirical level of cognition (visual-effective thinking) to the scientific and theoretical level (logical thinking), with the design of the structure of interconnected components, techniques of logical thinking (logical skills), which ensure the holistic functioning of logical thinking.

Thinking is a person’s indirect and generalized cognition of objects and phenomena of objective reality in their essential connections and relationships. It is in the process of mental activity that a person learns about the world around him with the help of special mental operations [4, p. 7].

The basic structures of thinking are formed between 5 and 11 years of age. Therefore, the logical preparation of a child must be carried out from primary school. Human thinking not only includes various operations, but also occurs at different levels, in different forms, which together allows us to talk about the existence of different types of thinking: theoretical (conceptual, figurative) and practical (visual-figurative, visually effective).

The problems of forming students’ thinking in the process of learning mathematics are studied both in the works of mathematicians and psychologists. Mathematics as a subject has a great influence on the development of students’ thinking through the formation of ways of thinking on mathematical material.

The development of mathematical thinking is often associated with the formation of logical thinking, which is determined by the assimilation of mathematical concepts, patterns, and the use of symbols and proofs of mathematical propositions. The ability to abstract and build mathematical models of life situations, systematize and generalize mathematical material is also especially emphasized.

We can note the characteristic features of mathematical thinking that are formed in students when studying mathematics: logical consistency in the presentation of the material, clarity in the formation of the problem, brevity of statements and notes, validity and completeness of reasoning.

The presence of a strict logical reasoning scheme is one of the main features of mathematical thinking, since even a partial loss of rigor in one link in the chain of reasoning makes it impossible to fully prove a statement or solve a problem.

In addition to the rigor of reasoning, mathematical thinking is also characterized by laconic statements. The work of the mathematical style does not tolerate unnecessary words or distractions with side ideas. Therefore, mathematics lessons are designed to give students, preferably over other subjects, the skills of concise thinking, not burdened with any unnecessary elements of thinking. Sometimes in the methodological literature there are inaccurate formulations and reasoning. So, for example, in one of the school geometry textbooks there is a proposition: to inscribe a circle in a triangle means to find its radius and the position of the center. Of course, to construct such a circle it is necessary to find the center and radius of the circle, but the idea must be formulated precisely and concisely.

As experience shows, if you do not carry out targeted work on the formation of methods of mental activity, then the developmental effect of such a learning process turns out to be insignificant. If you purposefully work on the development of thinking techniques, then the results of students’ assimilation of knowledge turn out to be higher.

In the process of teaching mathematics, inductive and deductive methods are usually used. In accordance with these methods, concrete and abstract types of thinking are formed, which are the main components of mathematical thinking. Students' specific thinking is formed and developed in interaction with specific models, that is, in the process of working with specific objects. The role of concrete thinking is also important in the formation of abstract concepts characteristic of mathematical thinking. In the process of teaching mathematics, the role of concrete thinking is
significant in the lower grades. To develop this type of thinking, it is advisable in elementary and middle grades to teach students generalization techniques, that is, using specific techniques and models to teach them to formulate general reasoning. When developing concrete thinking in students, one should also take into account the fact that constant reference to visual representations can slow down the development of abstract thinking. This fact is especially often reflected when teaching the beginnings of stereometry, i.e., excessive enthusiasm for clarity should not interfere with the development of spatial imagination. In high school, the role of concrete thinking gradually decreases; instead of concrete, abstract thinking develops as its generalization.

Abstract thinking is formed in parallel with the mental operation - abstraction. When abstracting, on the one hand, some properties of the object are abstracted, and on the other hand, more basic certain properties are highlighted. Abstraction is most clearly and effectively manifested in the axiomatic construction of geometry, since the main objects are abstractions and when formulating axioms, more essential and basic properties of these objects are highlighted. Further abstraction occurs when formulating definitions of geometric figures (parallelogram, rectangle, rhombus, etc.), since when defining objects, the main essential properties of these figures are also highlighted. Thus, abstract thinking is distinguished by the ability to mentally abstract from the specific content of a given object and highlight its certain general properties.

We can distinguish different types of abstract thinking: verbal-logical thinking, analytical thinking, spatial thinking. Logical thinking is characterized by the ability to draw consequences from given premises and the ability to generalize the conclusions obtained. When teaching geometry, logical thinking usually manifests itself in students when proving theorems and justifying solutions to problems. A primary school student has, to some extent, developed only two types of concrete thinking: visual-effective and visual-figurative.

Visual-effective thinking is the first type of thinking that arises in early childhood. Then the child develops a second type of thinking - visual-figurative, when the child begins to operate with sensory images. And only in the process of studying at school does the child begin to develop reasoning, verbal and logical thinking. Verbal-logical thinking is formed with the help of mental operations (analysis, synthesis, comparison, generalization, abstraction, etc.).

The results of mental actions are then expressed in the form of judgments - the affirmation or denial of something regarding the object of thought. The set of judgments regarding some object forms a concept, and the necessary and sufficient number of judgments about the most essential properties of the concept is the definition of the concept. Thus, the concept is broader than its definition. When learning mathematics, students have to master many concepts. In mathematics, one of the important actions on judgments is inference, as a result of which, from one or several judgments known to us and related in a certain way, a new judgment is obtained that contains new knowledge. Various types of inferences include deduction, induction, and analogy. When people talk about the development of thinking in the process of learning mathematics, they usually mean mathematical thinking. Unfortunately, some authors, when considering the essence of the mathematical style of thinking, often indicate such a large number of its distinctive qualities that the specificity of this type of thinking is lost. For example, the following qualities of mathematical thinking are listed: flexibility, activity, focus, depth, conciseness, accuracy, criticality, clarity, completeness, rigor, etc. [5]

Of course, mathematical thinking has all these qualities. But not all of them are specific to this type of thinking. Famous mathematician A.Y. Khinchin, who has done a lot in the field of mathematics methodology, points out only four characteristic features of mathematical thinking:

1) “the dominance of the logical scheme of reasoning taken to the limit...”;
2) “...laconism, conscious striving always finds the shortest logical path leading to a given goal”;
3) “clear dissection of the course of argumentation”;
4) Scrupulous precision of symbolism [5].

It is obvious that the qualities of mathematical thinking identified by A.Ya. Khinchin are more significant and specific than those listed above, but they also reflect only the external features of the
mathematical style of thinking. The mathematization of sciences that is currently taking place has led to the fact that all the indicated qualities of mathematical thinking have become inherent in other sciences. Therefore, the specificity of the mathematical style of thinking should be sought not in its methods, widely used in other sciences, but in its objects. Mathematical objects are devoid of any material characteristics, having only one characteristic: these objects are in certain relationships with each other, in quantitative, spatial relationships. Therefore, the mathematician A. Poincaré wrote: “Mathematics does not study objects, but only the relationships between objects; therefore, it is completely indifferent to him whether these objects are replaced by some others, as long as their relationships do not change” [7].

Thus, mathematical thinking is extremely abstract, theoretical thinking, the objects of which are devoid of materiality and can be interpreted in an arbitrary way, as long as the given relationships between them are preserved.

The process of forming a culture of mathematical thinking is a long-term one, occurring throughout the entire period of study, perhaps throughout life. In order for the abilities and skills of mathematical thinking to be conscious, it is necessary to include a system of certain theoretical knowledge in the content of teaching mathematics.

This system must contain, first of all, knowledge about the essence of logical forms and laws widely used in school geometry: what is the definition of a concept, what is an axiom, theorem, the concepts of necessary and sufficient, what is a proof, etc. This knowledge must be used in teaching as they encounter relevant mathematical concepts and then repeated many times.

**Bibliography**

THE ROLE OF HIGHER EDUCATION INSTITUTIONS IN TEACHER TRAINING (IN THE EXAMPLE OF AZERBAIJAN STATE PEDAGOGICAL UNIVERSITY)

Medina Nabiyeva Azer
Azerbaijan State Pedagogical University

Abstract
The progress of the society depends on the school, and the value of the school depends on the potential of quality and competent staff, first of all, on the teacher. The teacher is the architect of the spiritual world of the young generation, the person trusted by the society. Our society trusts the teacher with its dearest, most valuable wealth - children, its hope, its future, and sets before him the following task: "He who understands his responsibility before the state of Azerbaijan, respects the national traditions and democratic principles of the people, human rights and freedoms, patriotism and to educate independent and creative thinking citizens and personalities who are loyal to the ideas of Azerbaijanism". This is a sacred duty, a divine mission that Azerbaijani teachers must fulfill. So - ciety owes its progress, development, and cultural advancement to teachers. The great leader Heydar Aliyev used to say : "The art and profession of teaching is a profession that deserves the highest value in society. There is no honorable job like being a teacher. I don't know a higher name than a teacher." The teaching profession is a responsible, difficult and complex job, as well as an honorable one. One of the sages said that a teacher is not the one who teaches, but the one who learns from him. To teach well, you need to learn well. From this point of view, K.D.Ushinsky's views are interesting. He wrote: "As long as a teacher reads and learns, he lives. When he stops reading, his teaching dies."

Keywords: ASPU, education, teacher

A perfect system of teacher training has been created in Azerbaijan. More than 150,000 teachers in general education schools are engaged in the education of the growing generation, most of whom are graduates of our university. We are proud of it. In addition, we are seriously concerned that 12.7 percent of teachers could not find the correct answer to even 50 percent of the specialty questions (out of a maximum of 40 points) during the trial evaluation in Baku. In district schools, there are teachers who have poor scientific-methodical preparation, who are distant from the school, the student spiritually and from the heart, who welcome all innovations with a "bayonet", who cast a shadow on the name of the holy teacher, who do not meet modern requirements in terms of responsibility, organizational ability, and mobilizing the collective around a common goal. , there are not a few school principals who do not understand the modern problems of education, the essence of reforms in this field, and are not distinguished by their creativity and initiative. Plato said that while a cobbler's bad fitting of a pair of shoes harms one Athenian, the bad work and bad education of a teacher harms the whole of Greece. In order to rid the school of such random people, serious, unbiased, fair, objective, systematic evaluation of the educational activities of teachers, conducting certification exams to assess the knowledge and skills and professional levels of teachers can be an important factor in the selection and placement of teachers and improving the quality of training.

I always think about one issue: how should it be that only teachers who know their specialty perfectly, who are proficient in modern education and information and communication technologies, and who love the school and students are hired? The path to school should be closed once and for all for those who graduate from universities with difficulty, and those who show poor results in training. In recent years, the Ministry of Education's implementation of the electronic admission rules for the recruitment of teachers has led to significant changes in this field. Thus, 21795 of the 24,437 applicants who applied to become teachers in the 2015-2016 academic year were eligible to participate in the test. Out of 18,574 people who participated in those exams, 2,618 people were awarded the title of teacher.
In recent years, a unified concept of teacher training, a clear strategy and a specific state program have been developed, nearly 3,000 school buildings have been built, unsuitable educational facilities have been overhauled, the content of general education has been updated, a new textbook policy has been implemented, a new model of student achievement assessment has been implemented, educational institutions have most of them were provided with information and communication technologies, successful steps were taken in the field of informatization of the education system, education abroad and expansion of international relations. The Heydar Aliyev Foundation and the president of the Foundation, Mrs. Mehriban Aliyeva, made exceptional contributions to the renovation of the schools' infrastructure. In addition, in our rapidly modernizing republic, there was a need to take new, more efficient and effective steps in order for education to meet the challenges of human capital development. Meeting those needs, creating conditions for the sustainable development of human capital in the country, improving the existing infrastructure, improving the training of pedagogical staff with modern thinking, new education and training technology, moral and spiritual purity, and high professional and professional training has become the demand of the time.

The training of quality teaching personnel, distinguished by their academic ability, teaching experience and level of professionalism, requires increasing the reputation of the teaching profession. In the process of pedagogical activity, along with professionalism, teacher's reputation also plays a big role. The teacher works with people who are alive, conscious, and have their own individual attitude to facts and events. It can be said that a teacher's pedagogical activity is effective when he has a high reputation among students, his colleagues and parents. A teacher's reputation is his moral status. Influence is the power to influence others, based on the moral dignity that a person has acquired in the experience of the course of social processes. Pedagogical reputation depends very much on the moral-ethical and psychological-pedagogical preparation of the teacher. Its level is the depth of the teacher's knowledge, erudition, mastery, attitude to work and colleagues, general preparation, social activity, method of working with parents, behavior at home, etc. is determined by It is impossible to raise the authority of a teacher by decision, command, or instruction. Every teacher can raise the reputation of the teaching profession with their work and moral qualities.

While writing these lines, I remember my high school years and my school teachers. Teachers were respected not only by us students, but also by the village community. Our parents would set them as examples for us. I idolized my teachers so much that I was surprised that they even did household chores. I was fascinated by their speech, manners, neat and clean clothes, cheerful walks, smiling faces, and loving hearts. My biggest dream was to become a teacher like them. I studied all subjects with excellent grades and graduated with a gold medal. I chose the profession of teaching mathematics, graduated from the mechanics-mathematics faculty of ASU (now BSU), became a university teacher, received scientific degrees and titles. The reason why I chose the mathematics major was the image of the ideal teacher created in my mind by my mathematics teacher Novruz in high school. My teachers have a share in all my successes in the scientific and pedagogical field.

Sometimes, in order to increase the prestige of the teaching profession, they propose to increase the salary of teachers several times. In our opinion, this is not the right way, and suddenly increasing the salary of all teachers by the same amount will not lead to improvement in teaching performance. The salary should be differentiated, only the salary of teachers whose work is certified should be increased.

The prerequisite for the preparation of high-quality and competent teaching staff depends on the correct, objective and transparent selection for the teaching profession. For this, first of all, the level of professional competence of the applicants applying for the teaching profession should be checked. There are many people who chose the teaching profession unwillingly or unwillingly. Therefore, vocational counseling in general education schools should be conducted in a scientific, purposeful and deliberate manner. Unfortunately, the current system of student admission to universities does not allow this option to be realized. Applicants’ interest, inclination and abilities to the teaching profession, their appearance, especially the writing and speech culture of those who choose the specialty of primary school teaching are not checked. As musical sense is necessary and
important for a musician and color sense is as important for an artist, pedagogical aptitude and pedagogical abilities are as necessary and important for a teacher. The teacher’s special professional and social functions make important demands on him. A teacher should be an example and standard for students, parents and society in general. Professionalism, human and personality formation of other professionals depends on the teacher. Having a teacher with the necessary competencies means training a good doctor, a good engineer, a good lawyer, a good economist, and a professional soldier. For this reason, in all the documents adopted in recent years related to education, especially in the "Azerbaijan-2020: a vision of the future" Development Concept (2012), "State Strategy for the Development of Education in the Republic of Azerbaijan" (2013) approved by the decrees of the President of the Republic of Azerbaijan Mr. Ilham Aliyev the teacher is considered a decisive figure in the process of learning and development of students, monitoring their achievements. Pedagogical competencies, which are considered personal qualities of a teacher, are manifested in his love for children, enjoyment of working and communicating with them. Applicants who have been living with the dream of becoming a doctor in a white coat for years, guarding people’s physical health, but who could not fulfill this desire during admission to higher education, who fell into the specialty of biology teaching as a result of accident, or who want to become lawyers, diplomats, enter the specialties of history, literature, classroom teaching, and enter that profession. even though they score higher than those who chose voluntarily, it does not indicate that they will be good teachers in the future. A teacher should be a teacher by nature. Organizational, research, training (teaching), scientific-cognitive abilities necessary for the teacher's practical activity, without interest and inclination to the pedagogical profession, It is extremely difficult to create in applicants who fall into this specialty as a result of chance. After a while, those students themselves realize their mistakes and have to stop their studies. As a result, the applicant who is excluded from admission to higher education due to someone who does not like the teaching profession taking his place, the student who is a victim of the wrong choice, and his parents also suffer, and the state that finances the student's education loses a large amount of funds. That is why the rules of student admission to higher education institutions should be improved, specialties, especially educational specialties, should be separated from other groups. In order to train high-quality teaching staff, it is necessary and important to conduct interviews to determine the level of professional competence of applicants who apply for pedagogical qualifications, to check their speech and writing culture, and to guide those who get high marks to the teaching profession. Conducted with students admitted to the first course of the Azerbaijan State Pedagogical University it is known from the conversation that sometimes the student is given professional advice by his parents, classmates and schoolmates, acquaintances and relatives. Of course, if such advice is given taking into account the applicant’s individual interest, skills and abilities, health condition, professional suitability, then it will be very useful. Experience proves that more unsystematic and random counseling is not based on individual-psychological characteristics of the applicant, but on how that person wants to see him. Vocational counseling can be given by educators, psychologists and doctors, not by random individuals.

Compared to the 70s and 80s of the last century, the role of parents in the career choice of applicants has decreased significantly compared to school teachers. So, according to the results of the survey conducted with the first-year students admitted to the primary school teaching specialty of ADPU, 49% of the first-year students chose the teaching profession due to the influence of school teachers, 41% due to the influence of other reasons, and 10% stated that they chose that profession under the influence of their parents.

One of the important problems in the training of pedagogical staff is the feminization process in schools, which began in the second half of the last century and has reached an alarming level in modern times. Analyzing the effects of feminization, Professor Abdul Alizade draws attention to the fact that women play a more active role in the upbringing of boys - mothers at home, and female teachers, who are the majority at school: boys who spend most of the day in communication with women often pick up not only their way of thinking, but also he adopts female criteria, in other words, he begins to look at the world through female eyes. It is not for nothing that they say that character forms character. The fact that the vast majority of students admitted to higher educational institutions,
even up to 90% of those enrolled in the engineering-pedagogical specialty, are girls, prompts us to sound the alarm. In order to eliminate this inadequate situation, implementation of stimulating measures for boys to choose the teaching profession, giving them special scholarships and privileges, in our opinion, can be beneficial.

Establishing higher education in accordance with the requirements of the time requires improvement of its infrastructure. It does not seem realistic to ensure the quality of training at the level of European standards without having a high scientific and pedagogical personnel potential, a strong material and technical base, and modern and new campuses. The training of high-quality and competent teaching staff brings to the fore the importance of establishing basic schools and practice-production centers at higher educational institutions. The creation of a kindergarten-school-high school complex, a music and vocational school under ADPU, which carries out pedagogical staff training for pre-school, general education, first vocational-specialization, music schools, while ensuring the unity of theory and practice, flexible and dynamic adaptation to the educational process of future teachers, will ensure the training of competent and professional teachers who successfully apply innovative teaching methods to their work and achieve effective mastery of the content of education. Under the personal supervision of the President of the Republic of Azerbaijan Mr. Ilham Aliyev, the planning of the construction of the campus for ADPU will serve to create interest in this profession among young people and will ensure the training of highly qualified teaching staff. The gift of chemistry, biology and physics laboratories purchased from Germany by the Ministry of Education to our university at a high price should be evaluated as a manifestation of the attention and care shown not only to ADPU, but also to teaching staff training in Azerbaijan in general.

In recent years, continuous and purposeful reforms in the field of improving the financial wellbeing of teachers, increasing professionalism and interest in the teaching profession have significantly increased the public reputation of this honorable profession. The result of the competition for the recruitment of teachers held by the Ministry of Education under highly competitive and transparent conditions is an indication of the growing interest in the teaching profession. On the initiative of the Minister of Education of the Republic of Azerbaijan, Mr. Mikayil Jabbarov, the ministry gave the "Teacher of the Future" scholarship of 100 manats to 300 students who wrote the teaching specialty in the first place during the admission to higher education institutions and scored more than 500 points in the entrance exams. 600 students have already been awarded this scholarship.

With the recommendation of the Ministry of Education, the meetings held by the professors and teachers of our university with the graduates in separate schools of Baku city, the conversations they had about the teaching profession were also effective. So, while only 19 students who were admitted to ADPU a year ago scored more than 500 points, this year their number has increased 10 times (188 people). There has also been a sharp increase in the number of students studying under the state order: 64.4 percent of the students admitted to the university this year were state-ordered students. Last year, this indicator was 40 percent. Out of 265 students admitted to the "Primary class teaching" specialty, only 4 students will study on a paid basis. These are very high indicators.

A new methodological approach to the training of pedagogical personnel was made possible as a result of the purposeful and consistent educational policy of the great leader Heydar Aliyev and the worthy follower of his political school, the President of the Republic of Azerbaijan Mr. Ilham Aliyev. In order to improve initial teacher training, the "Framework Curriculum for the training of elementary school teachers at the bachelor level of higher education in the Republic of Azerbaijan" was developed and applied in 3 pilot higher education institutions (ADPU, AMI, GSU). In the strategy, it is considered necessary and important to develop new curricula and competency-based standards for higher education. In one of his interviews, the Minister of Education of the Republic of Azerbaijan, M. Jabbarov, rightly noted that although new curricula for teacher training are being implemented, the curricula of higher education institutions as a whole do not correspond to the modern conditions of the labor market. The strategy shows that the development of curricula at the level of higher education lags behind the dynamics of economic development. The state has great expectations from higher education, especially higher pedagogical education. The formation of the moral potential of the nation depends on the level of the teacher's deep and comprehensive knowledge,
practical skills, high culture, sense of responsibility and modern outlook. Since intensively changing socio-economic relations in society in modern times require flexible and dynamic adaptation of the educational system to these processes, improving the quality of the learning process from year to year requires a more competent approach to the educational process from teachers. A modern teacher should be able to conduct research, learn from modern education, training, and development technologies, know the functions of correct diagnosis, forecasting, projecting, information giving, organization, evaluation, control, and correction, and should have the quality of research. A teacher without research skills cannot instill this quality in his students. The teacher of the modern school should be creative, should be able to see the development of the student he/she teaches at all stages, and should correctly direct their formation as a personality. A teacher must know all the psycho-pedagogical features of a student's creative thinking in order to educate a citizen and personality who understands his responsibility, respects the principles of democracy and the national traditions of the people, human rights and freedoms, is loyal to the ideas of Azerbaijanism, and thinks independently and creatively.

References
CREATIVE COMPETENCE AS TEACHER’S PROFESSIONAL ACTIVITY COMPONENT

Mukhambetalina Nazerke
2nd year doctoral student of Ualikhanov University, Kazakhstan

The concept “competence” in relation to the characteristics of a teacher has been used not so long ago, since the 90s of the 20th century. Initially, this term was used as a synonym for the concepts “professionalism”, “pedagogical skill”, i.e. those qualities that can ensure successful teaching activities in the professional field.

Today, scientific-theoretical and scientific-methodological works are being carried out, which analyze the essence of the competence state and the problems of forming key competencies (L.F. Ivanova, A.G. Kasprzhak, A.V. Khutorskoy). Scientists R. Barnett, J. Raven, V. Vestera, P.P. Borisov, N.S. Veselovskaya, A.N. Dakhin, I.A. Zimnyaya, N.A. Perelomova, T.B. Tabardanova, I.D. Frumin, G.A. Zuckerman and others are working on this problem.

The amount of research on creativity is large, but creativity as a competency is not a problem that makes it difficult to implement the results of scientific research into practice. Creative competence has not been studied so far, but there are studies, sources “nearby”, about this problem. These include works devoted to the study of creative thinking and creativity (D.B. Bogoyavlenskaya, M. Wallach, D. Gilford, V.N. Druzhinin, M.M. Kashapov, A.M. Matyushkin, S. Mednik, V. .I.Panov, Ya.A.Ponomarev, E.Torrence, V.D.Shadrikov, etc.).

Speaking about the problems of pedagogical activity, N.V. Kuzmina defined the structure of a teacher’s activity as follows (Kuzmina, 1979).

This model depicts five functional components: 1) gnostic; 2) design; 3) constructive; 4) organizational and 5) communicative.

1. The Gnostic component (from the Greek “gnosis” – “knowledge”) refers to the sphere of knowledge of the teacher. We are talking not only about knowledge of one’s subject, but also about knowledge of the method of pedagogical communication, the psychology of students, as well as self-knowledge (one’s own personality and activities).

2. The design component includes an idea of the long-term objectives of training and education, as well as strategies and methods for achieving them.

3. The constructive component is the features of designing one’s own pedagogical activity and the activity of students, taking into account the immediate goals of teaching and education (lesson, lesson, cycle of lessons).

4. The communicative component is the features of the teacher’s communicative activity that characterize his interaction with students. The emphasis is on the connection between communication and effective pedagogical activities aimed at achieving didactic (educational and educational) goals.

5. The organizational component is a system of teacher skills for organizing one’s own business, as well as the activities of students.

The need for change lies in the fact that all components of these models are often provided through a system of appropriate teacher skills. The presented components are not only complementary, but also overlap to varying degrees. So, for example, when thinking about the structure and course of a lesson, the teacher must keep in mind what class his students will come from to this lesson (for example, after physical education classes, it is usually difficult for schoolchildren to calm down and concentrate). It is necessary to take into account the character and personal problems of each of them. This is the difference between the Gnostic and the organizational components.

I.A. Zimnyaya emphasizes that the proposed model of socio-professional competence, correlating in the nomenclature of the types of competencies included in the subsets with many of those developed in the Tuning project, is fundamentally different in the following:

– in the proposed model, not adjacent groups of competencies are identified, but subordinate ones: basic, prerequisite (intellectual abilities, personal properties) and core (social and professional) competencies;
– social and professional competencies are overlapping, which is reflected in the name of such
cOMPETENCIES, such as, for example, “a person’s attitude to activity”;
– this model representation shows which levels of holistic socio-professional competence
should develop on the basis of the psychological laws of a person’s mental and personal development,
which should be formed on the basis of the psychological laws of mastering an activity (including
professional) and the formation of its subject – the student himself;
– in the presented model, the concepts of “intellectual abilities”, “personal properties” and “so-
 cio-professional personal qualities” are distinguished, where quality is a formed characteristic of the
measure of compliance of the manifestation of a phenomenon or process with a given or specified
standard (Tuning Educational Structures, 2003).

The presented model of socio-professional competence can, firstly, rationalize and streamline
the sets and subsets of formed core social and professional competencies, delimiting the tasks - what
needs to be developed (further developed) with special tasks, and what needs to be formed as a prac-
tical result of education. In other words, we can say that: socio-professional competence is a cumu-
lative integral personal characteristic of a person who has received a qualification and is characterized
by professionalism.

Thus, the author gives the following definitions. Socio-professional competence is a cumulative
personal quality of a person formed on the basis of intellectual (in particular, thinking) abilities and
personal characteristics, which allows one to be defined as competent in his field. 67 At the same
time, emphasizes I.A. Winter, it is necessary to note the interpretation of the component structure of
competence fixed in 2003, according to which: a) competence is broader than knowledge and skills,
it includes them; b) competence includes emotional-volitional regulation of its behavioral manifesta-
tion; c) the content of competence is significant for the subject of its implementation and d) being an
active manifestation of a person in his activities and behavior, competence is characterized by mobi-
lization readiness as the possibility of its implementation in any situation requiring it (Zimnyaya,
2003).

Considering the tasks of modern education, R. Epstein introduced the concept of “creative com-
petence” into scientific use, considering it as the readiness to adaptively apply acquired knowledge,
supplement the knowledge system independently and the desire for self-improvement.

R. Epstein suggested that creativity largely depends on the level of formation of one or more
core competencies, which are studied in the theory of generativity.

F.V. Sharipov argues that the creative competence of a teacher includes a system of knowledge,
abilities, skills, abilities and personal qualities necessary for creativity. The creative component can
be present in any type of teacher activity (pedagogical, communicative, organizational).

In the structure of the creative competence of an individual (including a teacher), the author
identifies the following qualities:
– ability to be creative and problem-solving; ingenuity;
– flexibility and criticality of mind, intuition, originality and self-confidence;
– the ability to pose and solve non-standard problems, the ability to analyze, synthesize and
combine, the ability to transfer experience, the ability to foresight, etc.;
– emotional-imaginative qualities: spirituality, emotional upsurge in creative situations; asso-
ciativity, imagination, fantasy, daydreaming, a sense of novelty, sensitivity to contradictions, the ability
to respond emotionally (empathy);
– having relaxed thoughts, feelings and movements; insight, the ability to see the familiar in the
unfamiliar; overcoming stereotypes;
– the ability to formulate hypotheses and construct versions of their evidence;
– propensity to take risks, desire for freedom (Sharipov, 2010).

Researchers identify the following in the structure of innovative and creative competence:
• personality traits of a teacher (innovative thinking style; ability to take a creative approach to
designing the educational process depending on a specific situation; desire to master new methods
and technologies);
• body of knowledge (modern theories of creativity and approaches to its development);
• and skills (use methods for developing creativity; encourage creativity and imagination; encourage independent search for solutions to non-standard problems; stimulate the development of higher-level mental processes).

Creative competence in the structure of teacher competence reflects the creative achievements of the individual at different stages of professional (teaching) activity and is understood as the ability to create new professional products and high performance results through the realization of the individual’s creative abilities. The characteristics of the creative product of the pedagogical activity of a kindergarten teacher or teacher are unusualness, novelty, usefulness of the decisions made, as well as the overall productivity of pedagogical activity, expressed in the optimal organization of activity.
MODERN METHODS OF TEACHING ENGLISH AT SCHOOL

Murtuzayeva Leyla Afghan
Azerbaijan State Pedagogical University

Abstract

The article discusses modern methods of teaching English at school. The methodology of teaching English at school has undergone sufficient changes and has acquired several different directions. The article analyzes methods of teaching English in secondary schools using new technologies. Currently, the methodology of teaching English at school has undergone sufficient changes and has acquired several different directions. They are constantly being improved and supplemented, and therefore are quite popular in the modern world.

Keywords: foreign language, game, innovative technologies, technological tools, methods, techniques

Today it is difficult to imagine any sphere, including education, without computers and information technology. The National Training Program emphasizes the importance of creating modern educational technologies aimed at solving the problem of mastering the content of education at the stage of development and implementation of a new generation of didactic and information support for the educational process. Today, the content and quality of education is considered one of the most pressing issues and priorities of society. Ways to develop education and increase its efficiency are being sought, and the issue of introducing new information technologies into the educational process is gaining popularity. In particular, the development of mechanisms for integrating science and production into the educational process, its implementation in practice, the individualization of theoretical and practical training and self-study, as well as the development of technology for a multimedia education system and its tools. One of the urgent tasks is to accelerate the recruitment, assimilation, and training of students based on new pedagogical and information technologies and multimedia technologies.

Methods of teaching English at school have two approaches:

In the first approach, the student becomes the initiator, and the teacher acts as a guide. Using this approach, you can achieve the most effective work for each student individually and in a group.

The second approach is based on the use of a huge amount of technology and methodology that many teachers use in the most various combinations, creating an exciting learning process. In this approach, the teacher plays the main role and he gives the task to the students and evaluates the completed task. The method focuses on obtaining maximum results from individual work.

The most effective method of teaching English at school is the “grammar-translation” method, which is based on reading texts and doing grammar exercises. The dominant language is the native language.

The next important method is the emotional-semantic method, which is the most popular in terms of teaching schoolchildren. This method is based on the specifics of information perception by children and adolescents [4].

Unlike the above methods of teaching English at school, the training method is based on independent study. Students are given structured material that has already been worked out and is clearly explained by the teacher [3].

When using the training method, students learn theory, memorize the rules and use them in practice. This method is mainly used in online learning. Its main advantages are the presence of a carefully thought-out program and the presentation of information necessary to improve the level of English proficiency.

With online learning, it is proposed to learn English through texts, stories and fairy tales. For each text, a number of exercises, listening and translation are given for memorization [1].
That is why the role and effectiveness of information technology in the rapid development of the educational process, which is one of the key areas of our development, are incomparable. Because modern means of information technology have completely changed all their capabilities and methods of organization in the process of improving the quality and efficiency of the educational process. That is why today we all use the term “new pedagogical technologies” or “innovative technologies” in the education system. Today, educational institutions are equipped with modern computers and information technologies. This requires a new approach for teachers to their work, the need to effectively use modern innovative technologies in the educational process. The introduction of innovative technologies into the educational process, along with the development of teachers' skills and abilities in the use of modern pedagogical and information technologies, changes their place, tasks and roles in the educational process. At the same time, they teach innovative technologies to create a wider range of opportunities for introducing new methods, techniques and software of new pedagogical and information technologies into the system. In the process of teaching a foreign language in educational institutions, it is important to collect, assimilate, process, use and transmit a large amount of information. Therefore, in addition to traditional methods, it is necessary to use innovative technologies, including information technologies.

The educational process is exciting with the help of information technology, allowing for an individual approach to each student.

Thanks to the use of information technologies, teachers and students have the opportunity to receive and assimilate a large amount of information on the subject of foreign languages. The introduction of innovative technologies to ensure the effectiveness of teaching foreign languages, conducting lessons using new interactive methods and information technology tools, including multimedia, distance learning, the use of Internet technologies, computerized conferences, the creation of electronic manuals and textbooks and their direct use in the classroom are effective. Currently, it is recommended to use electronic textbooks in all aspects of the educational process, including when teaching foreign languages.

The use of multimedia technologies in teaching foreign languages requires the use of various methods and technologies for organizing lessons. To do this, it is necessary to organize practical training for students in classrooms and computer classes, in the premises of technical teaching aids, in the methodological room, and in libraries. Multimedia makes it possible to present information in various forms and create dynamic images, the ability to receive and visualize it through the organs of vision and hearing. When teaching foreign languages, multimedia technologies, unlike traditional ones, express information in the form of images, sounds and actions, and not in the form of text. This teaches students to be more active and attentive in class because the information is based on response to specific actions. Because every recommended piece of information is created by their participation and actions. Multimedia technologies are a tool that positively and effectively influences students, combining theoretical, practical, visual, informative, educational and control parts.

Educational technologies are the effective use of modern information technologies in the educational process. It is also aimed at improving the quality and efficiency of education through the introduction of modern innovative technologies into the educational process. In particular, there are several advantages of using such information and communication technologies when learning a foreign language. The role of modern technologies in learning and teaching languages is invaluable. The use of technology is beneficial in all aspects of foreign language learning (reading, reading, listening and speaking). Listening is one of the most important parts of learning a language. This requires the student to pay attention to the speaker's pronunciation, grammar rules, vocabulary, and meanings simultaneously. An important factor in the use of modern technologies in education is the ability of students to know and use information and communication technologies. Teaching and learning a foreign language using modern technologies is one of the most effective ways. This process includes:

- When using computers, the student can watch and listen to videos, demonstrations, dialogues, films or cartoons in a foreign language;
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- It is possible to listen and watch radio broadcasts in foreign languages and television programs; - use of tape recorders and cassettes, more traditional methods;

- CD players are available.

Using these tools will make the process of learning a foreign language more interesting and effective for students. In the process of globalization, it is difficult to imagine our life without the Internet. This is one of the most effective ways to learn and teach a foreign language. You will be able to communicate with foreign speakers via the Internet. Writing exercises can be improved by writing letter by email. In short, the use of innovative methods in English classes develops students' logical thinking skills, verbal fluency and the ability to respond quickly and accurately, which stimulates students' pursuit of knowledge. The student strives to prepare well for the lessons. This makes students active participants in the educational process. Since the education system is aimed at raising a free-thinking, well-rounded, mature person, in the future we will contribute to the further development of effective ways for future teachers to use innovative technologies.

Result

The educational process also uses active methods of teaching English. These include:

- a round table, where the teacher formulates a problem and offers students a task: to assess the significance of the problem, demonstrate all the pros and cons, determine a possible result, etc.

- brainstorming, which is aimed at discussing and solving a problem.

When using this method, the audience is divided into two groups - “idea generators” who offer ideas, and “experts” who, at the end of the “assault”, evaluate the position of each “generator”.

- a business game, where the teacher prepares a game on a studied topic and explains the rules to students. As a rule, the proposed tasks imitate tasks and situations of real communication, for example, searching for and applying for a job, concluding a contract, traveling, etc.

- a game technique, its main advantages are the absence of a mechanism of compulsion to classes and great interest on the part of students [2].

The teacher conducts a wide variety of games with the student on the vocabulary and grammatical structures being studied, during which the children quickly memorize them and learn to apply them in speech.

Thus, when using any method of learning English at school, motivation is of great importance, and the key to successful learning is regularity and systematality of classes.

Bibliography

PROTECTION OF NATIONAL AND MORAL VALUES IS THE DUTY OF MODERN YOUTH

Narmin Hasanova
Faculty of Pedagogy and Psychology, Agjabadi branch of ASPU teacher, Azerbaijan

Abstract
The article deals with the essence of moral education in the organization of modern education of the younger generation. The ideas of Heydar Aliyev, a great leader in the organization of moral and educational work, reflect the protection of national values by organizing a fund. The national-spiritual development of the younger generation and the individual as a whole is a complex and multifaceted process that covers all spheres of human life. From the issues discussed in the article, it can be concluded that as a result of the educational work carried out today with the youth, modern youth should grow up and mature as children worthy of society and the Motherland. Although the original core is located in the family, among the actual pedagogical problems are the issues of moral education, which acquire a more systemic form in secondary school, and then in higher education.

Keywords: spiritual education, modern youth, spiritual development, education problems, global problems.

Moral education, on the one hand, forms moral consciousness and feelings, moral imagination and concepts, judgment, and on the other hand, moral behavior. Love for the motherland – patriotism, a high noble quality that is extremely important for humanity and society, is developed precisely during the work on moral education. In addition, honesty and truthfulness, respect for elders, comradeship and national identity, sense of honor and dignity, active life position, etc. The formation of similar positive qualities is included in the duties of moral education. History is a record of the dynamics of economic and social development and social consciousness that the people have gone through. Historical stages, which carry cultural categories, also contain information about the time when national values were created. According to the means of creation, the national wealth of the people is divided into two parts, such as spiritual and material national values. Folk applied art, folk architecture, carpet weaving, coppersmithing, carpentry and other ethnopedagogical examples are the national values of the people.

There are important scientific and moral sources of national education, which have been handed down from generation to generation for centuries and are addressed more or less in each of us today. Directly with their help and influence, our national traditions and national upbringing live on, and thousands of years will pass, the people of Azerbaijan will still live their national identity, national dignity, national conscience and the morality of the Motherland. Our philosophical thought, our national psychology, our religious roots, our national education, being the pioneer in this work, reflect the spiritual and moral resources.

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DIGITAL EDUCATIONAL ENVIRONMENT OF COLLEGE AS A FACTOR OF IMPROVING THE QUALITY OF EDUCATION

Niyaz Altai Tahir
Azerbaijan State Pedagogical University

Abstract
In the context of the development of the digital society and digital economy, there is an urgent need to create a digital educational environment. The article discusses the concept of “college digital educational environment”, its components and the effectiveness of using digital educational resources in the context of the implementation of the Federal State Educational Standard for Secondary Professional Education. It is noted that a comprehensively developed graduate must have the necessary set of competencies that will allow him to work effectively or continue his education in a highly developed information society. These competencies are: “communication and cooperation in the digital environment”, “self-development in conditions of uncertainty”, “creative thinking”, “information and data management”, “critical thinking in the digital environment”. The authors of the article draw attention to the fact that digitalization in the educational process involves innovations related to: expanding access to educational services through online resources; content of training; digital educational equipment and teaching materials. Thus, the interactivity of the educational process and its effectiveness increase.

Keywords: digitalization, education, educational environment, digital competencies

The functioning of the digital educational environment in an educational organization is fixed at the state level. Consequently, in the context of the transition of all spheres of life to the digital economy, there is a need to create a new type of educational environment - a digital educational environment that operates on a network principle, allowing all participants in the educational process to move to a new level and increase its efficiency through optimal and timely management decisions.

“Traditional forms of work in the educational process fade into the background and become uninteresting to participants in the educational process” [2, p. 315]. The digital educational environment at the college has a special mission, which is to prepare a comprehensively developed graduate with the necessary set of competencies, ready to work or continue education in a highly developed information society, and also possess standard digital competencies, such as:
1) “Communication and cooperation in the digital environment”;    
2) “Self-development in conditions of uncertainty”;    
3) “Creative thinking”;    
4) “Information and data management”;    
5) “Critical thinking in the digital environment.”

The “Communication and Cooperation in the Digital Environment” competency presupposes the student’s ability to use various digital tools that allow him to achieve his goals in interaction with other people.

Electronic library systems (ELS) are one of the effective digital tools available to all participants in the educational process. Electronic library systems play the role of an information space created with the aim of uniting teachers and students, providing free access to all library resources and equal opportunities to use them. EBS guarantee the accessibility of any (scientific and artistic).

When we talk about distance learning, the associative word “convenience” appears, associated with the distance format of teaching and learning that has entered our lives. Now it is not necessary to tie yourself to one place; There are many free courses and video lessons available that can be completed by the teacher himself, or introduced as part of the topic of the lesson for students; it became possible to manage your time independently and choose a study schedule that fits into your usual lifestyle; This mode takes little time, which allows you to quickly acquire new knowledge, improve your skills or get an education in a new field of activity; you can save the organization’s
financial resources by not going to meetings of the regional methodological association, and much more. Obviously, it is more convenient for most of us to receive any information and undergo training from home, but is it possible to compare the quality of the information received, and for the learner, knowledge, in this case?

When comparing two forms of education, it is impossible to say unequivocally which is better: distance learning or traditional - full-time. The choice depends on many factors, including the age and qualifications of the person, the initial level of knowledge and the required result, and the subject of study itself. But we can say with great confidence that during the period of digital transformation of education, the greatest effect in learning can be achieved only by combining several forms and methods of teaching at the same time, taking into account the fact that different methods are used to solve certain problems.

Educational institutions, the introduction of ELS is justifiably associated with an increase in the quality, completeness, efficiency and comfort of information and library services.

Advantages of using EBS: [6]
- the ability to use the book on any electronic medium at any time;
- creation of book collections by a librarian (formed taking into account the recommendations of the teacher, as well as based on the lists of references recommended by the Ministry of Science and Higher Education of the Russian Federation) and issuing these collections to the group;
- clear and easy-to-use settings that make it possible to choose the optimal and comfortable reading mode for each reader;
- convenient work with text (selecting and saving the necessary quotes, opening the book on the desired page).

The presence of computer classes at the Multidisciplinary College makes it possible to provide each student (or group) in class with both fiction and electronic textbooks, as well as a variety of electronic dictionaries. Using ELS, a student can analyze a text, read an article in a textbook, use an explanatory, etymological or spelling dictionary, select and analyze means of artistic expression.

The “Self-development in conditions of uncertainty” competency presupposes the student’s ability to set educational goals for emerging life challenges, select solutions and opportunities for development (including using digital means) of other necessary competencies.

Provided they are connected to the Internet, students in class not only have the opportunity to access the EBS, but can also take various forms of online testing with immediate receipt of results and a detailed analysis of mistakes made on the educational portal of the Federal State Budgetary Educational Institution of Higher Education “MSTU named after G.I. Nosova.”

The “Creative Thinking” competency determines a person’s ability to generate new ideas for solving problems of the digital economy, to abstract from standard models: to rebuild existing methods of solving problems, to put forward alternative courses of action in order to develop new optimal algorithms.

Today, standard forms of work in the educational process are becoming auxiliary and of little interest to all participants in this process. Both teachers and students are looking for new, convenient forms of communication for everyone, available both during classes and outside of class hours. The use of the LearningApps service in the educational process seems promising and relevant. org. LearningApps.org supports learning and teaching through small, publicly accessible, interactive exercise modules. These exercises are created online and can later be used in the educational process. To create such exercises, the site offers several templates (classification exercises, multiple choice tests, etc.). Such exercises can be easily integrated into a training scenario. [6]

The “Information and Data Management” competency requires the student to develop the ability to find the necessary sources of information and data, perceive, analyze, remember and transmit information using digital means, as well as using algorithms when working with data obtained from various sources, to be able to effectively use the information received to solve problems.
The “Critical Thinking in a Digital Environment” competency presupposes the ability to evaluate information, its reliability, and build logical conclusions based on the data received and the information collected.

Also, the digital educational environment contributes to the formation of core competencies of the digital economy among teachers of the Multidisciplinary College. This environment involves a set of ICT tools, the use of which is systematic and meets the requirements of the Federal State Educational Standard for the formation of conditions for the implementation of the main educational program of vocational education, contributes to the achievement of planned professional, personal, meta-subject, subject learning outcomes by students, the development of general and professional competencies and is a set of digital teaching aids, online courses, electronic educational resources that ensure the fullest use of the didactic potential of digital technologies for developing competencies in students that meet the needs of the digital economy.

In addition, the college’s digital educational environment should ideally become a single communication space for all participants in educational relations, an effective tool for managing the quality of implementation of educational programs, and the work of the teaching staff.

Digitalization in the educational process involves innovations related to the expansion we have access to educational services through online resources; with the content of training; with digital educational equipment and teaching materials; at the same time, it does not lead to a radical transformation of teaching methods, but increases the interactivity of the educational process and its effectiveness.

Corporate portal: automation of calculation of teaching load (own development) Provides planning of the educational process and its resource support, access to all necessary official documents (documents on the management of educational, research activities); synchronizes the work of structural divisions

Electronic document management system 1C Provides modern procedures for creating, searching, collecting, analyzing, processing, storing and presenting information

Individual plan for teaching staff (IPPR) Ensures the organization and planning of educational and extracurricular activities of teaching staff for the current academic year

The program “Student of Secondary Professional Education” Contributes to the management of the contingent from admission to graduation; creating statements; recording, uploading and retrieving various information about students. The program is integrated into the educational portal

Self-recording studio of the Federal State Budgetary Educational Institution of Higher Education “MSTU named after. G. I. Nosova” Ensures the creation by teaching staff of high-quality original educational content

Today, educational organizations at various levels (including colleges) are actively developing an online learning system based on the use of various educational platforms [3]. One of such platforms that supports the educational process in college and makes it possible to ensure equal and free access to knowledge for students, flexibility of learning, and also to implement training using distance educational technologies is

Xia modular object-oriented dynamic environment Moodle.

The Moodle educational environment offers a wide range of opportunities for the implementation of information and communication technologies, since it is interactive in nature. At the same time, Moodle allows you to implement the requirements of the Federal State Educational Standard (clause 7.2.1. Federal State Educational Standard 3+ and clause 4.3.4. Federal State Educational Standard 3++), which indicate that each student should be provided with unlimited individual access to electronic library systems, to an electronic information educational environment, remote access in the case of using e-learning (from the English Electronic Learning - a training system based on information and electronic technologies), etc.

An electronic educational course (EUC) is an educational electronic publication or an information system for complex purposes, capable of realizing the didactic capabilities of information and communication technologies [4], created to support the educational process in institutions of all
levels of education, as well as for self-education as part of educational programs aimed at continuing education. This course is part of e-education.

An electronic training course created on the basis of Moodle allows you to effectively organize the educational process based on the principles of interaction and independent learning of students under the guidance of a teacher. In order to demonstrate the capabilities of the dynamic educational environment Moodle, we will describe an example of such a training course. [7]

The purpose of the electronic training course is the formation and development of independent cognitive activity of students with the active interaction of all participants in communication. Taking into account the provisions of the new educational standards Federal State Educational Standards 4 and TOP-50, which do not provide for independent work, the electronic educational system becomes an indispensable element of the educational process and, accordingly, communication, which has a certain value for students.

The structure of the educational curriculum for any discipline being studied includes a number of sections and corresponds to the work program of the discipline. On the one hand, the structure of the course is typical, traditional, and includes mandatory elements of the section: theoretical material, presentations, practical work of a reproductive nature, a control test on the topic or section, as well as an additional practical task for a more detailed study of the material being studied.

On the other hand, the authors of the course - teachers - have the opportunity to creatively rethink the structure of the educational curriculum, introduce additional non-standard elements that allow them to re-analyze the educational material independently, such as: “Book”, “Database”, “Crossword”, “Glossary” " [5].

The BigBlueButton conference has undeniable advantages when organizing blended learning, which makes it possible to interact with students online: conduct a survey, consult, explain new material.

The electronic course itself universally and comprehensively reflects the interaction between teacher and student, since it acts as a tool for the student to master educational material, and the teacher analyzes and controls this process [5].

In the future, the Multidisciplinary College is expected to switch to an electronic journal, as well as an automated schedule based on the ProCollege system.

All participants in the educational process are involved in creating and filling the digital environment of the Multidisciplinary College.

Methods of organizing and implementing educational and cognitive activities

Verbal (story, lecture, seminar, conversation) In the formation of theoretical and factual knowledge and solutions to learning problems. Oral speech of the teacher, books, manuals, workbooks, slides, etc. is successfully used. Partially used Educational audio and video materials, video conferences, means of communication, EBS

Visual (illustration, demonstration, etc.) To develop visibility, increase attention to the issues being studied. Successfully used Printed publications, online resources, demonstration models, dummies, layouts, stands, maps, posters, wall illustrations, slides, films, etc. Successfully used Educational audio and video materials, video conferencing, virtual platforms, EBS. [6].

Practical (exercises, laboratory experiments, labor activities, etc.) To develop practical skills. Manuals, recommendations, laboratory equipment, educational instruments, simulators, training and production equipment, etc. are successfully used. Multimedia technologies, GIS- technologies, simulation technologies, electronic simulators, etc.

Reproductive and problem-search (from particular to general, from general to particular) To develop knowledge, skills and abilities The Word, visual aids, books, manuals, workbooks, recommendations, laboratory equipment, etc. are successfully used. Partially used Educational audio - and video materials, EBS, video conferences, virtual platforms (Russian electronic school)

Methods of independent work and work under the guidance of a teacher To develop independent thinking, research skills, a creative approach to business Successfully uses Primary sources, documents, texts of works of art, collections of problems and exercises, magazines and newspapers, educational films, maps, tables, instructional and methodological instructions, video,
audio materials, computer and computer programs, exercises and training, etc. Successfully used Electronic textbooks, manuals, multimedia encyclopedias, EBS, network teaching aids, educational information audio and video materials, computer training systems in conventional and multimedia versions, databases and knowledge with remote access, online or offline interaction, educational platforms. [7 ].

Conclusion

According to the concept of L. Floridi, people create a new environment for themselves - the “information sphere”, or “inosphere”, in which they actively interact. The digital environment of a college is one of these “inospheres” that makes it possible to organize both offline communication with students and online interaction, which often meets the needs and interests of students, since they are representatives of a new type of person - homo informaticus.

At the present stage of development of sciences, including those about man and society, production technologies, culture (intellectual, technological, social, spiritual, informational) and education itself, there is an urgent need to transition to a practice-oriented type of lifelong education based on the fundamental content of the sciences and on the inexhaustible possibilities of a person as a subject of general and professional development, including through the use of the enormous capabilities of digital learning tools.

In the digital learning environment, students develop many of the most important qualities and skills that are in demand and determine the personal and social status of an educated person. Students often choose the digital option and find it more convenient and exciting than traditional media. Thanks to the interactivity of the material, faster assimilation of information is achieved, which leads to improved academic performance. But independent acquisition of knowledge is not always possible due to the inability to find exactly the necessary materials or acquire the necessary knowledge. And it is also impossible to check the quality of this knowledge without an organized digital system.

Teaching aids are the various objects used by the teacher and students in the learning process. The main didactic purpose of teaching aids is to speed up the process of learning by students. When preparing for classes, the teacher carefully selects teaching aids depending on:

- on the objectives of the lesson;
- teaching methods used;
- content of educational material;
- teacher preferences.

It is important to follow the principles of using teaching aids:

- visibility and accessibility;
- harmonious use of traditional and modern teaching aids;
- joint creativity and cooperation between teacher and students;
- priority of safety rules for teaching aids, taking into account the age and psychological characteristics of students.

The teacher always needs to maintain the “golden mean” and keep in mind that overloading the lesson with visuals and a variety of teaching aids leads to a decrease in reducing the effectiveness of the learning process due to the scattered attention of students.

References


Abstract

Today, strategic interaction between employers and universities is necessary to improve the quality of education. For employers, this is an opportunity to develop professional competencies in future specialists without having to engage in lengthy retraining and training when applying for a job. For universities, this is a way to organize practical classes in the real labor market, developing relevant professional skills among students. The article discusses the problems of developing cooperation between higher education and the labor market. The possibilities of using professional standards and the system of assessment and certification of professional qualifications to establish cooperation between higher education and the labor market are analyzed. The main directions of work on creating an information database on the quality of training of higher school graduates are proposed.

Keywords: competencies, labor market, quality of education, cooperation, federal state educational standards, professional standards, assessment and certification of qualifications,

In the period until the early 1990s, the relationship between employers and higher education was reduced mainly to the planned distribution of university graduates, which was of a directive and formal nature, since it reflected only the numerical needs of economic sectors, but did not in any way connect the demand for graduates of various universities with their quality of preparation. The emphasis was placed on the personal qualities of the applicant, his general culture and training in the process of work within corporate educational structures. The influence of this trend decreased significantly by the middle of the first decade of the 21st century, when employers in the vast majority of cases began to regard the presence of a higher education diploma as a mandatory requirement for an applicant, sometimes even for technical occupations positions that did not require such a level of education.

The growing demand for higher education diplomas in the labor market continues to this day, but in parallel with it, employers’ dissatisfaction with the quality of training of graduates of the higher professional education system continues to grow, which manifests itself in the form of a persistent distrust of employers in the quality of diplomas. The results of an analysis of the websites of recruitment agencies, largest enterprises and firms show that the lists of employers’ requirements for applicants are still dominated by lists of personal characteristics and general cultural, rather than professional, competencies. Even today, employers often rely on corporate universities to develop professional competencies. Unfortunately, universities, for their part, do not seriously analyze the employment results and competitive advantages of their graduates, but, on the contrary, in an attempt to expand enrollment on a contractual fee basis, they create new training programs that at first glance are prestigious, but are often not in demand in the labor market.

At the beginning of the second decade of the 21st century, there were mutual, rather potential than realized, attempts at rapprochement on the part of universities and employers, since there are different barriers and restrictions on both sides. In particular, an understanding is gradually emerging among employers of the need to participate in financing (together with the state) orders for universities to carry out research and development work, the practice of participation of employers and professional communities in monitoring the quality of university education is expanding, and positive experience in targeted training of specialists is accumulating at the request of employers on the basis of tripartite agreements, attempts are being made to conduct state exams for graduates on independent external platforms, a system of educational and methodological centers for the
development of educational programs with the participation of business and professional communities is being developed, etc.

For its part, the higher education system is gradually overcoming the closedness of the period when it set tasks for itself, then checked itself and assessed the quality of educational results itself, without using external criteria and independent tools of social and professional assessment, which increased the isolation of the activities of Russian universities from real economic requirements. This gap has not been fully bridged to this day, although a number of areas of work have emerged that contribute to the establishment of cooperation between the vocational education system and the labor market. (5)

Some areas of work carried out in universities include:
- performing search work in the field of connecting professional and educational standards;
- changing the content and methods of teaching in accordance with the requirements of new educational standards;
- structural restructuring of the system of educational institutions by introducing new structures for interaction with employers (business incubators, employment and career centers, etc.);
- radical updating of the material and technical base of universities to create conditions for simulating professional activities;
- development and implementation of state-public models of interaction between universities and interested organizations and enterprises, development of a system of social partnership;
- creation of an integrated system of vocational guidance for young people for training in blue-collar professions and specialties;
- creation of a social and professional system for assessing the quality of vocational education;
- creation of an effective system for managing personnel in vocational education and their material incentives from employers. (4)

The establishment of interaction between universities and employers is greatly facilitated by the introduction of the Federal State Educational Standards, at least in the form as intended by their creators. It was assumed that the formulation of the requirements of educational standards would be based on the objectives of the future activities of university graduates and the requirements of professional standards, and employers themselves would participate in the development of the Federal State Educational Standard. This plan was only partially implemented for a combination of reasons, among which, first of all, it should be noted the lack of professional standards in the vast majority of sectors of the Russian economy. Therefore, we can hardly expect that the professional competencies laid down in the approved Federal State Educational Standards will in the absolute majority live up to the hopes of their developers in the status of target indicators of the quality of vocational education results. Although the certification of university graduates according to the new Federal State Educational Standards has not yet been carried out, it is already clear that the competencies in the standards in many areas of training have typical shortcomings: they are excessively fragmented, excessively numerous and poorly correlated with the real needs of the labor market.

Nevertheless, the introduction of the Federal State Educational Standard allows universities to take further steps to establish business partnerships between universities and the labor market. These steps include:
- developing a mechanism for interaction with employers on the principles of social partnership, creating joint professional teams and building strong and effective vertical and horizontal connections in working on common problems;
- bringing into compliance the professional standards of the industry and the Federal State Educational Standard in the relevant area of training;
- monitoring the needs of industries dominating in the region for specialists in the short and long term;
- development and testing of joint educational programs and professional modules;
- carrying out research and development work on orders from employers.

The work to create a system for certification of qualifications of specialists and graduates, which is currently proceeding at an increasing pace, creates additional opportunities for establishing
cooperation between universities and employers in the field of requirements for the quality of professional training of graduates. Since 2010, in the activities of educational authorities, the National Agency for the Development of Qualifications (NARC) under the Russian Union of Industrialists and Entrepreneurs (RSPP), regional agencies for the development of qualifications (RADC) and methodological centers of various industries, significant attention has been paid to the development of programs to create an independent qualification assessment and certification systems.

On the one hand, this process stimulates sectors of the Russian economy to develop professional standards. On the other hand, universities have objective information about the quality of educational results obtained from the external environment, which acts as an evaluator. The form of its presentation gives this information particular value. Instead of subjective reviews of individual employers and demonstration of their growing distrust in the quality of vocational education, statistics obtained from the results of certification of graduates of various universities in Russia will be accumulated in the databases of expert and methodological centers operating within the framework of the qualification certification system. The whole question is how to correctly collect, analyze and interpret this information to improve the quality of developing professional competencies among university graduates.

In the event that the requirements of the Federal State Educational Standard and professional standards are presented in one language in the form of a set of competencies, an analysis of the assessments of specialists and graduates received during certification of qualifications within each sector of the economy will allow:

- identify those competencies that were developed during the training process, as well as identify obvious failures in work in each area of specialist training within industries;
- obtain the necessary external criterion for validating the tools used in the process of certification of university graduates;
- highlight the range of competencies relevant for each sector of the economy, optimize their composition and improve the formulations in the Federal State Educational Standard, more clearly linking professional competencies with the tasks of future professional activity of graduates and based on criteria external to the education system;
- draw conclusions about the progress of the process of introducing a competency-based approach into the vocational education system.

Thanks to these data, assessing the correlation between certification results and grades during certification of qualifications, the university community will be able to select the tools that will predict the success of graduates’ professional activities with high predictive validity.

The analysis of professional standards is greatly complicated by the variety of forms of presenting the requirements of professional standards and their structure. Initially, certain efforts were made to standardize professional standards and translate them into the language of a competency-based approach. In particular, the National Qualifications Framework of the Russian Federation was developed, which is a joint recommendation document of the Federal Institute for Educational Development (FIRO) and the National Agency for the Development of Qualifications of the Russian Union of Industrialists and Entrepreneurs. According to the developers, the document was addressed to developers of professional standards, Federal State Educational Standards, industry qualification and tariff systems, procedures for assessing educational results and certification of qualifications.

National Qualifications Framework of the Russian Federation (NQF):
- is a tool for connecting the sphere of labor and the sphere of education;
- is a generalized description of qualification levels recognized at the federal level and the main ways to achieve them in;
- includes characteristics (descriptors) of qualification levels presented in table form, disclosed through a number of generalized indicators.

Similar to the European Qualifications Framework, the NQF includes descriptors of general competence, skills and knowledge, which are revealed through relevant indicators of professional activity: breadth of authority and responsibility, complexity of activity, knowledge intensity of activity.
Unfortunately, the intention of the developers of the NQF as a whole did not materialize, since professional standards, for the most part, do not take into account the recommendations of the National Qualifications Framework. Moreover, in some regions, analogues of professional standards have appeared - regional (industry) regulatory documents that define, within a specific type of economic activity (area of professional activity), requirements for the content, qualifications and competencies of workers at various qualification levels. They are developed on the basis of industry qualification characteristics for professions/specialties, compiled by the same groups of specialists that developed professional standards.

Significant work to connect the requirements of educational and professional standards, as well as to establish business contacts between the vocational education system and the labor market, has been done in many regions of Russia (Kuban, Volgograd region, Krasnoyarsk region, etc.). Regional models for the modernization of vocational education have been built, the structural elements of which are educational and scientific institutions, business and government structures, and the functions are aimed at the interaction of all elements of the model for the implementation of the program for the modernization of vocational education. A superstructure is being formed for interaction between an enterprise, an educational institution and regional authorities in the form of a joint working group and/or a tripartite partnership council (enterprise - university, college - regional ministry).

Professional educational programs are being developed and implemented, focused on the requirements of the regional labor market and designed to modernize the content of vocational education and educational technologies in accordance with the requirements of the regional labor market. One of the effective components of this work is the installation of development of a regionally significant variable component of basic educational programs within the framework of the Federal State Educational Standard and state and public control over their implementation. Regional requirements are formed in addition to the requirements of the Federal State Educational Standard, taking into account the strategic objectives of the socio-economic development of the region.

Ensuring the participation of employers in the formation and implementation of personnel policy in some regions is carried out by creating a special structure - the “Basic organization of a vocational education institution.” Its goal is to create conditions for ensuring an active position and social responsibility of the business community in the formation and implementation of personnel policy by jointly solving a number of problems with universities:
- improving the regulatory and legal support for the activities of organizations involved in personnel training in the region;
- ensuring coordination of the activities of authorities, employers, educational institutions for the training of in-demand personnel;
- establishing systematic interaction between organizations and educational institutions within the framework of contracts and agreements;
- ensuring the participation of the business community in the procedures for certification of students and accreditation of universities.

In other regions, to ensure interaction between the labor market and the vocational education system, a multi-level system of coordination councils for personnel training is being created. There are regional, sectoral, municipal councils under executive state authorities and local self-government, trustee and supervisory boards of educational institutions, which provide joint solutions to the problems of personnel training and the development of the vocational education system. For example, in Kuban there is a system for assessing the personnel needs of the regional economy. It is based on the regional Coordinating Council for Vocational Education and Training of Skilled Workers. It is he who determines the strategy for the development of vocational education in the region. Its tasks are to accurately assess economic prospects, take into account the requests of employers and determine orders for the training of professional personnel. In addition, similar councils have been created in all municipalities of the region. The final result of their activities is an agreed upon annual forecast of the personnel needs of the regional labor market. The department of labor and employment of the
population of the region is also involved in this work, which, based on the forecast, forms the state task for personnel training.

However, despite the existing problems, at a meeting of the Presidium of the UMO Council on Management Education, held on November 22-23 in Kostroma, it was decided to conduct an analysis of the compliance of the requirements of the Federal State Educational Standard and professional standards in the field of economics and management. At the State University of Management, which is the base university of the UMO for education in the field of management, it was decided to begin work on analyzing the conjugation and constructing tables of contiguity between the requirements of the Federal State Educational Standard and professional standards, as well as qualification characteristics for groups of specialties related to three areas of training: “State and municipal management ”, "Management", "Human Resources Management". The work is quite complex and voluminous. The result will be adjacency tables, on the basis of which it will be possible to identify those competencies of the Federal State Educational Standard that are really in demand by the labor market. yes, to identify redundant competencies and outline ways to minimize their list to improve the Federal State Educational Standard and build clusters of competencies when developing meters for certifying students.

**Bibliography**


CULTURALLY RESPONSIVE TEACHING: STRATEGIES FOR ENHANCING INTER-CULTURAL COMMUNICATION IN THE CLASSROOM

Seiitzhan Zhanela Kynatkyzy
Student of Kazakh Abylai Khan University of International Relations & World Languages

Abstract
This article embarks on a journey to explore the profound significance of culturally responsive teaching within the context of today's diverse classrooms. It delves into the integral role of educators in nurturing intercultural communication skills through a pedagogical approach that embraces diversity. It aims to provide educators with a comprehensive understanding of culturally responsive teaching, its practical applications, and its transformative impact.

Keywords: Intercultural communication, classroom, culturally responsive teaching, strategies

1. Introduction
In the rich tapestry of today's diverse classrooms, the concept of culturally responsive teaching shines as a beacon of inclusive education. It acknowledges the cultural diversity within the student body and strives to provide a learning environment that respects, values, and responds to the unique backgrounds, experiences, and perspectives of each student. Culturally responsive teaching recognizes that a one-size-fits-all approach to education falls short in meeting the needs of an increasingly multicultural student population.

In this context, the importance of culturally responsive teaching cannot be overstated. It goes beyond adapting instructional materials and curriculum to include cultural references. It encompasses a deep commitment to fostering intercultural communication, respect, empathy, and understanding among students. It is an educational approach that equips students with the skills they need to communicate effectively in an interconnected world, where cultural diversity is the norm rather than the exception.

2. The significance of culturally responsive teaching and its benefits
Culturally responsive teaching, often referred to as CRT, is an educational approach that recognizes the cultural diversity of students and aims to create inclusive learning environments where every student feels valued and respected. At its core, CRT is grounded in the belief that students' cultural backgrounds should not be seen as obstacles to learning but as valuable assets that can enhance their educational experiences. Key principles of culturally responsive teaching include:

1. Cultural Awareness: CRT promotes an understanding of the cultural backgrounds, experiences, and perspectives of students. It acknowledges that culture influences how individuals learn, communicate, and interact with the world.

2. Inclusive Curriculum: Culturally responsive educators adapt curriculum and teaching materials to reflect the cultural diversity of their students. They incorporate diverse voices, authors, and perspectives into the learning materials.

3. Personalization: CRT recognizes that every student is unique and responds differently to teaching methods. Educators tailor their approaches to accommodate students' individual needs and cultural differences.

4. High Expectations: Culturally responsive teaching maintains high academic expectations for all students, regardless of their cultural backgrounds. It challenges stereotypes and ensures students are encouraged to reach their full potential.

5. Empathy and Respect: Educators practicing CRT foster an environment of empathy and respect where students are encouraged to share their experiences, ask questions, and learn from one another. The classroom becomes a safe space for open dialogue[1].

Cultural awareness is a cornerstone of culturally responsive teaching. It recognizes the cultural diversity within the classroom and emphasizes the importance of educators acknowledging and respecting these differences. When students feel that their cultural backgrounds are valued, it fosters a
sense of belonging, motivation, and engagement in the learning process. Cultural awareness in education has the following significance:

1. **Enhanced Learning**: Students are more engaged and motivated when the curriculum incorporates their cultural perspectives. They see the relevance of what they are learning to their lives and experiences.

2. **Reduces Stereotyping**: Cultural awareness helps break down stereotypes and biases, allowing students to interact with empathy and open-mindedness.

3. **Builds Empathy**: Understanding and appreciating different cultures leads to empathy. It enables students to understand the viewpoints and experiences of others, promoting unity and respect.

4. **Supports Academic Achievement**: When students feel respected and valued, they are more likely to excel academically. Culturally responsive teaching is associated with higher student achievement[2].

Culturally responsive teaching methods yield a wide range of benefits for students, educators, and the entire educational community. The advantages of implementing CRT approaches include:

1. **Improved Student Engagement**: CRT captures students' interest and enthusiasm by connecting the curriculum to their cultural backgrounds and lived experiences. It makes learning more relevant and engaging.

2. **Enhanced Academic Achievement**: Research consistently shows that CRT is associated with higher academic achievement, particularly among students from marginalized or underrepresented backgrounds. This includes improved test scores, graduation rates, and overall academic success.

3. **Social and Emotional Development**: CRT nurtures students' social and emotional development. They become more empathetic, self-aware, and better equipped to navigate an increasingly diverse world.

4. **Positive Classroom Environment**: Culturally responsive classrooms are often characterized by inclusivity, mutual respect, and open communication. This creates a positive learning atmosphere that benefits both students and educators.

5. **Closing Achievement Gaps**: CRT plays a pivotal role in narrowing achievement gaps among students. It provides equitable opportunities and support for those who may face systemic disadvantages.

6. **Cultivating Global Citizens**: By emphasizing cultural awareness and intercultural communication, CRT prepares students to become global citizens who can navigate a multicultural world with respect and understanding[3].

Numerous success stories and research findings support the benefits of culturally responsive teaching. For example, schools that have embraced CRT have reported significant improvements in student engagement, academic performance, and overall school culture. Studies have demonstrated that CRT is particularly effective in closing achievement gaps among student populations.

In one case, a school district that incorporated CRT principles noted a substantial increase in graduation rates among students of diverse cultural backgrounds. Furthermore, academic research has consistently shown that CRT fosters a positive classroom environment that enhances the overall educational experience for students and educators alike.

These real-life success stories and research findings underscore the transformative power of culturally responsive teaching in the modern educational landscape. By embracing CRT, educators have the potential to unlock the full potential of their students and pave the way for a more inclusive, empathetic, and academically successful future.

3. **Strategies and principles for culturally responsive teaching**

Culturally Responsive Teaching (CRT) is an educational approach that acknowledges the critical importance of incorporating students' cultural references into all aspects of the learning process. Its significance lies in providing a structured and practical method for instructing, interpreting, and discussing information in a way that aligns with meaningful learning. CRT is integral to what John Dewey describes as progressive education.
Traditional education avoided this responsibility systematically, relying on a school environment with desks, blackboards, and a small schoolyard. It did not demand that teachers become intimately acquainted with the local community's conditions, whether physical, historical, economic, or occupational, to utilize them as educational resources. In contrast, an educational system rooted in the connection between education and experience must constantly consider these elements. Dewey emphasizes the learner's active involvement in shaping the purposes guiding their learning, contrasting this with the failure of traditional education to secure students' cooperation in constructing educational goals[4].

Without CRT, a teacher cannot effectively involve students in defining the purposes of their education, which is crucial for fostering active cooperation. Purpose, as Dewey suggests, is fundamental for both intelligence and discipline. Intelligence encompasses the ability to strategize and execute a purpose, while discipline involves committing to follow a strategy to achieve that purpose. Dewey underlines the importance of purpose so much that he warns that failing to engage a student's sense of purpose transforms the student into a passive executor of someone else's intentions, effectively creating a "slave."

It is widely recognized that no single teaching method can engage all students simultaneously, but employing a culturally-responsive instructional approach can help you connect with a diverse student body hailing from various backgrounds. So, what does it entail to be a culturally-responsive educator? Being culturally responsive means having the ability to relate not only to people from your own cultural background but also to those from different cultures. It goes beyond merely knowing your students' cultural backgrounds; it involves using that knowledge to integrate teaching methods that effectively engage all students in your class, including those with diverse backgrounds.

Here are several pedagogical strategies to assist you in becoming a more culturally-responsive teacher[5]:

1. **Familiarize Yourself with Your Students Culturally**
   An effective strategy for cultivating a more culturally-responsive classroom is getting to know your students on a deeper level. The more you understand about your students, the better. Icebreakers provide one approach to achieving this goal. You can explore Classroom Icebreakers and additional Classroom Icebreakers for activities suitable for your classroom. Other methods include using interest surveys or questionnaires to understand students' learning preferences. By demonstrating a genuine interest in what is important to your students, you establish trust and create a welcoming environment where every student feels at ease.

2. **Integrate Real-World Learning Scenarios**
   Another valuable strategy involves the integration of real-world learning scenarios within your classroom. By designing activities that present problems related to students' lives, you are bridging the gap to their interests and allowing them to employ their cultural awareness to resolve the problems. You can find inspiration for creating real-world problem scenarios in Collaborative Projects in PBL.

3. **Employ Learning Stations**
   Students respond differently to various types of content based on their preferences, learning styles, and cultural backgrounds. By using learning stations, you can offer a range of materials that are tailored to students' needs. Each station should employ a unique instructional method, granting students the choice to visit the station that suits them best. When culturally diverse students can connect with the content, their engagement tends to increase.

4. **Incorporate Games into Lessons**
   Including games in your lessons is another method to differentiate content and delivery. Gamifying the learning process can be an effective way to motivate students from diverse cultures. Students often enjoy earning badges or competing to achieve the highest score. Establishing goals or specific tasks and offering rewards can inspire students and fulfill their needs while adding an element of enjoyment to the learning experience.

5. **Invite Guest Speakers**
Inviting speakers from diverse backgrounds to address your students and share their knowledge is another strategy for fostering a culturally-responsive classroom. Students may find more motivation and engagement when they share a cultural connection with the guest speaker. Additionally, advancements in technology have made it easier than ever to bring guest speakers into your classroom. Setting up a Google Hangout or Mystery Skype can facilitate connections with guest speakers.

Culturally Responsive Practices are guided by seven principles:
1. Communicating High Expectations,
2. Using Active Learning and Teaching Methods,
3. Identifying and Nurturing Student Strengths,
4. Incorporating Culturally and Linguistically Diverse Teaching Strategies,
5. Demonstrating Cultural Sensitivity,
6. Creating a Supportive Learning Environment Reflecting the Cultures of All Children,
7. Implementing Small Group Instruction.

When working with African American students, it's essential to adopt African-centered philosophies and techniques to become a Culturally Responsive Teacher, applying CRT strategies effectively.

"Culturally Responsive Teaching look fors" include:

1. **Intellectual Humility**: Demonstrated willingness to ask questions rather than make assumptions, especially regarding another person's lived experiences. Intellectual humility involves active listening and a readiness to be informed by another's narrative and facts, rather than relying solely on one's opinions.

2. **Cultural Competency**: The acquisition of specific knowledge and skills to engage with a unique community of people. This includes understanding intragroup and intergroup power dynamics and the skills needed to negotiate and strategize interactions to promote equity and social justice.

3. **Authentic Voice**: Providing opportunities for students to express their lived experiences and perspectives, often in diverse forms. These expressions inform pedagogy, policy, and practice. Students also have the opportunity to critique prevailing narratives and their representative symbols and transform or replace them.

4. **Representation**: Ensuring the presence of people, images, symbols, and values from the heritage of the students, including family, neighborhood, ethnic group, nationality, culture, and the students themselves. These elements must be visible in the classroom and curriculum.

In today's multicultural world, the adoption of culturally responsive teaching strategies has become increasingly imperative for creating a successful learning environment where all students can thrive. Consistency is a crucial element in becoming a more culturally-responsive teacher. Consider utilizing some or all of the instructional strategies outlined above to ensure that you meet the needs of all your students.

**Conclusion**
In conclusion, culturally responsive teaching (CRT) stands as a beacon of educational excellence, championing the importance of recognizing and celebrating the rich tapestry of cultural diversity within our classrooms. This pedagogical approach underscores the profound significance of acknowledging students’ cultural backgrounds as valuable assets that not only enrich their educational experiences but also foster inclusivity and respect. Culturally responsive teaching is grounded in core principles that emphasize cultural awareness, inclusivity, personalization, high expectations, and the nurturing of empathy and respect.

Cultural awareness serves as the bedrock of CRT, empowering students and creating a sense of belonging, motivation, and engagement in their learning journey. By incorporating students’ cultural perspectives, CRT enhances learning, dismantles stereotypes, builds empathy, supports academic achievement, and promotes social and emotional growth.

The benefits of implementing CRT methods extend far and wide, impacting students, educators, and the entire educational community. They encompass improved student engagement, enhanced academic achievement, nurtured social and emotional development, the creation of positive classroom environments, the narrowing of achievement gaps, and the cultivation of global citizens. These benefits are well-supported by numerous success stories and research findings, with CRT demonstrating its transformative power in the modern educational landscape.

In the journey towards becoming a more culturally-responsive teacher, the adoption of specific pedagogical strategies becomes paramount. By embracing a deeper understanding of your students, integrating real-world learning scenarios, utilizing learning stations, incorporating games into lessons, and inviting guest speakers from diverse backgrounds, educators can further enhance the impact of CRT.

The principles and practices of CRT, guided by intellectual humility, cultural competency, authentic voice, and representation, reflect a commitment to nurturing a classroom environment that respects and cherishes the cultural mosaic within. In an increasingly multicultural world, embracing CRT ensures a more inclusive, empathetic, and academically successful future for all. It is a powerful force for change, paving the way for educators to unlock the full potential of their students and fostering a community of learners ready to embrace diversity, celebrate culture, and build a more harmonious global society.

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CHARACTERISTICS AND BASIC PRINCIPLES OF STRATEGIC MANAGEMENT IN GENERAL EDUCATION INSTITUTIONS

Vagif Fatullayev Tahir
Azerbaijan State Pedagogical University,
Specialist of the Strategic Development Center
ORCID: https://orcid.org/0009-0005-2718-529X

Abstract

Studying the factors that influence the improvement of the quality of education in the field of management and ensuring the precise definition of the path to development - strategy by planning them correctly - is presented as an urgent problem. Planning the quality of education is a part of the overall planning of activities in the field of education. The article shows that as a mechanism for managing strategic development in a university, it is advisable to use complex strategic maps, which provide a visual-spatial representation of the cause-and-effect relationships between the elements of the strategy. A strategy map is a universal and coherent way of describing strategy so that you can not only set goals, but also manage them. The purpose of the study was to reflect on the details of the system of strategic indicators in the map and illustrate the dynamics of strategic development. Ultimately, the above models of strategic maps show how intangible assets (human, information, and organizational capital) of a university contribute to the creation of value not only for owners (founders), but also for society in general and consumers of educational services. These maps can be used in modeling strategic changes in any higher education organization.

Keywords: management, education, strategy, method, plan.

Introduction

Any changes in social life directly lead to changes in education. Various pedagogical theories consider the methodological foundations of education when changing values that are relevant for a particular socio-economic situation.

In every society, the education system performs three essential functions. Firstly, it teaches the norms of living in society and provides young, skilled workers. Secondly, the education system creates a professional elite of workers who, overcoming stereotypes, make discoveries and offer new ideas in the fields of production and business. Thirdly, it dilutes people from different strata of society in accordance with their inclinations and talents and thereby, at least in part, creates conditions for an “equal start” for everyone.

The relevance of studying and implementing a strategic planning system in educational institutions of various types is since strategic planning recognized in world practice as an element of a management and regulation system that allows creating conditions for long-term development and making current decisions considering strategic goals in the conditions of indigenous socio-economic transformations.

Theoretical aspects of strategic planning in educational organizations

All over the world, significant changes are taking place in national education systems. Against the backdrop of these changes, one of the leading trends in the process of education management is its orientation towards a thinking and creative person. Domestic scientists and practitioners pay attention, as a rule, to such important but multidirectional aspects of management in the education system as the conservatism of education, the crisis of education, the modernization of education, the informatization of education, the quality of education, the effectiveness of the education system and the processes of integration into the world education system, which taken together predetermines the need to develop new approaches to the formation of a new management concept in this area.

However, even the conceptual apparatus of the concept of strategic management in the modern education system is still in its infancy. The Azerbaijan education system has entered a stage of reform and modernization when the lack of a developed strategy hinders its further full development.
Therefore, issues of conceptualization of concepts and approaches in the field of strategic management in education are of great scientific and practical interest.

Revealing the features of strategic management in the education system, first, we will define the content of the concepts of “strategy” and “management” from the point of view of modern science. The term "strategy" consists of two Greek words: "stratos" - army and "ago" - lead. In military science, strategy means the ability to correctly calculate and organize the movement of troops.

In economic reference literature, strategy is considered as the art of leadership, a general plan for conducting this work, based on the current reality at this stage of development [6, p. 917]; as a way of using funds and resources aimed at achieving development goals and considering environmental conditions, as well as factors such as uncertainty, chance, and risk [8, p. 593].

Strategy is the main means of achieving the general goal [9, p. 11]; an integral part of the decision-making process on development directions [5, p. 91]; a set of settings, decision-making rules, and methods for transferring the system from the old (existing) position to a new (target) state, ensuring the effective fulfillment of its purpose (mission) [4, p. 692].

Market, innovation, competitive, and marketing strategies are distinguished.

The main feature of strategy is not a temporary, ongoing adaptation to unfavorable conditions, but a constant and active attitude to the external environment. Strategy expresses the attitude of the socio-economic system and its participants to certain aspects of the external environment.

A strategy is not a plan or its equivalent. Strategy is the “course of action” that management will use to achieve its overall goal.

In turn, "management" is the ability to achieve set goals using labor, intelligence, and the motives of other people's behavior; the process of planning, organizing, motivating, and controlling necessary to formulate and achieve goals; the deliberate impact of the management subject on the management object in order to accomplish specific goals.

Despite the difference in approaches to defining the concept of "management," we believe that the main task of management is leading people and coordinating their activities to achieve a specific goal.

A subject of management is a person, group or specially created body that is the bearer of management influence on a social object (managed system), carrying out activities aimed at preserving its qualitative specificity, ensuring its regular operation and effective progress toward an allocated objective.

The object of management is a social system (country, region, industry, enterprise, team), to which all types of management influence are directed in order to improve it, improve the quality of functions and tasks, and successfully move toward the planned goal [5, p. 12].

The works of such famous authors as I. Ansoff, P. Doyle, B. Karlof, G. Mintzberg, T. Peters, M. Porter, M. Starr, A. Thompson, G. Hamel were devoted to the development of problems of strategic management. Hofer, E. Chandler, G. Steiner, K. Andrews, and many others. Thus, Professor E. Chandler from Harvard Business School identified three essential components of strategy: determining the main long-term goals and objectives, adopting a course of action, and allocating resources [6]. A. Thompson and A. Strickland consider strategic management as five main ongoing tasks: determining the scope of activity and forming strategic guidelines; formation of a strategy to achieve the intended goals; implementation of the strategic plan; performance evaluation; change in the strategic plan or methods of its implementation [7].
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Scheme 1. Strategic management in higher education institutions

According to the point of view of O.S. Vikhansky, strategic management represents a dynamic set of processes that logically follow each other: analysis of the environment, determination of the mission and goals, choice of strategy, implementation of the strategy, evaluation, and control of implementation [7].

Most works have developed the idea of strategy as a specific process of managing an organization.

But the concept of strategic management in the Azerbaijan education system is radically different from the strategic management of an organization and is determined, first, by state policy in the field of education and the fact that education is considered in Azerbaijan as part of the social sphere, which is fundamentally different from the Western European approach, where education is considered a production activity.

Methodologically, everything is correct, but here again the problem of resource provision for the mechanism for sustainable development of the education system in each specific region and the country arises.

- creating the basis for sustainable socio-economic and spiritual development, ensuring a high quality of life for the people and national security;
- strengthening the democratic rule of law and developing civil society;
- staffing for a dynamically developing market economy, integrating into the world economy, with high competitiveness and investment attractiveness;
- affirmation status in the world community as a great power in the fields of education, culture, art, science, high technology, and economics.

**Strategy** is the general direction of development. If it cannot be specified precisely, then it is still more useful to have a not entirely clear direction of development than none. Even an insufficiently clear, but understandable general direction can be translated into tactical steps and programs. At the same time, strategic management should not be too formal and predictable. The primary role of strategic management is to steadfastly learn and change. Thus, strategic management is the process of strategy formation, its implementation and control, and the correspondence of achieved results to planned goals.

**Strategy** is a generalizing model of long-term actions to achieve set goals within the available capabilities.

**Strategy** is a comprehensive plan designed to achieve key goals.

**Strategy** is a set of main goals and the main ways to achieve them; means of achieving the final result; action plan; combining all parts of the system into a single whole; position in the environment; perspective, a vision of the state to which one must strive; the result of analyzing the strengths and weaknesses of the system and identifying opportunities to eliminate obstacles to its development; pre-prepared system response to changes in the external environment; the system’s reaction to objective external and internal circumstances of its activity.
Strategic planning is a set of specific actions and decisions taken by management and leading to the implementation of strategies that ensure the educational institution achieves its goals.

The logic of strategic planning implies an orderly sequence, consistency and validity of procedures associated with solving the planning problem; determining the starting point (beginning of the procedure) for making a decision: determining the goals that need to be achieved in the planning period; determination of the initial level of development of the organization; determining the volume and structure of needs in the planning period; consistency of needs and resources based on ranking and preparation of draft management decisions.

The essence of strategic planning in management lies in answering the following three questions:

- what position the organization is in currently;
- what position the organization would like to be in three, five or more years;
- how to achieve the desired position.

In its content, strategic management focuses not only on available resources, but also on opportunities to increase the organization's potential. Strategic management is based on strategic decisions.

Strategic decisions are management decisions that:

- a) are future-oriented and lay the foundation for making operational management decisions;
- b) are associated with significant uncertainty, since they consider uncontrollable external factors affecting the organization;
- c) involve significant resources and can have serious long-term consequences for the organization.

Strategic decisions include: reconstruction of the organization; introduction of innovations; organizational changes (changes in the organizational and legal form, forms of organization and remuneration, interaction with consumers.

The strategic management process includes three stages: [4, p. 34]

1. Strategic planning, including development of mission and goals, SWOT analysis, strategy development.
2. Implementation of strategy, including organizational structure, information system, personnel, culture.
3. Strategic control, including control indicator criteria, monitoring and analysis.

Strategic planning is the activity of developing a strategy and concretizing it in the form of a strategic plan.

Strategic planning is the process of modeling the effective activities of an enterprise for a certain period of operation, establishing goals and their changes in conditions of uncertainty in the market environment, as well as determining ways to implement these goals and objectives in accordance with its capabilities.

The strategy provides answers to key questions regarding the essence of the education system and educational institution:

- What is the education system, educational institution, and their work like today?
- What are our services and products, functions, markets, our positions?
- What should they become tomorrow, in 5-10 years?
- What do we need to do to achieve our goals?

The strategy highlights the results of its implementation:

- Formation and expansion of: a) a very specific and unconditional b) positive image of the education system, educational institution.
- Development of services and products of the education system, educational institution.
- Positive, controlled development of the market for services and products of the education system and educational institution.

As a result, we can conclude that the strategy is largely developed by senior management, and its implementation involves the participation of employees at all levels of management. The developed strategy gives the organization a general direction and individuality, and its employees -
clear guidelines in their daily actions. The strategic plan must be, on the one hand, holistic, and on the other, flexible, allowing for correction.

**Main functions and stages of strategic planning**

A guarantee of successful strategic planning is experience in practical (teaching and/or management) activities in the education system, as well as determining the need for changes being introduced in the modern education system.

The organization of strategic planning begins from simply drawing up plans to the importance of mastering innovative practices for managing the development of an educational institution in the context of modernization of education.

Strategic planning is one of the functions of strategic management, which is the process of choosing the goals facing a modern school and ways to achieve them.

What does the strategic planning system provide to a modern school? The opportunity to determine the directions and pace of development, outline global trends in modern education, understand what organizational and structural changes are necessary to increase the competitiveness of a particular school, what tools are necessary for the successful implementation of a development program.

What is the optimal algorithm for the strategic planning process in terms of achieving goals?

**The strategic planning process consists of several stages:**

1. **Defining the mission and goals of the educational institution.**

The target function begins with establishing a mission that expresses the philosophy and meaning of existence of an educational institution.

The goal is the specification of the mission in a form accessible to manage the process of their implementation. The main characteristics of the purpose of strategic planning are as follows:

- clear orientation to a certain time interval;
- specificity and measurability;
- consistency and consistency with other missions and resources;
- targeting and controllability.

How is the development strategy built and determined by the organization's policy?

As a result, the optimal algorithm is based on the mission and goals of the educational institution.

2. **Choice of strategy.**

The strategy is selected considering:

- competitive position of the educational institution;
- prospects for the development of the internal and external environment of the educational institution.

3. **Implementation of strategy.**

The implementation of the strategy is a critical process, since it is the process that, if successfully implemented, leads the educational institution to achieve its goals. The strategy is implemented through the development of programs, budgets, and procedures, which can be considered as medium and short-term plans for the implementation of the strategy.

4. **Evaluation and control of implementation.**

The assessment of the chosen (implemented) strategy consists of answering the question: will the chosen strategy lead to achieving the goals?

If the strategy corresponds to the goals of the educational institution, then it is advisable to further evaluate it in the following areas:

- compliance of the chosen strategy with the state and requirements of the environment;
- compliance of the chosen strategy with the potential and capabilities of the educational institution;
- acceptability of the risk inherent in the strategy.

The results of the implementation of the strategy are assessed, and with the help of a feedback system, the activities of the educational institution are monitored, during which adjustments to the previous stages can occur.
Management functions in the strategic planning process:

1. In-depth study of the state of the environment, goals, and strategy development: final understanding of the essence of certain goals and broader communication of the ideas of strategies and the meaning of goals to employees.
2. Making decisions on the efficient use of available resources.
3. Decisions about organizational structure.
4. Carrying out the necessary changes.
5. Reviewing the strategy execution plan in case of unforeseen circumstances.

As a result, we can conclude that the main components of the successful implementation of the strategy of an educational institution are the following:

- the goals of the strategy and plans are communicated to employees in order to achieve on their part an understanding of what the organization is striving for and to involve them in the process of implementing the strategy;
- management promptly ensures the receipt of all resources necessary for the implementation of the strategy, forms a plan for implementing the strategy in the form of targets;
- In the process of implementing the strategy, each level of management solves its own problems and carries out the functions assigned to it.

Thus, strategic planning certainly provides the basis for all management decisions. The functions of organization, motivation and control are focused on the development of strategic plans. Without taking advantage of strategic planning, both educational institutions as a whole and members of teaching staff will be deprived of a clear way to assess the goals and direction of school development.

Types of strategies of educational institutions

There are more than 20 standard strategies and a significantly larger number of modifications of standard strategies. Most typical for educational institutions, there are four main types of strategies: offensive, defensive, focusing and eliminating.

1. **Offensive strategies** are characteristic of leaders of the regional education market or young “aggressive” educational institutions that enjoy significant support from the state, major enterprises, and financial institutions. For example, PSU (The Pennsylvania State University) enjoys state support.

   The strategy of constant offensive assumes an active, aggressive position of the educational institution in the market and pursues the goal of conquering and expanding market share. This strategy is chosen by the largest organization in the region if:
   - its market share is below the required minimum for a leader (30-50% of the volume of services) or has sharply decreased as a result of the actions of competitors and does not provide a sufficient level of profit;
   - the organization is going to introduce a new educational service to the market;
   - competing educational institutions are losing their positions and a real opportunity is created to expand their market share at relatively low costs.

   The quality leadership strategy is to ensure leadership of an educational institution by achieving the best results in the region in terms of the quality of educational services provided; “our quality is better than theirs”; “elite quality of education.” A characteristic image is revealed in the process of state accreditation of an educational institution and by the high professional achievements of graduates.

   The strategy of “capturing unoccupied spaces” is associated with the educational institution’s refusal to openly challenge competitors in the price and advertising struggle, high costs of differentiation, etc. Instead, the organization pursues a policy of working in new geographical territories, mastering new technologies, strengthening its main advantages, i.e., seeks advantage where the educational institution's greatest strengths can be most clearly demonstrated.

   The anticipatory strike strategy consists of actions to maintain an advantageous position in the market, which excludes the possibility of competitors copying the strategy of an educational
institution. These steps ought to totally deter any attempts by rivals to propel the company into second position.

Cost leadership strategy is a strategy of leadership through cost savings. In strategic management, one of the general strategies of an organization aimed at creating competitive advantages. Using a cost leadership strategy, the institution targets a broad market and produces goods in large quantities, minimizing costs and offering low prices. This strategy relies on performance and is usually associated with the existence of an experience curve effect. It involves careful control of fixed costs, investments in education aimed at realizing the effect of the experience curve, careful development of new educational services, and reduced marketing costs. The focus is on low costs compared to competitors.

A low-cost educational service is more than just moving down the experience curve. An educational institution must use every opportunity to gain cost advantages, without ignoring the principles of differentiation, since from the point of view of society, an educational service must be acceptable or comparable with the services of competitors.

2. **Defense strategies** are built on strengthening the market position of organizations that cannot fully compete with the regional market leader or spend resources on developing a service, or for various reasons have had failures in the implementation of basic services.

The strategy of defense and strengthening presupposes the ability of an educational institution to maintain market positions gained as a result of previous activities, and means that the organization is pursuing a course to maintain its existing market share. The need for this strategy arises if the organization's market position is satisfactory or it lacks the funds to pursue aggressive policies, and if it is afraid to pursue the latter due to possible undesirable retaliation from competitors or government restrictions. The goal of this strategy, according to industry leaders, is to hinder the entry of new businesses into the market and to keep candidates for leadership roles from advancing their positions. For a medium or small institution, this strategy means an uphill battle to maintain student enrollment levels.

The retaliatory strategy consists of informing competitors that their actions will not go unanswered, i.e., the educational institution is ready to defend its competitive advantage. The readiness to repel an attack and communicating to competitor’s information about the possibility of taking countermeasures can somewhat cool the ardor of the attackers, since the result of offensive actions may be zero or negative.

The “fire-fighting” strategy is typical for educational institutions that are in a difficult situation that is gradually worsening. In such a situation, an organization can radically change its strategy in order to restore lost positions and strengthen its position in the market. An example is the failure of certification and accreditation of an educational institution, while students were promised state-issued diplomas.

The strategy of guerrilla warfare involves an organization carrying out “incursions” and planned “harassment” of competitors in their own markets. Thus, the educational institution, as it were, gives its rivals a kind of warning about its economic strength, so that the latter do not have the desire to attack its positions. Also, actions may encourage competitors to make appropriate agreements (coordination of actions, division of the educational services market and other compromises). Typically, guerrilla warfare strategy is classified as a defensive strategy.

The recovery or turnaround strategy is typical for educational institutions that are in a difficult, gradually deteriorating situation. For example, an educational institution of advanced training entered the higher education market and spent a lot of money on the “entry barrier”: license, programs, teachers, library, etc. An organization can drastically alter its approach in this scenario and reclaim lost ground in the personnel retraining market.

3. **The focusing (concentration)** strategy is one of the common and most common strategies in the educational services market for large organizations. It consists of concentrating on one or several market segments (school, primary vocational education) without attempting to cover the entire market. The goal here is to satisfy the needs of the selected target segment better than competitors. Such a strategy may rely on either differentiation or cost leadership, or both, but only within the target
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segment. The strategy achieves a high market share in the target segment, but always leads to a low market share. For example, the Law Academy specializes in training lawyers of various profiles in the specialty “Jurisprudence”, has a high quality of specialist training and a high cost of training in the region.

The differentiation (specialization) strategy is one of the general strategies of an educational institution aimed at creating competitive advantages. Differentiation is an organization's desire to be unique in some aspect that is considered important by many customers. The organization selects one or more groups of such clients and carries out its activities in such a way as to satisfy the needs of citizens. This is typical for the MBA (Master of Business Administration) program, which has gained fame due to its active work in the educational services market. This ultimately leads to higher production costs. A differentiation strategy is not always compatible with the goal of gaining a large market share, since most citizens may not be inclined to pay a premium price even for a high-quality educational service. Differentiation can take various forms: the image of the university, technological excellence, educational and methodological support, the development of learning via the Internet, ensuring the employment of graduates.

A focused differentiation strategy is a situation where an organization within a selected segment enhances the differentiation of services by price, quality, or type of programs, trying to stand out among other educational institutions in the regional market. The most typical types of strategy are: “high quality - high price”, “average quality - affordable price”, “low quality - low price”, “our good services at a price lower than our competitors”, etc.

4. The liquidation strategy is typical for organizations in crisis situations (unprofitability, disintegration of the team, revocation of license, etc.). As a rule, this applies to organizations that can no longer successfully compete with large educational institutions in the region, city, or district. To do this, you need to overcome the “exit barrier” of leaving the market and close the organization with debts paid.

The elimination strategy is an extreme case of the targeted reduction strategy. Here, the organization liquidates (closes) individual divisions (departments, faculties, branches) within a short period of time, as it needs to regroup forces to ensure increased efficiency of its activities, or abandons some areas of its activities.

The collapse (downsizing) strategy involves the restructuring of independent structural units (branches and representative offices), which the parent educational institution either abandons altogether or retains only partial control. Obviously, this will be the most typical strategy for numerous branches of non-state universities formed according to the “MMM” (Marketing Mix Modeling) principle.

A retreat strategy usually involves reducing market share as quickly as possible in order to increase profits. An organization may find itself in a situation where it urgently needs cash and decides to “sell” part of its market share to competitors. This is usually a forced rather than a chosen strategy. This strategy involves the gradual phasing out of educational services or the liquidation of divisions of the organization that are not characteristic of the educational institution.

The “harvest” strategy is a rejection of a long-term view of the educational service in favor of maximizing income in the short term. This strategy involves obtaining the maximum possible income from reducing a specific type of activity to a minimum level. An example is a significant increase in the number of applicants for the specialty “Accounting, Analysis and Audit”, concentration on profitable advanced training programs and the curtailment of unprofitable programs. Sometimes, large organizations (banks, corporations) establish educational institutions, but they often attempt to shut them down as soon as they realize they won't be profitable.

The model of the basic strategy of the organization can be presented in the form of a diagram that lists the factors of positioning the organization in the market and typical development strategies of the organization. Through the intersection of factors and strategies, it is convenient to analyze possible options for an organization’s behavior in the market depending on the influence of the external and internal environment. Of course, the competitive position of an organization in the
market must first be clearly defined in the region based on the following factors: sales volume of educational services, number of students, cost of material and technical base.

The choice of a specific strategy from the listed set of typical ones is influenced by various factors:

1. The type of services provided and the characteristics of the industry in which the organization operates. First, the level of competition from educational institutions providing similar educational services in the same markets is considered.
2. State of the external environment. Is it stable or subject to frequent changes? How predictable are these changes?
3. The nature of the goals that the educational institution sets for itself; values that guide senior managers or founders when making decisions (for non-state educational institutions).
4. Risk level. Risk is a real factor in the life of an educational institution. Therefore, the management of an educational institution is always faced with the question: what level of risk is acceptable?
5. The internal structure of the educational institution, its strengths, and weaknesses. Strong functional areas of the organization contribute to the successful exploitation of new opportunities. Weaknesses require constant attention from management when choosing a strategy and its implementation in order to avoid potential threats and successfully compete with other educational institutions.
6. Experience in implementing past strategies. This factor is associated with the “human factor”, with the psychology of people. It can be both positive and negative. Often, managers are consciously or intuitively influenced by the experience of implementing strategies chosen by an educational institution in the past. Experience allows, on the one hand, to avoid repeating past mistakes, and on the other, it limits choice.
7. Time factor. This is an essential factor when making management decisions. It may have a big role in an educational institution's achievement or failure. If a new technology, educational service, or strategy is released into the general public at the wrong time, it will fail, no matter how good it is.

As a result, we can conclude that the multifactorial nature of the choice of strategy largely determines the need to develop several strategic alternatives, from which the final choice is made.

Strategic alternatives are a set of various private strategies that allow achieving the strategic goals of an educational institution in all their diversity, within the framework of the selected basic strategy and restrictions on the use of available resources. Each strategic alternative presents different opportunities and is characterized by different costs and benefits.

Currently, in connection with the trend towards modernization of management in educational organizations of higher education, due to the new role of universities in society and the state, it is necessary to emphasize the existence of several conditions that create additional impetus for strategic planning in organizations of this type. One of these conditions is the successful use of the accumulated experience in developing and implementing strategies in business, which will allow the university to acquire several prospects: the formation of an accurate specific position in the educational space, the consolidation and coordination of the efforts of various subjects of educational activity, perspective, etc. [4]. This topic, due to the rapid development of the field of physical culture and sports, is currently relevant for educational organizations of higher education that train specialists for this industry.

In modern conditions, the system of training specialists in physical culture and sports can no longer remain in a state of internal employment and self-sufficiency. It must ensure compliance with the new requirements of the state order and world standards for the level of qualifications of the relevant workers, solve the problem of their competitiveness in modern socio-economic conditions, act as a scientific and methodological base for the training of highly qualified athletes capable of worthy representing major international competitions. This requires physical education universities to achieve high modern quality of work [6].
The relevance of updating the system of training specialists in physical culture and sports is determined by the tasks of the socio-economic development. Among them, the leading position is occupied by the need to overcome dangerous trends in the health of the population and the level of its physical fitness, which negatively affect overall social activity [6]. In this regard, an increase in the demand for specialists in physical culture and sports is predicted. At the same time, the need for professional coaching staff, as well as highly qualified athletes who win medals at major international competitions, remains very high.

An increase in the number of graduates must be accompanied by ensuring that the system of professional training of such specialists constantly corresponds to changing social requirements and conditions. It is important to increase the prestige of this profession and ensure the competitiveness of physical education universities in relation to higher education organizations in the region.

There is a need to prepare future specialists to make social choices, develop their communication skills and tolerance, and form modern thinking. Accordingly, there is a constant need to increase the level of education of graduates, increase their professional mobility, and ensure intensive advanced development of the vocational education system, including in the field of physical culture and sports [7].

Thus, the goals and balance of the needs of the individual, society and the state are coordinated. For a physical education university, several main indicators (described above) have been identified, which are included in the evaluation system, on the one hand, and are presented in the strategy for creating the long-term value of the educational organization for the founders, on the other hand [3].

The university development strategy is formulated based on cause-and-effect relationships between the goals recorded in a balanced system of consumers, clients, and society.

Such cause-and-effect relationships are reflected in strategic maps, which is the starting element in a new stage of development of a physical education university. A strategic map is a visual representation of the cause-and-effect relationships between the elements of the strategy of a physical education university. The map details the system of indicators, illustrating the dynamics of strategic development; it represents a universal and consistent way of describing the strategy in such a way that it is possible to set not only goals and indicators, but also to manage them [5]. A strategy map is the link between strategy formulation and execution.

**Conclusion**

A strategy map is a checklist of strategic components and their interactions. If any element is missing, then errors in the strategy map can lead to negative results. These elements include:

- the financial component, which proposes to balance short-term financial goals of reducing costs and increasing efficiency with long-term goals of sustainable profit growth, the educational organization must demonstrate improvement in short-term results;
- the client component, which assumes that the satisfaction of clients (consumers of educational services) is a source of sustainable creation of value for the organization. To do this, you need to clearly define target customers and customer value propositions that can satisfy them;
- the internal component describes how the strategy can be implemented. Effective and consistent internal processes determine how to create sustainable value;
- the training and development component describes the organization's intangible assets and their role in the implementation of the strategy.

Overall, the strategy map model describes how intangible assets contribute to the creation of value for customers, owners, and society. A feature of all educational organizations is that the system of strategic indicators can be measured not only by financial indicators, but also by intangible assets that create additional value for the educational organization.

Thus, acquiring an increasingly higher degree of independence in a rapidly changing external environment, educational organizations are faced with the need to revise established management systems of higher education. In fact, until now since then, each educational organization of higher education has solved the tasks of strategic planning independently, based on its own resources, goals, and vision of the situation. Today, the strategic planning experience accumulated by business is successfully transferred to the higher education system. It is necessary to note the sets of technological
developments that have already been formed in this area, within the framework of which strategic planning turns into a distinct and simple technology that can be used by educational organizations even in dynamically developing conditions. Such technologies include the construction of strategic maps that describe the logic of the strategy, clearly showing the internal processes that create the value of an educational organization and identify the intangible assets necessary to support them. When constructing strategic maps in a specific educational organization of higher education, it was found that they represent a visual model of integrating the goals of an educational organization into four components. Such maps illustrate the cause-and-effect relationship between the desired results of the client and financial components and the results obtained in the main internal processes - operational management, customer management, innovation, legislative and social processes. In addition, the strategic map determines the specific capabilities of the intangible assets of an educational organization - human, information, and organizational capital, which is necessary for the development of the internal component of the organization. When using appropriate technologies, strategic planning turns out to be a relatively simple and, most importantly, understandable tool that allows, by carefully and accurately organizing work, to obtain answers to key questions about the organization's activities.

References

Philological sciences

PROBLEMS OF LITERATURE AND ARTISTIC STYLE IN AZERBAIJANI RUSSIAN-LANGUAGE PERIODICALS OF THE EARLY TWENTIETH CENTURY

Maryam Yakubova
D.F.P.F., Associate Professor BSU

Abstract
At the beginning of the XX century in Baku, the capital of Azerbaijan, a large number of newspapers and magazines were published in Russian. The reason for the sharp increase in the number of publications in Russian was the oil boom that Baku was experiencing in those years. A huge number of people flocked to Baku, expecting to get rich quickly and improve their financial situation. Residents of the Russian Empire and Slavic countries of Europe dominated among the numerous seekers of quick money. For these people Russian was often their first, and in other cases their second mother tongue. The newspapers and magazines published during this period in Baku were "Caspian" (1881-1919), "Jigit" (1907-1908), "Baku" (1902-1918), "Baku News" (1902-1907), "Baku Day" (1907), "Bakinets" (1907-1920), "Baku Worker" (1906-1908), "Baku Proletarian" (1907-1909), "Wave" (1909), "Transcaucasian Speech" (1911), "Transcaucasia" (1907-1912), "Segodnya" (1908), "Sovremennaya zhizn" (1911) and others, turned out to be the only link for these people who moved to Azerbaijan with their past and familiar life, with the world they had left behind and abandoned. This explains the fact that Russian-language newspapers and magazines of this time enjoyed huge readership interest and that the number of such publications was constantly increasing.

Keywords: "Caspian", newspapers, press, Azerbaijan, magazines, literature.

Anнотация
В начале XX столетия в столице Азербайджана Баку издавалось большое количество газет и журналов на русском языке. Причиной резкого увеличения числа изданий на русском языке был тот нефтяной бум, который в эти годы переживал город Баку. В Баку хлынуло огромное количество людей, рассчитывавших быстро разбогатеть и улучшить свое материальное положение. Среди многочисленных искателей быстрого заработка в количественном отношении преобладали жители Российской империи, а также славянских государств Европы. Для этих людей русский язык был зачастую первым, а в других случаях вторым родным языком. Издевавшиеся в этот период в Баку газеты и журналы - «Каспий» (1881-1919), «Джигит» (1907 - 1908), «Баку» (1902 - 1918), «Бакинские известия» (1902 - 1907), «Бакинский день» (1907),«Бакинец» (1907 - 1920), «Бакинский рабочий» (1906 - 1908), «Бакинский пролетарий» (1907 - 1909), «Волна» (1909), «Закавказская речь» (1911), «Закавказье» (1907-1912), «Сегодня» (1908), «Современная жизнь» (1911) и другие, оказывались для этих переселившихся в Азербайджан людей фактически единственным связующим звеном с их прошлой и привычной жизнью, с оставленным и покинутым ими миром.

Именно этим объясняется тот факт, что русскоязычные газеты и журналы указанного времени пользовались огромным читательским интересом и что число такого рода изданий все время возрастало.

Ключевые слова: «Каспий», газеты, печать, Азербайджан, журналы, литература.
В наши дни, в начале двадцатого столетия немалую сложность представляет сам факт обращения к этим изданиям. Образцы бакинской периодики указанного времени за редким исключением в библиотеках города Баку почти не значатся. Наши многолетние поиски в таких известных книгохранилищах Азербайджана, как Республикаанская библиотека имени М.Ф. Ахундова, Научная библиотека Национальной Академии наук, научная библиотека Бакинского государственного университета, Президентская библиотека, дали возможность выявить только отдельные номера перечисленных выше изданий и на основе их анализа написать настоящую статью.

Будучи филологом, нас в этих труднодоступных сегодня изданиях привлекают, естественно, вопросы отражения в них филологической мысли. Подытоживая обнаруженные нами издания и исследованные имеющихся в них литературные материалы, мы сгруппировали отраженную в них филологическую мысль по трем группам:

1. Отражение проблем тогдашней литературы;
2. Отражение проблем литературного языка и художественного стиля;
3. Вопрос отношения к классическому наследию.

Решение каждой из этих проблем вызвало необходимость воссоздания и анализа исторической ситуации, выяснения, как ставился вопрос с учетом этой ситуации на данной национальной почве, и только после этого рассматривается отношение к проблеме основного объекта исследования - русской печати. Со ссылкой на имеющиеся исторические документы мы доказываем, что в изучаемый период, после революции 1905 года, в Азербайджане, как и посреду в России, шла упорная борьба между различными идеологическими противниками, что сказывалось и на околодлтературной полемике.

Отметим, что в это время в Азербайджане, наряду с только что зародившейся и развивающейся релистической литературной критикой, было немало и сторонников теории «чистого искусства», проповедующих «искусство для искусства». Они зачастую под флагом борьбы за свободу искусства от политики стремились отвлечь массы от революционной борьбы, завлечь ее под стяг исламской религии. В наши дни, когда впервые после советского неприятия творческой деятельности публицистов Ахмедбека Агаева (1868-1939), Алибека Гусейнзаде (1864-1941), Джейхуна Дагестани (1887-1962) много и вполне справедливо говорится об их просветительстве, не стоит в то же время забывать и о том, что оно протекало под знаменем чистого искусства. Публикуя свои статьи и умозаключения в таких сравнительно многотиражных для того времени изданиях, как «Хаят» (1905-1914), «Фиюзат» (1906-1907), «Шалале» (1912-1914), они умело привлекали на свою сторону часть одаренной молодежи, отрывая ее от реалистического мироощущения.

Как к классическому наследию, так и к современному литературному движению они подходили с позиции защиты интересов эстетической критики, стремясь свергнуть с правильного пути молодые таланты. Ахмед бек Агаев критически отзывался об азербайджанской реалистической литературе: «Что касается оригинальных сочинений, то, на мой взгляд, большая часть их не стоит и одной страницы перевода кого-нибудь из европейских классиков. Всякий раз, когда я читаю какое-нибудь оригинальное сочинение на татарском языке... я с грустью сожалею о том времени, которое потрачено на них» (6, 1903 от 23 декабря).

Более того, Ахмед бек Агаев, не признавая даже основополагающее значение реалистических комедий М.Ф. Ахундова, в частности, его знаменитой комедии, жемчужины национальной драматургии «Приключение скряги, или Гаджи-Гара» писал, что эту пьесу «нельзя в строгом смысле назвать комедией: в ней нет ни «типов», ни социальных или психологических анализов» (6, 1908 от 18 ноября).

Ахмед бек Агаев различными путями старался очертить деятельность прореалистически настроенных педагогов, просветителей, стремившихся разбудить общественное сознание народа. В связи с этим он писал: «Вся деятельность наших педагогов выражается в сочинительстве никуда не годных комедий, смешных драм... И, выбросив всю эту литературу бельбера на рынок, наши педагоги... серьезно убеждены, что обогатили родную литературу,
развили язык, оказал величайшую услугу человечеству» (6, 1903 от 4 октября).

Идеологи азербайджанского чистого искусства не могли оценить чуждое им реалистиче-
ское наследие таких представителей нового литературного течения критического реализма,
как Джалил Мамедкулизаде, Мирза Алекпер Сабир, Абдураим бек Ахвердиев и др. Они при-
знавали и пропагандировали лишь эстетическую литературу. Такое пристрастие к чистому ис-
кусству, к Анакреонту и Эпикаку, в частности к ее научным и литературным идеям, пропаган-
дирование их, безусловно, имело свое значение. Однако это направление в критике и публи-
цистике не было единственно правильным; что, кстати, позднее было признано и самими его
представителями, в частности, Абдуллоей Шагом (12, с. 202).

Взгляды представителей чистого искусства, а равно и их сторонников, противопостав-
лялись резкие, логичные и убедительные высказывания реалистов, в первую очередь, молла-
насреддиновцев, в частности, таких сотрудников журнала «Молла Насреддин», как Фирудин
бек Кочарли, С. Агамалиоглы, Гусейн Минасазов, Эйнали Султанов, Рагим бек Меликов и
другие.

Успешнее и плодотворнее в литературной критике в эти годы занимался Фирудин
бек Кочарли. Учитывая степень ее изученности, мы не будем здесь повторять уже известные
по работам наших предшественников положения и постараемся привлечь к кругу исследова-
ния лишь новые материалы.

Как указывал академик К. Тальбзаде, «Фирудин бек Кочарли... материалистически ре-
шал основной вопрос эстетики об отношении искусства к действительности» (11, с. 415).

Фирудин бек Кочарли понимал социальные задачи литературы, со всей отчетливостью
чувствовал ее преобразующую, воспитательную роль. В 1904 году в газете «Шарги-
Рус» он писал: «Литература нации это, можно сказать, зеркало ее быта. Уровень материального благо-
состояния, быта, степень прогресса, мощь и расцвет можно определить по его лите-
ратуре» (3, 1905, 13 октября). С тех же позиций, в противовес идеологам-эстетам, Ф. Кочарли
оценивал творчество М.П. Вагифа и М.В. Видали, М.Ф. Ахундова и Н. Везирова, М.А. Сабира
и Д. Мамедкулизаде, Н.В. Гоголя и А.П. Чехова, А.С. Пушкина и А. Церетели. С тем же мери-
лом подходил он и к вновь зарождающейся и развивающейся быстрыми темпами реалистиче-
ской литературе.

Подобные же требования реалистической эстетики можно найти и в творчестве многих
упомянутых выше публицистов - современников Фирудина бека Кочарли - выступавших в рус-
ской прессе, подходивших к решению вопроса именно с такой точки зрения, порой высказы-
вавших еще определеннее и резче. Самед Агамалиоглы в «период золотых дней контрреволю-
ции» и в пору, когда буржуазные идеологи перешли в решительное наступление против реа-
листического искусства, писал: «В этой борьбе самым могучим оружием является литература,
которую противники прогресса стремятся аннулировать» (5, 1909 от 19 февраля). Говоря о
литературе, Самед Агамалиоглы, отталкиваясь от этой мысли, в указанной статье заявил: «Нация, лишенная
родной литературы - этнографическая масса, социально не мыслящая и не чувствующая, без
общественных идеалов и стремлений, без героических порывов и вопросов жизни, без про-
шлого, без будущего, с зоологическим состоянием настоящего» (4, 1911 от 12 июня).

Русские реалисты считали, что искусство не только отражает, но и объясняет жизнь. Са-
мед Агамалиоглы, отталкиваясь от этой мысли, в указанной статье заявлял: «Нация, лишённая
родной литературы - этнографическая масса, социально не мыслящая и не чувствующая, без
общественных идей и стремлений, без героических порывов и вопросов жизни, без про-
шлого, без будущего, с зоологическим состоянием настоящего» (4, 1911 от 12 июня).

Приверженцы реалистической литературы в Азербайджане в острой полемике со своими
идеологическими противниками отстаивали материалистические взгляды на искусство. Ос-
новным источником, питающим сознание, утверждали они, является наука, объектом которой
служит сама жизнь, социальное бытие народа, социальный и духовный мир унизенных и
оскорбленных. Литература способна претворять в жизнь свои общественные идеалы лишь при условии, если она опирается на три основных фактора: национальный язык, реальную действительность и светскую науку. Литература, не опирающаяся на эти факторы, не может рассчитывать на внимание со стороны народа, на то, что она будет способна оказывать на читателей какое-либо общественно-влияние. В связи с этим, Самед Агамалиоглы писал: «Литература не на родном языке, не свободная в своих мыслях и чувствах, отрешенная от жизни и науки - это подделка» (4, 1911 от 12 июня).

Подобная позиция азербайджанских прореалистов прямо перекликалась со следующим известным положением критики В.Г.Белинского: «Говорят: для науки нужен ум и рассудок, для творчества- фантазия , и думают, что этим порешили дело начисто... А для искусства не нужно ума и рассудка?.. В творениях Шекспира не знаешь чему больше дивиться - богатству ли творческой фантазии, или богатству всеобъемлющего ума» (13, т. 3, с 791).

Самед Агамалиоглы, провозгласивший литературу ценным духовным сокровищем, подчеркивал, что искусство должно быть выразителем национального духа каждого народа, создаваться на его родном языке, отражать близкие ему чувства и взгляды на жизнь. В искусстве он видел средство борьбы против общественных пороков и несправедливостей, за социальный прогресс.

Правда, временами, особенно после смерти М.А. Сабира, в настроении публициста появляются нотки разочарования. Он жалуется на скудость нашей литературы, не учитывая, что после ухода из жизни великих талантов, говоря словами В.Г. Белинского, «доступ к поэтической славе» становится «очень труден».

Одним из тех, кто лучше других осознавал и ценил эту истину, был известный русскоязычный литератор Гусейн Минасазов. Он высоко ценил молланасреддиновцев, отвечавших, по его глубокому убеждению, все более возраставшим требованиям жизни. Их искусство, заявлял Гусейн Минасазов, являло собой подлинно высокое искусство. Противостоящее всем другим, враждебным народу течениям в литературе и искусстве, оно начисто опровергало реакционные взгляды тех, кто закрывал глаза на национальные достижения, слепо преклонялся перед Западом.

Обладающие материалистическим мировоззрением, наши литературные критики были оптимистами, верили в светлое будущее, в близкое торжество справедливости. Гусейн Минасазов писал: «Мы начали строить здание новой жизни. Правда, нас пока мало, мы спотыкаемся, падаем. Дела наши хромают, работники слабы, средства ничтожны. Но все это не должно разочаровывать нас. Не нужно никогда забывать, что мы только вступили в новую жизнь и плодами ее народ может пользоваться только после упорной, совместной, долгой работы...» (5, 1907 от 31 июля).

На подступах к этой новой жизни, как и во всех других областях, прогрессивные литературные круги сталкивались с огромными трудностями, препятствиями. Выражаясь словами Наримана Нариманова, «господствовала ситуация, при которой - «если посмеете высказать на словах то, что в мыслях ваших, с вас спустят шкуру» (9, с. 248). Но и в такой обстановке наши представители передовой интеллигенции не боялись высказывать правду. Рагим бек Меликов в письме к одному из буржуазных идеологов писал: «Мы не хотим вожачества над народом, но верными путеводителями для него мы всегда будем, хоть «угомоните» нас при помощи ваших «кочи»- головорезов. Знайте, что наше место придут новые и наши кадры будут постепенно пополняться» (1, 1907 от 6 июля).

Убеждения выработали у них уверенность в том, что для привлечения народных масс к борьбе за новую жизнь, необходимо без устали проводить среди них воспитательную работу, открывать им глаза на право, беспощадно вскрывать социальные язвы, разъяснять читателям встающие перед ними на каждом шагу, «проклятые вопросы». Только так можно сократить расстояние между жизненной и художественной правдой, поднять последнюю на уровень насущных требований дня; только так можно добиться, чтобы читатель и зритель увидели и познали свою жизнь» со всеми ее преимуществами и недостатками; тогда в этой жизни
узнают себя «и мулла - взяточник, и помещик - бек, эксплуатирующий своих крестьян и женщин — татарка, несущая ярмо, и разбойник - «кочи», - из-за копейки обирающий своего брата и поливающий его кровь и т.д., и т.д.» (7, 1908, 30 июля).

Представители прореалистически настроенной интеллигенции, публицисты, критики выделили прямую связь между успехом политической борьбы и тем, насколько верно и последовательно литература и искусство отражают национальную действительность, ибо «никакое возрождение невозможно без родной литературы, без родного искусства, без театра - без этих волшебных зеркал жизни» (5, 1912, 30 апреля).

Речь, конечно же, идет о таких художниках слова, как М.А. Сабир, Дж. Мамедкулизаде и другие. Несмотря на утверждение идеологов-эстетов о том, что «из нас знающих Сабира не так много», критики-реалисты всегда выделяли Сабира среди молланасреддиновцев, пропагандировали его творчество, считая его основателем новой литературной школы, глашатаем новых, реалистических идей, «певцом народных масс» (6, 1913, 6 июля). Гусейн Минасазов писал: «Сабир - создатель новой школы в поэзии закавказских татар... он пел песни жизни. Той подлинной жизни, в тисках и под гнетом которой влачат свое существование миллионы людей. Это была яркая утренняя звезда на заре пробуждения грядущего дня» (3, 1912 от 12 июля).

Названные представители реалистической критики и публицистики примерно также отзывались о творчестве Джаили Мамедкулизаде, Наримана Нариманова, Наджаф бека Везирова и других реалистов, пропагандировали их произведения за отражение в них правды жизни, за укоренение реализма в литературе.

Азербайджанские русскоязычные критики и публицисты, по примеру русской демократической критики 1850-60-х годов, требовали изображения «темного царства». Они считали, что национальные писатели, если воспользоваться выражением Н.А. Добролюбова, должны создать возможность читателям «при свете своих ярких изображений» хотя бы «осмотреться в этом темном царстве» (14, с. 193).

Так, осознавая значение беспощадного разоблачения властующего в начале XX века строя, вскрытия, обнажения трагедий порождаемых самодержавием в социально-экономической и правой областях, Гусейн Минасазов писал: «Мы спим не тем чутким сном, который прерывается одним прикосновением ласкающей руки, а сном крепким, который могут прервать только сильные толчки» (3, 1911 от 18 декабря).

Гусейн Минасазов считал, что все пишущие, все творческие люди Азербайджана своим художественным и публицистическим творчеством должно обрушиваться на заржавевшие умы, будить уснувшую совесть, звать к борьбе за счастливое будущее.

Передовая интеллигенция страны, наряду с проблемами современности и реализма в литературе, занималась и другой, не менее важной и неразрывно связанной с предыдущими, проблемой, от положительного решения которой во многом зависели целесообразность и эффективность проводимой борьбы. Речь идет о проблемах литературного языка. В полемике, развернувшейся вокруг этой проблемы, и проявляли себя с наибольшей остротой столкновения, борьба против буржуазных идеологов.

Начатая Молла Панахом Вагифом и продолженная Мирза Фатали Ахундовым борьба за чистоту народного азербайджанского языка была продолжена в интересующий нас период всеми, кто представлял прогрессивные силы азербайджанской литературной общественности. Такое благородное стремление не пробуждало ни в ком возражений, не было жалоб на «скудость» родного языка.

Литераторы, боровшиеся за чистоту и оздоровление языка, употребляя термины «мусульманский язык», «язык родины», «татарский язык» имели в виду лишь азербайджанский язык. Зачастую его называли языком кавказских тюрков или закавказских татар. Однако в начале 20 века, в связи с поднявшим голову в Азербайджане пантюркизмом, Али бек Гусейнзаде вместе со всеми своими стамбульскими и бакинскими «сподвижниками» развил бурную деятельность по практическому внедрению в жизнь своих реакционных идей. Претворение их в жизнь началось с попытки провести реформу языка. Этот процесс продолжался с 1905 года...
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(со времени начала деятельности газеты «Хаят») до советизации Азербайджана в 1920 году. Это была хитроумная, с далеко идущими целями, политическая акция. Было бы неверно расценить конфликт в области языка, стремление «реформировать» его, как личную инициативу Алибека Гусейнзаде; он и его сторонники целенаправленно, исходя из собственных идей, воспевали «красоту» турецкого языка, вносили сумятицу в языковой строй родного языка. Азербайджанский язык они называли пастушим и плебейским, якобы непригодным и слишком бедным для выражения высоких чувств и стремлений.

А. Гусейнзаде в редактируемом им газете «Хаят» открыто писал: «Наш родной язык весьма узок и беден. На этом языке невозможно передавать некоторые мысли». Эта мысль внушалась читателям и в других печатных органах, возглавляемых А. Гусейнзаде (10, с. 11). Так, один из журналистов, занимавшихся проблемами языка, в журнале «Фиозет» писал: «В общем хочу сказать, что у тебя нет отдельно своего языка, твой язык это язык всех других турок; священный очаг, к которому должно повернуться лицом всеобщее развитие, иначе говоря, конечная цель всех нас - это признание османского языка».

Один из активных поборников чистоты азербайджанского языка Ф. Кочарли в письме Абдулле Шаигу, порицая его ошибочные взгляды, писал: «Никак не могу согласиться с недостатками, которые вы приписываете нашему языку. Во - первых, наш язык не так уж скуден пастушим. Мы не знаем своего языка и в этом виноваты мы сами, а не наш язык. Мы так долго и усердно стремились к арабскому и фарси (персидскому), что, выкинув из лексикона свои слова, заменили их усложненными фразами, словами, заимствованными из иностранных языков... уподобив свое прекрасное одеяние клоунскому костюму... следует приложить больше усилий к тому, чтобы язык стал богатым и широкораспространенным. Но терять языковое произношение и нарушать его стилистику - весьма каверзно».

Наиболее резко и эффективно против пантюркизма выступал журнал «Молла Насреддин», с первого же номера своего издания, заполнявший свои страницы произведениями и публикациями, написанными на простом и доступном народным массам языком. Этот журнал и его сотрудники подчинили свою деятельность непримиримой борьбе с теми, кто засорял азербайджанский литературный язык разного рода заимствованиями. Так, Джалил Мамедкулизаде открыто критиковал тех, кто способствовал созданию такого рода «языковой неразборише» в родном языке.

Таким образом, в вопросах языка, как и по многим другим вопросам национальной культуры, культурного строительства произошел раскол, носивший глубоко принципиальный характер, ставший предметом широкой полемики не только на страницах национальной печати, но и на страницах русскоязычных изданий Баку.

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Abstract

Although many works on loanwords and loanwords have appeared in the language, there is still diversity in the understanding of the existing process, or rather, in relation to the terminological expression of the process. When treating foreign language elements in any language, different opinions are mostly manifested in the naming of these language elements, as well as in loanwords and international issues.

Knowing the origin of words in a language is of great importance for language learners. Students are able to distinguish words in terms of meaning, pronunciation and spelling. Words stay in their memory quickly and for a long time.

When talking about the vocabulary of modern national languages, it is important to take into account the conditionality and relativity of the concept of loanwords. Because now there is no such national language that does not have borrowed words in its vocabulary, and the history of borrowing such words and the degree of their assimilation are so diverse that long-term and comprehensive in-depth research is required to determine them. The vocabulary of the English language contains words whose loanwords can only be determined as a result of special research, and people who pronounce such words many times a day recognize and use them as the language's own words; There are also words that were borrowed from other languages for limited use, rarely used and still remain so; there are also borrowed words that were once important for various reasons, but later some of them lost their historical importance, and the other part is still valid.

Keywords: loanwords, vocabulary, foreign words, language, borrowing words

As it is known, one or another word is taken and used from other languages sometimes without need, and even competes with it as a competitor of the word with the same meaning in the language itself. Such words exist not only in English, but also in the vocabulary of the Azerbaijani language. Considering all such cases, it becomes clear that the concept of borrowed word is both complex and conventional. In the stylistics of the modern English language, "borrowed words" mainly refers to words that are characterized by their origin from the point of view of their shade of being borrowed from other languages. Therefore, these types of words are called foreign, foreign or foreign words in all languages, so that the concept of this term is included in the concept of "words" used in a broad sense, and in a sense close to the concept expressed by the term barbarism in poetry and stylistics. not to be understood as the term used and not to be distinguished from it.

Since the stylistic shade of foreign words is more related to any language, to which field, to which style these words belong, we think it is more appropriate to consider these aspects not separately, but precisely in relation to the purpose. Studies show that foreign words in modern English are words borrowed from Latin, Italian, Spanish, French, Celtic, Greek, Anglo-Saxon, Persian, Indian, Portuguese, and Arabic languages.

In addition, there are a number of foreign words that originally belong to the languages of one or other peoples (Russian, German, etc.), and most of them are words that have passed through European languages in modern times.

No language exists without borrowing words. The role of borrowed words in enriching the vocabulary of the English language is undeniable.

Modern English vocabulary contains many foreign language elements.

The existence of loanwords in the vocabulary of the English language is related to the history of the English language.
If we look at the vocabulary of words in the English language, we see that the names of the animals whose meat is used as food belong to the Anglo-Saxon group, and the names of the meat of those animals belong to the French language group.

Being a social phenomenon, language is constantly developing and enriching. Unlike grammar, vocabulary is more prone to change. The lexicon of every living language grows very rapidly: new concepts and new things require new words. However, old words, as a rule, remain together with new words, only a small part of them goes out of use in the language and turns into archaisms. Here the process of increase significantly exceeds the process of decrease: the number is constantly increasing.

One of the means of enriching the vocabulary of a language is foreign language elements. By the way, it should be said that the influence of extraneous language elements should be understood here as a violent influence. Here, especially the words obtained as a result of necessity attract more attention. Speaking about the necessity of such borrowings, F. Engels wrote: "If necessary foreign words consisting of generally accepted scientific and technical terms could be translated, there would be no need to use them. Therefore, their translation only distorts the meaning; instead of explaining them, it confuses them [1]."

Indeed, if the language's own internal capacity to express new concepts is limited, it is necessary to acquire words. This is the natural regularity of the language itself. It is no coincidence that foreign language elements and borrowings form a special layer in the English and Russian languages, which are considered very rich on an international scale in modern times, and the researchers of these languages value that aspect as a condition that enriches the language and makes it more useful for communication. One of the main reasons for this is the adaptation of the borrowed words to the phonetic-grammatical rules of the language. Therefore, the origin of borrowed words is often unknown.

N.M. Shansky, talking about this feature of borrowed words, writes: "It is obvious that most of the foreign words are foreign words and come from outside. However, it is not always felt that foreign words are borrowed by origin. In order to prove that many foreign words are borrowings, special linguistic research is needed. [2]"

The role of borrowed words in the formation and enrichment of English vocabulary depends on the history of the language.

The problem of the etymology of loanwords and their use is explained in detail in Professor Smirnitsky's Lexicology book.

When talking about the appropriate use of borrowing words, we think it is necessary to remember certain aspects of some stylistic rules, conditional cases, and special stylistic colors related to such words.

When necessary, a foreign word can be included in the vocabulary of the language. In order to correctly master any foreign word, it is important to write it correctly and pronounce it correctly, so that it can be used and understood by the general public. or a brief explanation of the exact meaning should be given in the margin below. Sometimes the explanation can be given not by sentences or signs, but by synonyms that express a meaning close to the meaning of that word.

Sometimes it happens that there is a word in the language itself that can more or less express the meaning of a newly introduced foreign word, but nevertheless, the word in the language itself is used less than the borrowed word. For example, the French word "enemy" is used instead of the English literary word "foe". As a result, such words either produce synonyms or the language's own word is limited in meaning. When it comes to the use of such words based on stylistic purpose, it should be noted that synonyms are usually used as synonyms, some of the words limited in meaning are used only in a limited sense, sometimes according to their previous meaning, and a few of them are used in both meanings due to their place, and are obsolete in the language. words that have become unusable can usually be used as archaisms according to their place.

Sometimes foreign words with the same meaning meet in speech and book style, and such a meeting generally produces two results:

a) words that come from spoken language become more useful and even pass into the book style, while words of other origins used in the book style gradually fall out of the language.
b) or borrowed words that have passed through conversation, or have become very useful in oral speech due to the stationery-correspondence style of a certain period, cannot earn the right to be used in the national literary language and are gradually limited in conversation, on the contrary, to express the same concept, they are first only used in writing. In the literary language book, the vocabulary of the English language was cleared of many foreign words, and in this way, the vocabulary of the English language was greatly enriched at its own expense.

However, most of the loanwords brought into the English language have been adapted to the language. There are two types of adaptation of loanwords to the source language. There are changes that are specific only to borrowed words and serve to adapt the foreign words to the norms of the language from which they were imported. There are also changes that are characteristic only of native words. [3]

Adaptation of borrowed words to the language norms is called assimilation. Linguists have shown that there are three types of assimilation: phonetic, grammatical and lexical assimilation of loanwords.

Phonetic assimilation refers to changes in sounds and accents. Phonetic assimilation takes place when the sounds and accents of the borrowed words are foreign (do not match) to the target language. Grammatical assimilation occurs when the grammatical categories of borrowed words undergo a change. For example: the Russian word "sputnik" can be used in six cases. In English, it is used only in two cases (completeness and subjunctive). I see a sputnik.

The change in the semantic structure of the derived word is called lexical assimilation. When a word has multiple meanings, only one or two meanings are expressed.

For example: "cargo" is a very meaningful word in Spanish. But its only one meaning the (goods carried by a ship) is used in English.

Sometimes, after a borrowed word is uttered, its basic meaning changes and it brings a new meaning.

For example: the word "to move" has the following meanings in modern English:
- propose; to move somewhere. However, the word "move" is used in a completely different sense in the language it is taken from.

The word "Umbrella" comes from the Italian language. And this word means "sun shadow" in Italian. In English, it means "protection from rain, umbrella", losing its original meaning.

Sometimes the primary meaning of a borrowed word is used as its secondary meaning. For example: the word "hello" was spoken in the sense of "comrade", but later it lost its original meaning and is used in a secondary sense. The first meaning of the word "Hello" means "man, man".

According to their etymology, English words are divided into the following groups:
1) native words;
2) words that have accepted the citizenship of the language;
3) foreign words.

Native words form the basis of the English language. English conjunctions, pronouns, prepositions, articles are native words. Native words also have the following characteristics:

a) They usually start with w, wh, wr, tw, sw, y.
b) Words containing sh, th, ng, dg, h letter combinations native are words. Theatre; long, strong.
c) Words containing letter combinations aw, ee, oo are native words. A book, to look, deer, etc.

There is also a group of words that are foreign in origin, but they are words that have been adapted to the language from which they were brought and have adopted the citizenship of that language. For example; The word "leg" is derived from the Icelandic word "leggre". The word "sign" is derived from the French word "signe".

Thus, as a social phenomenon, language is constantly developing and enriching. If the specifics of the receiving language are not taken into account in the assimilation of borrowed words, if the phonetic and grammatical norms of this language are not expected, the borrowed word will not be able to acquire the right to citizenship and sooner or later it will disappear from the language. This in itself shows that words from another language are not mechanically acquired. On the other hand, "it
does not mean that the elements of foreign words are simply handed over to another language. It also means that these elements are assimilated by the language system, which means that these elements adapt to the specific requirements of that language, and change from a formal and semantic point of view under the conditions of the new system.

If the acquisition process is not a mechanical transfer of an indefinite collection of foreign words to another element, then it can be said about this process that it is basically the highest stage of creative, active development [4].

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THE SIMPLE SENTENCE IN MODERN ENGLISH AND ITS LINGUISTIC FEATURES

Svetlana Mammadova
Ph.D., Azerbaijan State Pedagogical University, Philology faculty, Foreign Languages Center department, Baku, Azerbaijan

Abstract

The simple sentence problem is one of the most relevant areas of syntax. This issue is both complex and controversial, as well as wide and multifaceted. This includes a two-part sentence, the structure of its main members, the subject and the message, the place of the main and secondary members in the sentence, single-part sentences and their types, types according to purpose and intonation, etc. A simple sentence expresses only a finished idea. A simple sentence consists of a subject and a news group based on its composition. Simple sentences are divided into single and double sentences based on their content. Both main members are involved in a double sentence. divided into two types - brief and broad sentences. In brief sentences, only the main members are involved. In brief sentences, the subject of the brief sentences depends on the language expression of the logically categorized sentence expressed in the form of a message, and the predicate in the form of news. In the long sentences, in addition to the main members, secondary members are involved. Broad sentences It is a type of sentence formed with the participation of determination, unmediated and mediated completeness, adverbs, several identical secondary members. In single-component sentences, ba. One of the members does not participate. If the main part of single-component sentences is expressed by words in the nominative case, such sentences are called nominative sentences. Nominative sentences are sentences that confirm the existence of the object by means of intonation.

Keywords: Sentence structure, unextended sentence, extended sentence, subject, predicate, linguistics, specific structure, conjunction, complex, comparative, intonation.

A sentence is a unit of language, this unit is characterized by its specific structure and it is an independent unit of speech; it consists of subject-predicate structure. It is realized in simple and complex models. Sentences are divided into four categories: simple sentences, compound sentences, compound-complex sentences, and compound-complex sentences. Simple sentence contains one independent clause. Simple sentence contains a subject (a person or thing performing an action) and a predicate (a verb or verbal phrase that describes the action) and expresses a complete thought as an independent clause. Simple sentences do not contain dependent or subordinate clauses. A sentence is typically associated with a clause, and a clause can be either a clause simplex or a clause complex. A clause is a clause simplex if it represents a single process going on through time, and it is a clause complex if it represents a logical relation between two or more processes and is thus composed of two or more clause simplexes.

A clause (simplex) typically contains a predication structure with a subject noun phrase and a finite verb. Although the subject is usually a noun phrase, other kinds of phrases (such as gerund phrases) work as well, and some languages allow subjects to be omitted. In the examples below, the subject of the outmost clause simplex is in italics and the subject of boiling is in square brackets. In brief sentences, the subject of the brief sentences depends on the language expression of the logically categorized sentence expressed in the form of a message, and the predicate in the form of news. In the long sentences, in addition to the main members, secondary members are involved. Broad sentences It is a type of sentence formed with the participation of determination, unmediated and mediated completeness, adverbs, several identical secondary members. If the main part of single-component sentences is expressed by words in the nominative case, such sentences are called nominative sentences. Nominative sentences are sentences that confirm the existence of the object by means of intonation.
The problem of the sentence is one of the most studied and studied issues of theoretical linguistics. Nevertheless, the problem of the sentence is still being investigated as one of the most controversial, complex and comprehensive, central problems in linguistics that has not yet been fully explained. Modal relationships, signs of predicativeness manifested in the message, and specific intonation features of the language in oral speech, etc. The sentence is the main and central unit of the syntactic structure of the language. The most important features of the language find their expression in the sentence. The language performs the role of thinking reality and communicative function through sentences. A simple sentence, which is a structural type of a sentence, is formed from words and word combinations. A simple sentence has a predicative center. A simple sentence is the most massive means of communication and exchange of ideas, it is used more often in the language compared to other types of sentences. The following structural types of simple sentences are distinguished:

1. Due to the participation of senior members;
2. Two member sentences;
3. One member sentences.

One-member sentences those sentences which have no separate subject and predicate but one main part only instead. One-member sentences in English are of two types: nominal sentences and verbal sentences. Nominal sentences are those in which the principal part is expressed by a noun. They state the existence of the things expressed by them. They are typical of descriptions. Verbal sentences are those in which the principal part is expressed by a non-finite form of the verb, either an infinitive or a gerund. Infinitive and gerundial one-member sentences are mostly used to describe different emotional perceptions of reality. The basic pattern of a simple sentence in English is one subject-predicate unit, that is, it has two main (principal) positions: those of the subject and of the predicate. It is the pattern of a two-member sentence. There are several variations of this basic pattern, depending mainly on the kind of verb occupying the predicate position. The verb in the predicate position may be intransitive, transitive, ditransitive or a link verb.

We will try to analyze the similar and different features of the structural models (types) of simple sentences used in English and Azerbaijani languages - double-compound and single-compound. Different opinions have been expressed about both types of simple sentences in linguistics for many years. "In compound sentences, all persons, all tenses and all images equally serve to create this relationship. In single-component sentences, these categories (time, person and image) are limited to a certain extent." The concept of the structural model of the sentence was developed mainly in simple sentences (with a single predicate). In the modern era, linguists are trying to find answers to all questions about the structural models (types) of the simple sentence in English. The structural models of the simple sentence are given differently by linguists. Thus, "N. According to Steinsberg, there are 9 structural models of a simple sentence in English". [2]

A simple sentence, which is a structural type of a sentence, is formed from words and word combinations. A simple sentence has a predicative center. A simple sentence is a basic sentence that expresses a complete thought. It contains:

1. A subject;
2. A verb;
3. A complete thought. [3]

A simple sentence is the most massive means of communication and exchange of ideas, it is used more often in the language compared to other types of sentences. The following structural types of simple sentences are distinguished:

I. Due to the participation of senior members;
1. Two member sentences;
2. One member sentences.

II. In addition to senior members, according to the participation of secondary members:
1. Simple extended sentences;
2. Simple unextended sentences.

III. Due to dismissal of primary and secondary members:
1. Complete sentences - Simple extended sentences;
2. Elliptical sentences.

A complete sentence or a full sentence is a sentence that has a subject-verb pair, a complete thought, a capital letter in the beginning, and a period at the end. Sentences can be incomplete if they lack any of the essential components of a complete sentence.

Elliptical sentence construction involves the omission of words from a sentence. These omitted words are implied by other elements within the sentence. Elliptical structures include a noun ellipsis, a verb ellipsis, or a verb-phrase ellipsis. A simple sentence can contain multiple subjects or multiple verbs and still be a simple sentence as long as another clause is not added. If a new clause is added, the sentence is no longer considered a simple sentence. Simple sentence: Tom, Amy, and James were running together. Not a Simple Sentence: Tom, Amy, and James were running together when Amy sprained her ankle and Tom carried her home.

Simple sentences are sentences containing one independent clause, with a subject and a predicate. Modifiers, compound subjects, and compound verbs/predicates can be used in simple sentences. The standard arrangement of a simple sentence is subject + verb + object, or SVO order.

The message of a simple sentence is connected with the same clauses as in the verb and the conjunction "and", in some cases it is expressed with a series of prepositions in the personal form that agree with the verb. In these cases, commas are used. A simple sentence contains a subject and a verb and communicates a single, complete thought. Here are steps to take when you're trying to identify a simple sentence.

Identify the subject and the predicate. A simple sentence must have at least one subject (someone or something performing an action) and a predicate (a verb or verbal phrase describing that action).

Look for a conjunction. You might have a simple sentence if a coordinating junction (and, but, or) joins two words or phrases that are equal parts of speech performing the same function in a sentence—for example, a compound subject. (If you identify a subordinating conjunction, then it is not a simple sentence but instead a complex sentence.)

Note any mid-sentence punctuation. A simple sentence contains at most one clause, but punctuation can indicate the joining of two clauses. For example, if a colon, a semicolon, or a comma
paired with a coordinating conjunction appear mid-sentence, you have a compound sentence (the pairing of two independent clauses) rather than a simple sentence.

Check for a complete thought. If the clause ends with punctuation and needs no additional supporting material to communicate its message, the sentence is an independent clause and therefore a simple sentence.

References

LOGISTICS SUPPORT FOR PROJECT ACTIVITIES

Vezirova Leila
Doctor of Philology, Professor. Azerbaijan, mountains Baku.
Azerbaijan State Pedagogical University

ЛОГИСТИЧЕСКАЯ ПОДДЕРЖКА ПРОЕКТНОЙ ДЕЯТЕЛЬНОСТИ

Везирова Лейла
dоктор филологических наук, профессор. Азербайджан, гор. Баку. Азербайджанский Государственный Педагогический Университет

Abstract

In the article talks about logistics support for project activities. At the beginning, the etymology of the word “logistics” is explored, then the very history of this concept is directed. Here, modern theories of logistics and logistics management are presented, and their methodologies are indicated. General logistics challenges are then examined. A special place in the article is given to the preparation and presentation of the project. The article indicates that the project is always aimed at solving a pressing problem, has a single goal, is limited in time and resources, and is aimed at achieving a unique result.

Аннотация

В статье говорится о логистической поддержке проектной деятельности. В начале, исследуется этимология слова «логистика», затем направляется взор саму историю данного понятия. Здесь представляются современные теории логистики и логистического менеджмента, указываются их методологии. Затем исследуются общие задачи логистики. Особое место в статье отводится подготовке и презентации проекта. В статье указывается, что проект всегда направлен на решение актуальной проблемы, имеет единую цель, ограничен во времени и ресурсах и нацелен на достижение уникального результата.

Keywords: logistics, project, etymology, transportation, entrepreneur, research, analysis, management, specialist, task.

Ключевые слова: логистика, проект, этимология, транспортировка, предприниматель, исследование, анализ, управление, специалист, задача.

Что такое логистика? Этимология слова логистика неоднозначна. Так, в древнегреческом языке логос означает «познание», логизм «мышь», логизмос «мысленный план расчета», логос «обсуждать», логистика означает «практическая культура расчетов». В древние времена логистика означала транспортировку и перемещение продуктов питания и припасов. За этот период был понятен набор алгоритмов математических расчетов. В Древнем Риме организацией питания и спальных мест легионеров занимались логисты. В Древней Греции отделы государственных служащих, занимавшихся финансовыми делами Афин, назывались логистикой. Архимед упоминал в своей работе, что при его жизни логистами были всего 10 человек. Наполеон Бонапарт логистические подходы использовал для обеспечения военных боеприпасов, продовольствия и размещения армии во время движения своей армии.

Логистика как научная область начала формироваться в США в начале 1950-х годов. С точки зрения эволюции логистики её можно разделить на несколько исторических этапов развития с точки зрения зарождения в XX веке:

Первый этап охватывает 1920-1950 годы. В это время логистика находилась за пределами предпринимательской деятельности и считалась не имеющей отношения к предпринимательской деятельности.

Третий этап охватывает период с 1970-х до середины 1980-х годов. Дональд Бауэрсон, один из влиятельных специалистов по логистике Мичиганского университета, США, назвал этот период периодом возрождения логистики.

Четвертый этап называется этапом перспективного развития логистики. Этот этап предполагает полное построение логистических систем с комплексным подходом к каждому процессу производства, поставок, продаж и потребления.

Современные теории логистики и логистического менеджмента базируются на следующих методологиях:
1. Систематический анализ;
2. Кибернетический подход;
3. Исследование операций;
4. Экономико-математическое моделирование.

Такие методы управления как программно-целевое планирование, функционально-системный анализ, прогнозирование, моделирование и т.п. на различных экономических уровнях для решения конкретных задач, возникающих при анализе и синтезе логистических систем, используются в детальной форме. Используя результаты методических и теоретических исследований в практике управления логистикой, в западных странах создано большое количество логистических обществ, организаций и ассоциаций, способных выделить практическую деятельность учёных и специалистов. В США существуют «Американское общество», «Американский совет по проблемам управления», «Институт логистики и управления дистрибуцией» в Великобритании, «Логистический центр» в Испании, «Производство» во Франции.

Общие задачи логистики означают, какие задачи следует выполнять, в какой последовательности, когда и где для достижения целей, стоящих перед логистикой. Любой хозяйствующий субъект должен определить свои общие и специфические характерные логистические задачи в области управления материальными потоками, к которым относятся:

Логистическая концептуальная идея, которая адаптирует компанию к происходящим на рынке изменениям с наименьшими издержками в текущих условиях, заключающихся в увеличении доли рынка и достижении экономических преимуществ перед конкурентами.

Особая задача логистики - это обеспечение совместимости материальных, информационных, финансовых, кадровых и других потоков;
Диспетчеризация материальных потоков и обеспечение их непрерывной информацией;
Определение физического распределения, стратегии и технологии продукта;
Стандартизация сортировки и упаковки продукции;
Создание рационального соотношения производство – хранение – транспортировка – реализация;
Оптимизация процесса управления производственными ресурсами;
Достижение максимального сокращения времени хранения и транспортировки грузов.

Говоря о подготовке и презентации проекта, следует отметить, что в современном обществе всё большую популярность приобретают проектная деятельность, реализуемая в образовательных учреждениях (классы и классная система в форме проектов), научная и производственная деятельность. В широком смысле проектная деятельность охватывает нашу повседневную жизнь. Проект — это деятельность, направленная на создание уникального продукта или услуги, при условии определенного результата, цели, заданных ресурсов и сроков, а также требований к качеству и приемлемому уровню риска.

Проект всегда направлен на решение актуальной проблемы, имеет единую цель, ограничены во времени и ресурсах и нацелен на достижение уникального результата. Примеры различных проектов включают разработку программы научного эксперимента, строительство жилого дома, реконструкцию предприятия, создание новой организации, разработку новой технологии, изменение структуры компании, судостроение, региональное развитие и новое включает в себя такие действия, как переезд в новое здание.
Группа участников – проектная команда – работает над разработкой проекта (обучающего или реального). Современный менеджер должен уметь создать команду для разработки проекта и контролировать работу этой команды. Команды (коллективы) могут создаваться на основе принципа взаимной симпатии (участию всех членов трудового коллектива в той или иной форме) с учетом способностей и профессиональных интересов участников. Важно получить наилучший результат и учесть все аспекты проекта.

При подготовке проекта члены команды обычно играют определенную роль в зависимости от их интеллектуальных способностей и психологических особенностей. Члены коллектива всегда являются творцами новых идей в соответствии с новыми запросами. Кому-то достается роль исполнителя, кому-то удается стать руководителем проекта (организатором). В любом коллективе обязательно есть критик (и он необходим), кто-то становится эмоциональным лидером, умеющим организовывать людей, разрешать конфликты. Кто-то может быть ресурсоисследователем, кто-то может взять на себя роль доводчика, финалиста работы.

Важным этапом проектной деятельности, который непосредственно связан с коммуникацией, является презентация проекта. В настоящее время слово «презентация» прочно вошло в нашу жизнь. Разработка нового вида продукта, открытие компании, банка, филиала или филиала сегодня не обходится без презентации (preentatio на латыни, презентация на русском языке).

Это оригинальный жанр (мероприятие), призванный отразить индивидуальный имидж предприятия, перспективы развития. Текстовая презентация рассылается в виде листовок, писем или буклетов. Устная презентация – проект, сочетающий в себе выступления организаторов (чаще сопровождаемые слайдами, таблицами, демонстрацией товаров) и неформальную часть со свободным общением аудитории. Иногда презентации организуются в форме пресс-конференции с приглашением большого количества журналистов. Выступление организаторов или участников пресс-конференции является официальной частью презентации. Неформальная часть включает в себя выступления певцов, приёмы и вечеринки.

Современная конкурентная среда требует умения умело презентовать и поддерживать проект. Общепринятая форма презентации проекта (как в производственной, образовательной, так и в научной деятельности) сопровождается электронной презентацией, выполненной в программе Microsoft PowerPoint. Подготовка электронных презентаций и материалов требует определенных знаний и навыков.

Презентация проекта должна включать в себя следующие элементы:
тема проекта; постановка задачи; актуальность проекта; цель и задачи проекта; содержание проекта (ступени реализации); ожидаемые результаты проекта; необходимые ресурсы (время, материальные ресурсы, люди и т.п.); риски проекта; преимущество проекта перед другими.

Когда дело доходит до дизайна презентации в Microsoft PowerPoint, следует учитывать некоторые рекомендации.
1. Презентация должна содержать слайды, на которых представлена информация о названии проекта и его авторах.
2. Каждый слайд должен иметь заголовок, причём заголовки обычно оформляются в виде основных предложений (например: план реализации проекта; риски реализации проекта и т. д.).
3. На слайдах желательно проставить цифры. Хорошей практикой является использование на слайдах субтитров – они повторяют краткую информацию о теме и авторе презентации.
4. Слайды должны содержать минимум текстовой информации. Основная цель электронной презентации – визуализация данных.
5. Параллельность грамматических конструкций на каждом слайде желательна (например, все выражения начинаются с существительного или глагола: польза..., риски...; организовать..., предвидеть..., решить... и т.д.).
6. Необходимо соблюдать контраст в цветовом решении презентации: светлые знаки на темном фоне или темные знаки на светлом фоне (выбор зависит от помещения, в котором будет проводиться презентация).
7. Необходимо соблюдать единство цветовой гаммы – для этого лучше использовать стандартные цвета, предложенные дизайнером слайдов.
8. Не нужно злоупотреблять способами выделения фрагментов текста – не должно быть презентационных шрифтов, гарнитуры, размера букв.
9. Не нужно переусердствовать с анимационными эффектами – они отвлекают аудиторию от содержания слайдов и устной речи (кроме того, не все компьютерные программы поддерживают анимационные эффекты).
10. Такие шрифты для проецируемого на экране текста легко читаются – Tahoma, Arial, Courier, Times New Roman.
11. При выборе объема презентации рекомендуется использовать формулу 10-20-30: 10 слайдов, 20 минут на презентационную речь, 30 размеров шрифта.
12. Рекомендуемый размер слайда: одна идея = один слайд; одно высказывание мысли = одна строка; 5-6 строк = один слайд (не более 10 строк на слайде); 5-6 слов = одна строка; один слайд = одна минута.

Важным направлением изложения является связь между разговорной речью и визуальным диапазоной. Для эффективной реализации целей презентации не следует забывать следующее:
не пишите того, чего не говорили;
не повторяйте произнесенную речь;
не читайте информацию со слайдов.

Использованная литература
1. Афанасенко И.Д., Борисова В. В. Цифровая логистика, Питер 2019
2. Левкин Г. Г., Куршакова Н. Б. Основы логистики. 2016
It is becoming increasingly difficult to ignore the role of culture, the totality of the "second nature" created on the basis of certain subjective values, as the number of examples of its not only indirect, but also direct influence on the modern life of society is growing [Gerashchenko A. L., p. 72]. Paradoxically, the consumption of certain items, important for the maintenance of life and created by labor, is sporadically replaced by the consumption of items endowed, in addition to the real value, also with the subjective value of human preferences [ibid.].

Some researchers pay special attention to "intangible assets of enterprises – recognition, cohesion, quality of management, unique knowledge, consumer belief that the product of this enterprise has a special value" [ibid., p. 154]. Intangible assets are a symbol of the post–industrial economy paving the way for the future. They are related to the non–decreasing product - information. We are witnessing a historical change in the role of resources and the revision of the idea of their limitations: the dematerialization of resources, the transformation of information into one of the main types of products leads to the complication of the material world, its addition to the world of virtual "reality".

The system presented by A. Maslow ("pyramid of needs") is a hierarchy, the transition from one level to another is carried out only after the satisfaction of the lower needs... The historical "rise" through the levels of the Maslow pyramid is carried out in the following sequence: physiological needs; the need for security and security; the need to belong to a social group; the need for respect and recognition; the need for self-expression.

As a result, a very stable relationship between culture and life is formed.

It has always been possible to observe attempts to continue Weber's line of communication of economic activity with the socio-cultural norms and principles of peoples that determine the nature of labor activity, attitude to work, wealth, etc.

In order to satisfy his personal interests, a person always faces the choice of an alternative way to achieve and use limited economic benefits, provided that he is free to choose. And the degree of freedom of choice is directly dependent on class, caste, political, legal and other restrictions on the choice of economic behavior [see Human economic models].

Due to these factors, an important task is to revise the concept of man, to enrich it with ecological and ethical values "... we need to develop criteria, values of neo-humanism, global ethics, understanding of the content of progress based on the imperative of survival as the highest value of humanity" [see Modern Philosophy of Economics].

This new concept of man should be inextricably linked with an ecological worldview that revisits classical anthropocentrism.

It is no coincidence that one of the most important indicators of the change of the scientific paradigm at the turn of the third millennium was "the transition from anthropocentrism to biospherocentrism, in which not man is considered the epicenter of civilizational development, but the system "man-biosphere" [Los A.V. Concepts of modern Natural Science, p. 195].

Gender, a complex socio-cultural construct that determines differences in roles, behavior, mental and emotional attitudes of men and women, has become an indicator of the paradigm shift in
the social sciences. Its object is only partially related to the objectivity, acting as a complex system (network) of gender role relations in formal and informal structures of society. Since the gender approach demanded not substantive, but procedural thinking, analyzing the diversity of relations that develop between the sexes, a characteristic feature of the methodology and worldview of this direction is the concept of relationships and networks, replacing traditional structures and hierarchical organizations. Gender discourse requires the researcher to think in relationships, processually, which is typical for most new directions of post-non-classical cognition.

Weber's ideas do not always and not everywhere find adequate application, and this is understandable, since the development of the state and society is promoted or hindered by a whole complex of socio-cultural factors and phenomena, not just religion.

R. Rakhlis believes that there is a constant "imposition on the professional and business " culture and the human dimension of the economy as a whole of the influence of such factors as: the peculiarities of the historical development of the country, the mentalities of its peoples, their racial, national-ethnic, religious heterogeneity; the type of political regime of society at this stage; the level of national and civic consciousness of society; the presence of or the absence of a national (supranational) idea" [Rakhlis R. Economy, culture and religion].

First of all, it is necessary to turn to ethnic culture, since it is almost the initial condition for the formation and preservation of the self-identity of the people.

"Ethnic culture forms an original world that visually and verbally fixes the boundaries of the cultural space of a certain ethnic group... The culture of a people concentrates norms, standards, standards and rules of activity, as well as a system of values developed in the real history of this ethnic whole" [see Human economic models]. Based on this, it should be recognized that each ethnic culture develops mechanisms for distinguishing one ethnic group from another.

Since ethnic culture contributes to the preservation and transmission of the identity of ethnic communities, insofar as "... it has high stability and minimal variability, fixing the boundaries of the ethnos as an integrity. It is a kind of cultural code of an ethnic community, storing information about the history, stages of formation, living conditions and activities, etc." [ibid.].

Ethnic culture is formed by various factors, one of which is religious culture. Today, religion occupies a variety of positions in society and the state. In most countries, it is separated from the state, in traditional (Islamic and some others) it is not only inextricably linked with the state, but also is its and, accordingly, society's ideological and formative principle, which also affects economic activity.

Thus, the researcher of the concept of "Buddhist economy", the Austrian economist E. Schumacher, believes that Buddhism sees the importance of economics not in indulging human needs, but in preserving spirituality, which is also supported by creative human activity in the field of production and consumption. Therefore, the goal of the economy is work free from coercion, which develops the spiritual potential of a person. The "Buddhist economy" is extremely eco-friendly, it is aimed not at export, but at local consumption, preaching economy and rationality of the use of material and natural resources, especially irreplaceable ones.

The observed difference in economic success has led to the formation of comparative studies of the influence of types of religion on the activity of their adherents. Some of these studies show that "Protestant, Jewish and Confucian societies achieve more than Catholic, Muslim and Orthodox, since the former are generally characterized by the same values that promote progress," and the latter tend to "resist" progress values. However, practice knows exceptions to this observation: "Basques, for example, are distinguished by a developed entrepreneurial spirit and at the same time are zealous Catholics, and Chile - the country that has achieved the greatest result in terms of sustainable growth in all of Latin America - is distinguished both by its commitment to Catholicism and by the most numerous population of Basque origin from all the states of the continent" [ibid.].

In general, according to numerous studies, religion affects the economy and determines the activity of a believer, his attitude to work as follows:
1. forms the main goals of a believer's activity;
2. predetermines or restricts the means of achieving economic goals;
3. religious institutions as a rule act as an independent economic agent;
4. Religious systems influence the economy through stable social connections that form social networks built on trust and a common value system [see Economics and religion].

And yet there is something in common in different religions that constantly affects a person and his activities: "they contain the answer to the question of the meaning of life. In all religions, it is argued that a person's life can be determined not only by the manifestations of world forces, but also by his own efforts that can influence his life. This means that a person cannot completely submit to fate, but must use his freedom and bear responsibility, since his life depends on the nature of these efforts. All religions say that a person should strive to achieve everything pleasant and avoid everything bad in life in order to receive a worthy reward in the future" [Economics and Religion]

Researcher Koval notes an important aspect: "religious thinkers were not concerned with the economic and legal aspects of property, but with its "human" dimension. The main attention was focused on the personality of the owner, the motivation of his behavior, his thoughts and feelings" [see Economics and religion]. There is no sharp separation of spiritual and material values in the Islamic economy, and ethical norms such as justice and generosity are an integral part of the economy [History of the Islamic Economy]. The following basic rules of the Islamic concept of economics are usually distinguished:

- the limited nature of property: all property belongs to Allah, the individual has only the right to its temporary use.
- any form of profit without personal contribution in the form of work or risk is prohibited.
- interest – riba - is prohibited.
- the increase of material goods at the expense of spiritual goods is contrary to the spirit of Islam [History of Islamic Economics].

For a long time, the concept of the spirit (national spirit) has attracted some attention, presented as a kind of integration energy principle that ensures the development of mental, religious, ethnic self-organization processes based on Vernadsky's ideas about the transformation of biogeochemical energy into the energy of culture [Ermolaeva L.K. In search of an adequate methodology for the study of the self-organization of the Russian people] and Gumilev about passionarity. Based on this approach, it becomes possible to establish a link between culture and economy through the influence of mentality and national spirit on the forms of social self-organization of each people or ethnic groups. One of these approaches was carried out by the Dutch sociologist G. Hofstede, investigating the influence of mentality (and, therefore, culture) on the multifaceted activities of various communities of people (but not an individual), including economic. The study was supposed to determine the influence of the culture of community of people on their work and economy by analyzing six parameters: the index of distancing from power, individualism (isolation), masculinity (assertiveness), avoidance (rejection) of uncertainty, strategic thinking (short-term or long-term orientation to the future, pragmatism), assumption (indulgence or indulgence - the degree of satisfaction of the simple joys of life). Briefly, these parameters can be described as follows: 1. cultures with a great distance from power are characterized by the perception of power as the most important part of life, worship of superiors; cultures with a small distance from power are characterized by building relationships based on equality, respect for the individual; 2. the choice between individualism and collectivism, awareness of oneself as "I" or "we"; 3. focus on achieving results at any cost, the quality of competition, self-confidence, dedication, commitment to material values. In this regard, all countries of the world are divided into "male" and "female" - respect for relationships, cultural values, concern for the quality of life; 4. acceptability or unacceptability of uncertain, unclear situations, risk, calm acceptance of disagreements, other points of view; 5. focus on solving strategic, long-term goals, the desire to look into the future; prudence, perseverance in achieving goals, steadfastness or adherence to traditions, fulfillment of social obligations; 6. is a measure of happiness; cultures (societies) that allow or prohibit the relatively free satisfaction of basic and natural human desires related to the enjoyment of life and pleasure [Hofstede Gert].

For a long time it was believed that these cultural parameters remain unchanged. However, further research has shown that over time (that is, due to a variety of ongoing changes) they change. "It means that the portrait of the nation and the mentality are also changing, and it does not take
centuries for this. Changes in mentality will be noticeable within 1-2 generations" [Russian mentality and economy: the national formula for modernization].

Russian economists believe that in those countries where a sharp economic recovery began, "such a jump was preceded by a change in Hofstede indicators. The index of power distance and avoidance of uncertainty decreased, the long-term orientation increased" [ibid.].

Thus, it should be recognized that mentality, being a form of collective unconscious, a stable code of behavior of people of one culture, is capable of changing. Explaining this transformation, B. Salikhov writes: "... the extra-conscious part of the national mentality is a part of the public psyche that expresses what has become the domain of behavioral unconditional constructs known as "national character features". The conscious "slice" of the national mentality is a public implicit knowledge, which appears in the form of conscious stereotypes of thinking and behavior. Their common basis is also the system of vital values being introduced into public practice. The overall result is a new implicit knowledge in the form of hidden social thinking and behavioral attitudes… There is a relationship between extra-conscious mental archetypes and conscious mental stereotypes of thinking. On the one hand, mental archetypes are nothing but "unaccustomed" conscious stereotypes of thinking and behavior of people of a certain community. What is decades and centuries (duration) it contributed to the survival (existentiality) and development of the nation, at first it was formed as the most important element of culture, and later it became constantly recurring, habitual and instinctive. This means that mental extra-conscious imprints have a completely "conscious origin": therefore, they are subject to appropriate modifications and even significant changes" [Salikhov B.V. Economic theory].

The above also applies to the mentality of Azerbaijanis, which at the same time has a number of its own original features. As G. Hasanov notes: "Azerbaijanis very quickly feel the benefits of the "phenomenon", which is visible to the eye. However, they are very weak in rational understanding of promising actions.... I think this explains why in recent years in Azerbaijan such industries as housing construction, transport, communications, catering, trade, leisure, etc. have received intensive development in the non-oil sector of the economy, where the capital turnover rate is high, which allows you to quickly profit from the investments" [Hasanov G. S. The mentality of Azerbaijanis and economic development]. Obviously, the time has come to conduct a large-scale study in Azerbaijan based on the methodology of G. Hofstede.

References and notes

7. Economics and Religion - http://studik.net/ekonomika-i-religiya /. According to the research: "Economic success was achieved by those societies and countries where various religions stimulated economic activity by their specific means, creating an appropriate moral background, work ethics and moral norms" - The influence of religion on the economy - http://knowledge.all-best.ru/economy/2c0a65635a2a68a4d43a89421206c26_0.html
8. Ermolaeva L.K. In search of an adequate methodology for the study of the self-organization
of the Russian people - http://moianauka.ru/load/3-1-0-46
10. Salikhov B.V. Economic theory. Lecture-3: Corporate economic mentality as a specific implicit knowledge, an object of management and a factor of innovation development - http://bv-salikhov.ru/ekonomicheskij-mentalitet.html. The author writes: "In fact, the economic mentality of Russians is undergoing anti-creative changes, which can be classified in reproductive, sectoral, regional and other analytical aspects. The reproductive aspects of the modern economic mentality of Russians are characterized by a number of negative stereotypical neoplasms. Firstly, the displacement of the priority of the values of creative and labor creation led to the transformation of the general economic "mentality of the worker-worker" into the "mentality of the businessman-marketeer". Secondly, the destruction of industrial consciousness and creative-labor thinking naturally leads to the mentality of total economic consumerism, which forms the psychological construct "after us though the flood". The economic thinking of the "money-market" type has led to the further consolidation of the economic mentality of gathering, based on the deceptive perception of the presence of allegedly untold natural resources" (ibid.). Гасанов Heydar Sardar oglu. The mentality of Azerbaijanis and economic development - http://journals.uran.ua/index.php/2225-6407/article/view/6573.
11. The author's article notes: "A systematic analysis of the state of modern Azerbaijani society allows us to say that a "capitalism of personal ties" has been formed in the country, and not traditional capitalism based on the mobility of human, monetary, technological and other resources (ibid.).
12. On the website www.izvestia.ru Oleg Tsyganov's article "Synthesis of Cultures - the Tradition of the Nation" has been published, in which it is noted: "The mentality of the Azerbaijani people has historically been formed as a humanitarian and political bridge between the West and the East.
13. Azerbaijan has managed to prove in practice that Islam is not only compatible with the progressive secular development of the country, but also allows the whole society to play with completely unique, diverse facets that allow the fullest and most careful use of historical and cultural heritage in the name of harmonious development.
14. Three social strata generate the main impulses of social modernization: the creative intelligentsia, scientists, people of science; the business community, entrepreneurs, bankers; the third group, which includes the best representatives of the first two, is commonly called the power elite, plus the brightest representatives of the ruling bureaucracy. It depends on these groups in which direction and on what ideological and moral foundations the movement of the country will be carried out: whether it will be a movement forward or a trampling on the spot, or even a retreat back, falling into obscurantism, regression, decline".
CHARACTERISTICS OF THE VALUES AND MENTAL STATE OF THE STUDENTS OF THE MODERN UNIVERSITY

Гета А.В.
кандидат наук з фізичного виховання та спорту,
Національний університет «Полтавська політехніка імені Юрія Кондратюка»;

Остапов А.В.
Національний університет «Полтавська політехніка імені Юрія Кондратюка»

Abstract
Property features and mental state university students of modern. The results of the study of values and mental conditions of typical Ukrainian university students. It is shown that mental health – a state of psychic sphere. It is based on the general state of peace of mind, which gives adequate behavioral reaction. Moral health – a set of motivational characteristics, need and informative aspects of life. Its basis is determined by the system of values, attitudes and motivations of individual behavior. It is established that the existing level of organization of the educational process in physical education does not create the necessary framework for the effective development of physical culture of the students and getting them non-professional physical education, only partially solves the problem of their physical fitness and recreation.

Keywords: mental, spiritual health of students, values, physical education.

Прийнято виділяти кілька компонентів здоров’я людини, кожен із яких привертає увагу до однієї з граней здоров’я [7].

Соматичне здоров’я – поточний стан органів і систем організму людини, основу якого складає біологічна програма індивідуального розвитку, опосередкована базовими потребами, домінуючими на різних етапах онтогенетичного розвитку. Ці потреби, по-перше, є пусковим механізмом розвитку людини, по-друге, забезпечують індивідуалізацію цього процесу [1].

Фізичне здоров’я – рівень зростання та розвитку органів і систем організму, основу якого складають морфологічні та функціональні резерви, що забезпечують адаптаційні реакції [1].
Психічне здоров’я – стан психічної сфери, основу якого становить стан загального душевного комфорту, що забезпечує адекватну поведінкову реакцію та який обумовлений біологічними, соціальними потребами, а також можливостями їх задоволення [1].

Моральне здоров’я – комплекс характеристик мотиваційної, потребісної та інформативної сфери життєдіяльності, основу якого визначає система цінностей, установок і мотивів поведінки індивіда [1].

Усі зазначені грані здоров’я мають пряме ставлення до формування діяльнісного потенціалу випускника університету.

У корпусі цілісної соціально-професійної компетентності випускника складається інтелектуально-особистісна база якостей, яка розвивається на кожному освітньому ступені на основі того, що було розвинено на попередній, та ядерна основна частина, яка формується в освітньому процесі стосовно специфіки та завдань майбутньої професії. До неї входять соціальні та професійні компетентності, кожна з яких явлє собою безліч з цілою номенклатурою підмножин, що видно з наявних державних стандартів вищої професійної освіти в частині професійних компетентностей і вимог до них [3, 8].

Модель цілісної соціально-професійної компетентності можна представити у вигляді чотирьох умовних блоків:

1. Базовий – інтелектуально забезпечує (представляє основні розумові операції лише на рівні норми розвитку). Відповідно до цього блоку випускник ЗВО має характеризуватись, як мінімум, нормовою розвитку таких розумових дій (розумових операцій) як: аналіз і синтез; зіставлення та порівняння; систематизація; прийняття рішення; прогнозування; співвідношення результату дії з метою, що висувається.

2. Особистісний, в рамках якого людині повинні бути притаманні такі властивості (або повинні характеризувати її), як: відповідальність; організованість; цілеспрямованість.

3. Соціальний, який соціально забезпечує життєдіяльність людини та адекватність її взаємодії з іншими людьми, групою, колективом. Відповідно до цього, випускник має бути здатний:
   - організовувати своє життя відповідно до соціально значущих уявень про здоровий спосіб життя;
   - керуватися у своїй поведінці цінностями буття (життя), культури, соціальної взаємодії;
   - вибудовувати та реалізовувати перспективні лінії саморозвитку (самовдосконалення), у тому числі й у плані охорони здоров’я;
   - інтегрувати знання у процесі придбання та використовувати їх у ході вирішення соціально-професійних завдань;
   - знаходити рішення у нестандартних ситуаціях;
   - знаходити творчі рішення соціальних і професійних завдань;
   - приймати, зберігати, обробляти, розповсюджувати та перетворювати інформацію (бібліотечні каталоги, інформаційні системи, Інтернет та ін.).

4. Професійний – забезпечує адекватність виконання професійної діяльності. Випускник університету має вміти вирішувати професійні завдання з інші специальності, свого призначення. Ці завдання можуть бути інваріантними в галузях діяльності та спеціальними (виробничо-технічні, розрахунково-проектні, експериментально-дослідні, експлуатаційні).

З представленого очевидно, що до формування різних аспектів соціально-професійної компетентності пряме відношення має особистісно орієнтоване фізичне виховання [1, 4], яке ми апробували у педагогічному експерименті.

Для порівняння середніх величин досліджуваних психічних показників, які відносяться до вибіркових сукупностей, і виявлення статистично достовірних відмінностей між ними використовувався t-критерій Стьюдента. Була прийнята ймовірність припустимої помилки, що дорівнює 0,05, за якої забезпечується достовірність розрахунків у 95 %, припустима помилка не перевищує 5 %, а також 0,01, при якій забезпечується достовірність розрахунків у 99 %, припустима помилка не перевищує 1 %.
Для проведення досліджень необхідно було визначити еквівалентність сформованих експериментальної та контрольної груп. У таблиці 1 та 2 представлені дані розрахунку t-критерію Стьюдента за психологічними показниками серед юнаків та дівчат експериментальної та контрольної груп до експерименту.

Таблиця 1

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</tbody>
</table>

Згідно з даними таблиць 1 і 2, всі розраховані значення t-критерію Стьюдента менше t-табл=1,96 (p≤0,05) та t-табл=2,58 (p≤0,01), відповідно, статистично достовірні відмінності за психологічними показниками між експериментальною та контрольною групою відсутні. Отже, сформовані групи за рівнями досліджуваних психологічних показників є еквівалентними.

Система ціннісних орієнтацій визначає змістовий бік спрямованості особистості і становить основу її відносин до навколишнього світу, до інших людей, до самого себе, основу світогляду та ядро мотивації життєвої активності, основу життєвої концепції. Вивчаючи структуру ціннісних орієнтацій студентів експериментальної групи нас цікавило, наскільки вплинули особистісно орієнтований підхід міг вплинути на зміну рейтингу їхніх цінностей.

У методиці «Ціннісні орієнтації» М. Рокич виділяє два класи життєвих цінностей: термінальні – переконання в тому, що кінцева мета індивідуального існування варта того, щоб до неї прагнути; інструментальні – переконання в тому, що якийсь образ дій або властивість особистості є кращим у будь-якій ситуації.

У дослідженні ми сконцентрували свою увагу на термінальній зоні життєвих цінностей: термінальні – переконання в тому, що кінцева мета індивідуального існування варта того, щоб до неї прагнути; інструментальні – переконання в тому, що якийсь образ дій або властивість особистості є кращим у будь-якій ситуації.

Слід зазначити, що рейтинг цінності визначався згідно з присвоєним йому випробуваним місцем від 1 до 18. Отже, зниження рейтингу цінності свідчить про актуалізацію та збільшення її значущості в системі термінальних цінностей особистості.

У таблиці 3 представлені статистичні дані за психологічними показниками у юнаків експериментальної групи до та після експерименту. Отримані результати свідчать про покращення рейтингу виділених нами життєвих цінностей, таких як «Здоров’я» з X=7 до X=4,89,
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при \( t=5,1 \) (\( p<0,01 \)), «Пізнання» з \( X=9,88 \) до \( X=7,92 \), при \( t=5,9 \) (\( p<0,01 \)) та «Розвиток» з \( X=10,71 \) до \( X=8,86 \), при \( t=5,8 \) (\( p<0,01 \)).

Таблиця 3

<table>
<thead>
<tr>
<th>Показники</th>
<th>До</th>
<th>Після</th>
<th>t-критерій Стьюдента</th>
</tr>
</thead>
<tbody>
<tr>
<td>Нервово-психічна адаптація, бали</td>
<td>25,08 ± 11,73</td>
<td>22,71 ± 10,09</td>
<td>1,9</td>
</tr>
<tr>
<td>Соціальна фрустрація, бали</td>
<td>0,86 ± 0,88</td>
<td>0,87 ± 0,71</td>
<td>1,1</td>
</tr>
<tr>
<td>Депресія, бали</td>
<td>53,74 ± 5,46</td>
<td>50,54 ± 4,17</td>
<td>5,9**</td>
</tr>
<tr>
<td>Тривожність, бали</td>
<td>21,68 ± 7,78</td>
<td>18,79 ± 6,3</td>
<td>3,7**</td>
</tr>
<tr>
<td>Здоров’я, рейтинг</td>
<td>7 ± 3,94</td>
<td>4,89 ± 3,56</td>
<td>5,1**</td>
</tr>
<tr>
<td>Пізнання, рейтинг</td>
<td>9,88 ± 3,23</td>
<td>7,92 ± 2,82</td>
<td>5,9**</td>
</tr>
<tr>
<td>Розвиток, рейтинг</td>
<td>10,71 ± 3,09</td>
<td>8,86 ± 2,64</td>
<td>5,8**</td>
</tr>
</tbody>
</table>

Примітка: * – позначені статистично достовірні відмінності (\( p<0,05 \)) між показниками групи до та після експерименту, ** – позначені статистично достовірні відмінності (\( p<0,01 \)) між показниками групи до та після експерименту.

Таблиця 4

<table>
<thead>
<tr>
<th>Показники</th>
<th>До</th>
<th>Після</th>
<th>t-критерій Стьюдента</th>
</tr>
</thead>
<tbody>
<tr>
<td>Нервово-психічна адаптація, бали</td>
<td>27,00 ± 14,46</td>
<td>26,99 ± 13,12</td>
<td>0,13</td>
</tr>
<tr>
<td>Соціальна фрустрація, бали</td>
<td>1,17 ± 0,97</td>
<td>1,29 ± 0,93</td>
<td>1,2</td>
</tr>
<tr>
<td>Депресія, бали</td>
<td>53,21 ± 5,82</td>
<td>52,42 ± 5,28</td>
<td>1,3</td>
</tr>
<tr>
<td>Тривожність, бали</td>
<td>21,41 ± 7,82</td>
<td>21,69 ± 7,59</td>
<td>0,3</td>
</tr>
<tr>
<td>Здоров’я, рейтинг</td>
<td>7,16 ± 3,62</td>
<td>6,59 ± 3,29</td>
<td>1,5</td>
</tr>
<tr>
<td>Пізнання, рейтинг</td>
<td>9,74 ± 3,08</td>
<td>9,09 ± 3,03</td>
<td>1,9</td>
</tr>
<tr>
<td>Розвиток, рейтинг</td>
<td>10,17 ± 2,87</td>
<td>9,59 ± 2,84</td>
<td>1,9</td>
</tr>
</tbody>
</table>

Згідно з даними, поданими в таблиці 4, у юнаків контрольної групи відсутні достовірні відмінності у досліджуваних цінностях. Рейтинг цінності «Здоров’я» склав на початку дослідження \( X=7,16 \), наприкінці – \( X=6,59 \), при \( t=1,5 \) (\( p>0,05 \)); «Пізнання», відповідно \( X=9,74 \) та \( X=9,09 \), при \( t=1,9 \) (\( p>0,05 \)) та «Розвиток» – \( X=10,17 \) та \( X=9,59 \), при \( t=1,9 \) (\( p>0,05 \)).

Таблиця 5

<table>
<thead>
<tr>
<th>Показники</th>
<th>До</th>
<th>Після</th>
<th>t-критерій Стьюдента</th>
</tr>
</thead>
<tbody>
<tr>
<td>Нервово-психічна адаптація, бали</td>
<td>25,51 ± 8,18</td>
<td>22,74 ± 7,39</td>
<td>1,5</td>
</tr>
<tr>
<td>Соціальна фрустрація, бали</td>
<td>0,91 ± 0,84</td>
<td>0,9 ± 0,71</td>
<td>1,6</td>
</tr>
<tr>
<td>Депресія, бали</td>
<td>54,61 ± 4,98</td>
<td>52,14 ± 4,19</td>
<td>4,8**</td>
</tr>
<tr>
<td>Тривожність, бали</td>
<td>21,51 ± 6,44</td>
<td>18,96 ± 5,58</td>
<td>3,8**</td>
</tr>
<tr>
<td>Здоров’я, рейтинг</td>
<td>6,26 ± 4,29</td>
<td>3,53 ± 3,47</td>
<td>6,3**</td>
</tr>
<tr>
<td>Пізнання, рейтинг</td>
<td>10,11 ± 4,76</td>
<td>8,09 ± 4,49</td>
<td>4**</td>
</tr>
<tr>
<td>Розвиток, рейтинг</td>
<td>9,69 ± 4,33</td>
<td>8,84 ± 4,09</td>
<td>1,8</td>
</tr>
</tbody>
</table>

З даних таблиці 5 видно, що серед дівчат експериментальної групи статистично достовірні зміни рейтингу зазначалися за цінностями «Здоров’я» з \( X=6,26 \) до \( X=3,53 \), при \( t=6,3 \) (\( p<0,01 \)) та «Пізнання» з \( X=10,11 \) до \( X=8,09 \), при \( t=4 \) (\( p<0,01 \)).

У контрольній групі дівчат достовірних відмінностей щодо виділених життєвих цінностей немає. Результати дослідження наведено у таблиці 6.

Таблиця 6
Статистичні дані щодо психологічних показників серед дівчат контрольної групи до та після експерименту (x±m)

<table>
<thead>
<tr>
<th>Показники</th>
<th>До</th>
<th>Після</th>
<th>t-критерій Стьюдента</th>
</tr>
</thead>
<tbody>
<tr>
<td>Нервово-психічна адаптація, бали</td>
<td>X=25,3, ±m=10,87</td>
<td>X=26,54, ±m=10,43</td>
<td>1</td>
</tr>
<tr>
<td>Соціальна фрустрація, бали</td>
<td>X=0,81, ±m=0,94</td>
<td>X=0,86, ±m=0,71</td>
<td>1,6</td>
</tr>
<tr>
<td>Депресія, бали</td>
<td>X=53,75, ±m=4,85</td>
<td>X=53,72, ±m=4,57</td>
<td>0,46</td>
</tr>
<tr>
<td>Тривожність, бали</td>
<td>X=21,64, ±m=7,4</td>
<td>X=20,84, ±m=6,49</td>
<td>0,88</td>
</tr>
<tr>
<td>Здоров’я, рейтинг</td>
<td>X=6,81, ±m=4,36</td>
<td>X=5,93, ±m=3,91</td>
<td>1,9</td>
</tr>
<tr>
<td>Пізнання, рейтинг</td>
<td>X=9,71, ±m=4,30</td>
<td>X=8,84, ±m=3,73</td>
<td>1,9</td>
</tr>
<tr>
<td>Розвиток, рейтинг</td>
<td>X=9,83, ±m=3,26</td>
<td>X=9,21, ±m=3,01</td>
<td>1,8</td>
</tr>
</tbody>
</table>

Розроблений у Психоневрологічному науково-дослідному інституті ім. В. М. Бехтерєва «Тест нервово-психічної адаптації» (І. М. Гурвіч, 1992) спрямований на виявлення у піддослідних однієї з п’яти груп психічного здоров’я. І група – здорові; ІІ група – практично здорові із сприятливими прогностичними ознаками; ІІІ група – практично здорові з несприятливими прогностичними ознаками; IV група – легка патологія; V група – очевидна патологія.

Отримані показники рівня нервово-психічної адаптації у юнаків експериментальної групи склали до експерименту X=25,08 балів, після X=22,71 при t=1,9 (р≥0,05), серед дівчат – до експерименту X=25,51 балів, після – X=22,74 при t=1,5 (р≥0,05). Відмінності недостовірні.

За допомогою методики діагностики рівня соціальної фрустрації Л. І. Вассермана (модифікація В. В. Бойко) у досліджуваних фіксувався ступінь незадоволеності соціальними досягненнями в основні аспекти життєдіяльності: чим більше бал, тим вищий рівень соціальної фрустрації.

Виділяють такі рівні: 3,5–4 бали – дуже високий рівень соціальної фрустрації; 3,0–3,4 – підвищений рівень фрустрації; 2,5–2,9 – помірний рівень фрустрації; 2,0–2,4 – невизначений рівень фрустрації; 1,5–1,9 – знижений рівень фрустрації; 0,6–1,4 – дуже низький рівень фрустрації; 0,0–0,5 – відсутність (майже відсутність) рівня фрустрації.

У юнаків експериментальної групи рівень соціальної фрустрації до експерименту становив X=0,86 балів, після – X=0,87 при t=1,1 (р≥0,05), серед дівчат – до експерименту X=0,91 балів, після X=0,9 при t=1,6 (р≥0,05).

За допомогою наступної методики диференціальної діагностики депресивних станів Зунге (адаптація Т. І. Балашової) визначалися депресивні стани та стани близькі до депресії.


Показовими є середньоарифметичні дані рівня «Депресії» у юнаків експериментальної групи до та після експерименту. Згідно з результатами тестування, відзначається статистично достовірне зниження рівня депресії з X=53,74 балів до експерименту, після експерименту X=50,54 бала при t=5,9 (p≤0,01). До експерименту рівень депресії у дівчат становив X=54,61 балів, після експерименту X=52,14 бали при t=4,8 (p≤0,01).

Визначення рівня тривожності проводилося за допомогою опитувальника, модифікованого В. Г. Норакідзе. За сумою отриманих балів визначався рівень тривожності. Розрізняють такі рівні тривожності: 40–50 – дуже високий рівень тривожності; 25–39 – високий рівень тривожності; 16–24 – середній, з тенденцією до високого рівня; 5–15 – середній, з тенденцією до низького рівня; 0–4 – низький рівень тривожності.

Середньоарифметичні дані рівня «Тривожності» у юнаків експериментальної групи до та після експерименту склали відповідно X=21,68 балів та X=18,79 балів при t=3,7 (p≤0,01). Середньоарифметичні дані рівня «Тривожності» у дівчат експериментальної групи до експерименту був X=21,51 балів та після експерименту X=18,96 балів при t=3,8 (p≤0,01).

У контрольній групі юнаків та дівчат відсутні достовірні відмінності за досліджуваними психологічними показниками.
Формування фізичної культури студентів у освітньому процесі ЗВО проявляється і в їхньому відношенні до цінностей фізичної культури та рівня розвитку їхньої власної фізичної культури. Студенти, які взяли участь у дослідженні, за даними анкетування, залежно від їхнього ставлення до фізичної культури та рівня фізкультурно-спортивної активності, умовно можуть бути поділені на чотири типологічні групи за часом, що витрачається на заняття фізичною культурою.

1. Студенти, які не виявлюють фізкультурно-спортивної активності, витрати часу у яких на заняття фізичною культурою не більше 1 год на тиждень (14,8 % опитаних).
2. Студенти з низькою фізкультурно-спортивною активністю, витрати часу у яких менше 6 год тиждень (60,0 % опитаних).
3. Студенти з оптимальною фізкультурно-спортивною активністю, витрати часу у яких становлять від 6 до 7 год на тиждень (17,2 % опитаних).
4. Студенти з відносно високою фізкультурно-спортивною активністю, що займаються на тиждень 8 год і більше (8,0 % опитаних).

Якщо проектирувати дані типологічні групи з курсів навчання, то видно, що кількість студентів, які займаються фізкультурно-спортивною діяльністю, що передує педагогічному експерименту, не більше 1 год на тиждень, до 3-го курсу зростає (на 1-му курсі – 8,8 %) і сягає 28,9 %. Зменшується від 1-го курсу до 3-го та кількість студентів, які займаються фізичною культурою не більше 6 год на тиждень: відповідно з 61,2 % до 49,5 %. До 3-го курсу зменшується кількість студентів з оптимальною фізкультурно-спортивною активністю, витрати часу у яких становлять 6–7 год на тиждень: на 1-му курсі – 17,1 %, до 3-го курсу – 8,1 % опитаних.

При розгляді відповідей на питання щодо достатності їхнього рухового режиму для нормальної життєдіяльності та збереження здоров’я було встановлено, що 63,1 % опитаних студентів відповіли задовільно; 22,2 % – відповіді; 14,7 % – готові визнати недостатнім власний руховий режим. У негативній оцінці власного рухового режиму у структурі життєдіяльності студентів та його впливу на збереження здоров’я більшою мірою простежується динаміка за курсами: 11,2 % першокурсників, 19,6 % другокурсників та 24,3 % третьокурсників вважають недостатнім свій руховий режим. Це свідчить про те, що студенти старших курсів більш критичні в оцінці змістовних аспектів своєї життєдіяльності.

Якщо простежити систематичність занять фізичною культурою студентів за статевою ознакою, то з’ясовується, що до спортсменів себе віднесли 7,8 % дівчат та 25,1 % юнаків; до фізкультурників – 48,7 % дівчат та 51,1 % юнаків; до тих, хто не займається фізичною культурою та спортом – 43,5 % дівчат та 23,8 % юнаків. Таким чином, дівчата меншою мірою беруть участь в активній фізкультурно-спортивній діяльності порівняно з юнаками.

Ці дані, що передували експерименту, були враховані під час проведеного формувального педагогічного експерименту, одним із завдань якого було не тільки заохочення до збільшення обсягу рухової активності, а й акцентувана увага до підтримки суб’єктивного оптимуму свого психофізичного стану. При цьому про результати цієї активності ми вирішили судити не за формальним збільшенням часу, що відводиться на фізкультурно-спортивні заняття, а з динаміки фізичних якостей та змін функціонального стану всіх студентів – учасників експерименту.

Аналіз отриманих даних показує, що суттєво впливають на рівень фізкультурно-спортивної активності студентів такі фактори: бажання підвищити свою фізичну підготовленість (52,1 %); необхідність оптимізувати масу тіла, покращити фігуру (49,6 %); необхідність втримання заліку за предмет «Фізичне виховання» (44,5 %); можливість зняти втому, підвищити продуктивність (22,4 %); виховати волю, характер (12,1 %).

З відповідей студентів, їхні потреби, інтереси та мотиви включення до фізкультурно-спортивної діяльності визначаються станом матеріально-спортивної бази, спрямованісю змісту навчального та тренувального процесів, наявністю інвентарю, спортивної форми, доброзичливого атмосфери. Перешкоджають формуванню мотивації та активного позитивного ставлення до фізкультурно-спортивної діяльності такі внутрішні чинники, як: нестача часу, відсутність потреби у фізкультурно-спортивній діяльності, шкідливі звички, стан здоров’я та ін.
Для підвищення ефективності фізкультурно-спортивної діяльності слід розглянути пріоритетність вибору форм заняття фізичними вправами у ЗВО. Значний інтерес студенти 1 та 2 курсів виявляють до секційних заняттів з обраного виду спорту (37,5 %). Другою за значимістю формою фізичної активності є прогулянки, ігри, плавання (35,1 % студентів). Частина студентів вважають для себе найбільш прийнятною форму заняття в клубах за фізкультурно-спортивними інтересами (14,1 %). Невелика кількість студентів хотіли б використовувати для фізкультурно-спортивної діяльності лише одну самостійну форму заняття (14,9 %).

Якщо розглянути форми фізичної активності студентів з курсів, то у першокурсників на першому місці стоїть секційні заняття з обраного виду спорту (33,1 %), а потім уже прогулянки, ігри, плавання (26,3 %); другокурсники, як виявилося, ще більшою мірою зацікавлені у секційних заняттях з обраного виду спорту (45,2 %), а потім у прогулянках та іграх (23,5 %).

Висновки:
1. Згідно з результатами тестування за методикою диференціальної діагностики депресивних станів Зунге в експериментальній групі юнаків відзначається достовірне зниження кількості студентів із депресивними станами. До експерименту X=53,74 балів та після експерименту X=50,54 бала при t=5,9 (р≤0,01). Середні арифметичні дані рівня «Депресії» у дівчат експериментальної групи склав X=54,61 балів, після експерименту X=52,14 бали при t=4,8 (р≤0,01).
2. Отримані середні арифметичні дані рівня «Тривожності» у експериментальних юнаків групи склали відповідно X=21,68 балів та X=18,96 балів за t=3,8 (р≤0,01). У дівчат експериментальної групи X=21,51 балів та X=18,96 балів за t=3,8 (р≤0,01).
3. Важливим джерелом для подальших узагальнень та висновків виступає аналіз результатів відповідей студентів на запитання: «Що означає для студентів фізична культура?». Переважна більшість опитаних студентів вважають фізичну культуру лише приємним проведенням часу, грою, розвагою (40,4 % опитаних, у тому числі 39,2 % юнаків і 41,2 % дівчат).
4. Результати анкетування, опитування викладачів і студентів з оцінки виконання навчальної програми з дисципліни «Фізичне виховання» за роками навчання показали, що обсяг лекційного курсу та методико-практичних занять, що традиційно планується у ЗВО України, недостатній на формування фізичної культури особистості студента. Отже, існуючий рівень організації навчального процесу з фізичного виховання не створює необхідної основи для ефективного формування фізичної культури студентів та отримання ними непрофесійної фізкультурної освіти і може лише вирішувати завдання фізичної підготовки та рекреації.

Перспективи подальших досліджень полягають у глибшому вивченні психічного стану студентів сучасного університету.

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Political sciences

HOW FAR DID AZERBAIJANI DIASPORA IN CANADA AFFECT CANADIAN FOREIGN POLICY TOWARDS AZERBAIJAN DURING AND AFTER THE 2020 KARABABKH CONFLICT?

Kamran Ismayilov

Abstract

This paper examines the work of Azerbaijani diaspora in Canada during and after the Second Karabakh War of 2020 to establish the extent to which Azerbaijani diaspora affected Canadian foreign policy towards Azerbaijan. This study provides an overview, which includes history and demographics, of Azerbaijani diaspora in Canada to illustrate how widespread the diaspora is and its achievements up to the start of the conflict. Additionally, this paper analyzes political activism and humanitarian initiatives of Azerbaijani diaspora in Canada during and after the conflict to evaluate the results the diaspora has achieved in attempting to attract attention to Azerbaijan and sway Canada’s foreign policy towards favoring Azerbaijan. It is important to note that Canada has been following a policy of neutrality towards Azerbaijan ever since diplomatic relations were established between the countries, making it very difficult - if not impossible - to alter Canadian foreign policy towards treating Azerbaijan as a close ally. In addition, Armenia, which is Azerbaijan’s enemy in the Karabakh conflict, has also established a strong diaspora, lobbying for the interests of Armenia, in Canada. Therefore, it is essential to view the efforts of Azerbaijani diaspora in the light of a struggle with Armenian diaspora as well. This study also elaborates on the role of Azerbaijani diaspora’s presence in social media in drawing public attention towards the conflict, and thus affecting Canada’s foreign policy. Finally, this paper analyzes how integrated the Azerbaijani diaspora is into the Canadian society in 2023 and the role of Karabakh conflict in advancing the integration.

Keywords: Diaspora, Karabakh, Azerbaijan, conflict, war.

Demographics and History. Despite the fact that immigration of Azerbaijanis to Canada dates back to earlier than 1980, ethnic Azerbaijanis were first mentioned in the 2001 Census of Canada, according to which, 1445 Azerbaijanis were living in Canada in 2001. [1] By 2021, 9915 Azerbaijanis were residing in Canada. [2] Most Azerbaijani immigrants were residents of Ontario (5910) and British Columbia (1665) provinces. Meanwhile, only 25 and 20 Azerbaijanis were residing in New Brunswick and on Prince Edward Island, respectively. Thus, that most of the political work of the Azerbaijani diaspora is conducted in Toronto, the capital of Ontario, is obvious.

The first organization established by the Azerbaijani diaspora, in 2003, was the Tabriz Azerbaijani Music & Dance Ensemble. [3] The aim of the organization is to introduce and spread Azerbaijani music and dances throughout Canada. In 2005, Alberta Azerbaijani Cultural Society (ALACS) [4] was established. Based in Calgary, ALACS aims at connecting people interested in Azerbaijani culture, history, language, and tradition, as well as at serving as a bridge between Azerbaijani and Canadian communities. In the same year, Azerbaijani Women’s Support Centre (AWSC) [5] was founded. AWSC is “committed to improving the status of women” through “community engagement, information, resources, and social, educational, and cultural activities.” 7 years later, in 2012, Azerbaijani Cultural Society of Edmonton (AzCSE) [6] was established. With its purpose similar to that of the ALACS, AzCSE strives to “gather all Edmontonians who are interested in Azerbaijan’s culture, dances, music, foods, and so on.” Although all of the abovementioned organizations have helped establish a visible presence of Azerbaijani diaspora in Canada, they had a very little, if any, impact on the Canadian politics. Azerbaijani diaspora has marked its presence on the Canadian political arena only in 2020, with the creation of Network of Azerbaijani Canadians. [7]
**Political Activism.** Network of Azerbaijani Canadians (NAC) embodied a unified political voice during the Second Karabakh War in 2020. From September, when the war began, until November, when the fighting ceased, Network of Azerbaijani Canadians was constantly in contact with Canadian policy makers, elaborating on the position of Azerbaijan in the conflict, as well as urging the policy makers to support Azerbaijan and put an end to the violence.

The first political act of NAC took place on the 28th of September, when NAC addressed an official letter [8] to the Prime Minister of Canada Justin Trudeau, asking him to “stop Armenian occupation of Azerbaijan lands and withdraw from the occupied territories.” On the same day, NAC addressed a similar letter [9] to Minister of Foreign Affairs of Canada François-Philippe Champagne, requesting to “express Canada’s concern on Armenian aggression and occupation.” On the 1st of October NAC Executive Director Ismayil Alakbarov met with Conservative Shadow Minister of Foreign Affairs Michael Chong over the phone. [10] Director Alakbarov brought the concerns, linked to Armenian aggression and shelling of civilian settlements, of thousands of Azerbaijani community members to the attention of Minister Chong. Over the course of October, NAC held meetings with Chairman of the Canada-Azerbaijan Friendship Group Jamie Schmale, [11] Senator Salma Ataullahjan [12], Rob Oliphant [13] - Parliamentary Secretary to the Foreign Affairs Minister Champagne – and Parliamentary Secretary to the Prime Minister Omar Alghabra [14]. During these meetings, NAC representatives described the Second Karabakh conflict from the perspective of Azerbaijan, as well as requested to raise the Karabakh issue in the Canadian parliament and convince Armenia to withdraw from the occupied territories.

Furthermore, in order to attract public attention to the Karabakh conflict and further push the Canadian government officials towards taking serious action, NAC helped organize a protest rally [15] in downtown Toronto on the 18th of October, 2020. Close to 2,500 Azerbaijani Canadians marched from Yonge and College streets to Nathan Phillips Square, protesting the occupation of their homelands by Armenian invaders. An article about the rally was published in Toronto Star, one of the most influential newspapers in Canada. According to News Media Canada, an advocate of public policy which represents hundreds of newspapers across Canada, Torstar Corporation- the owner of Toronto Star- was the second largest newspaper in Canada in 2020, with its total circulation of newspapers amounting to 2,150,607 [16]. Consequently, even if the rally had little to no influence on the Canadian government, it raised awareness about the Karabakh conflict among the Canadian masses at the very least.

**Humanitarian initiatives.** The Azerbaijani diaspora has initiated several humanitarian efforts during and after the 2020 Karabakh conflict. The efforts were spearheaded by Alov Foundation [17], a charity advancing the philanthropic goals of the Azerbaijani community in Canada, and Azerbaijani Canadian Multicultural Center (ACMC) that supports the Azerbaijani community in Canada. On the 20th of October 2020, Alov Foundation and ACMC created a fund [18] for the families of fallen soldiers. As of 2023, 195 people donated a total of $21,211. [19] On 18 November, 8 days after Azerbaijan emerged as the victor, Alov Foundation launched the “We Are Karabakh” project. [20] Phone cases, sweatshirts, t-shirts, stickers, etc. were sold and all of the proceeds were directed at supporting the victims of Karabakh. ACMC has also created pins with the symbol of Khari-bulbul, a flower and symbol of remembrance and grief for the fallen soldiers, and started selling them online for $5 each. [21] A total of 45 pins were sold and $4.55 raised from each pin was donated. The objective of the abovementioned humanitarian initiatives was not only to financially support the Karabakh victims, but also to generate public interest and encourage involvement. Unfortunately, the humanitarian efforts of Azerbaijani diaspora failed. Up to 2023, less than 500 people took part in the initiatives and only a bit more than $20,000 was raised. Although the Azerbaijani diaspora did not set any specific targets, regarding the initiatives, the figures are still very low.
In 2020, 30 million Canadians were using social media. [22] Considering this fact, Azerbaijani diaspora was actively using various social media platforms to disseminate its message and attempt to secure the public opinion on its side during the Second Karabakh War. NAC was the main Azerbaijani Canadian organization using social media to spread information. The main platform used by NAC was Facebook.

Since the start of the conflict on 27 September, until its end on 10 November, NAC was constantly sharing the perspective of Azerbaijani community on the Karabakh conflict, as well as facts and infographics. NAC shared its first infographic titled “Azerbaijan frees its lands in the face of Armenian attacks” [23] on 29 September 2020. This infographic describes the events at the start of the war, illustrating how Armenian military provocation- which killed “5 civilian members of a single family”- led to an Azerbaijani counterattack and beginning of war. Another ‘important infographic shared by NAC was called “Civilian targets under Armenian fire (beyond conflict zone).’ [24] The infographic demonstrates Armenian shelling of the cities of Fizuli, Agdam, Tartar, Gornaboy and Agjabadi that are close to, but not in, the conflict zone. It also depicts Armenian attacks on the cities of Tovuz, Shemkir, Ganja, and Mingachevir that are further from the conflict zone than the above-mentioned ones. Most importantly, the infographic shows how Armenia bombed Khizi and Absheron districts that are situated very close to Baku, the capital of Azerbaijan, and are obviously very far from the conflict zone. Armenia’s acts showed just how cruel and immoral Armenia really is (bu cumleni deqiqleshdirmek).

On 7 October 2020, NAC shared images of Melik Ajdar Mausoleum [25] that had an inscription which is now impossible to read due to wear and tear, Aghdam Juma Mosque [26] that had been severely damaged and burned, and Aghdam Bread Museum [27] that was destroyed by an Armenian missile. These images demonstrated that Armenian aggression and savagery was directed not only at Azerbaijani soldiers and civilians, but also at Azerbaijani cultural objects.

In order to illustrate that Azerbaijan is legally entitled to the Karabakh territories, NAC shared a post titled “UN Security Council Resolutions” on the 16th of October. [28] These resolutions demanded immediate unconditional withdrawal of all occupying forces from the Kalbajar district, the district of Aghdam, the Zangilan district, and other occupied territories of the republic of Azerbaijan. The resolutions positioned Azerbaijan as a defender of its homelands rather than an invader.

NAC used not only Facebook, but also Instagram to spread its message among the Canadians. The information shared on Instagram was similar to the one NAC posted on Facebook and included infographics [29], as well as the description [30] of UN Security Council Resolutions. However, NAC utilized Instagram at a much lower rate than it did with Facebook. Overall, NAC failed to encourage ordinary Canadians to even be involved in the issue of Karabakh conflict, not to mention taking Azerbaijan’s side in it. As of August 2023, only 7,4 thousand people [31] and 1,8 thousand people [32] are subscribed to NAC’s Facebook and Instagram pages respectively. Nevertheless, the Azerbaijani diaspora is not to be blamed for the disappointing result. The Canadian people are, in general, disinterested in not only Karabakh and Azerbaijan, but also in the South Caucasus region as a whole. Many Canadians are even unaware of the existence of Azerbaijan. The reason behind this is the lack of extensive communication and cooperation, both economic and political, between Canada and the countries of South Caucasus. Azerbaijani diaspora had absolutely no chance of changing this trend during the Second Karabakh War that lasted for only 44 days.
Impact on Canadian Foreign Policy. Prior to analyzing the impact that Azerbaijani diaspora had on Canadian foreign policy during and after the 2020 Karabakh war, it is important to understand the dynamics of relations between Azerbaijan and Canada since Azerbaijan became independent on 30 August 1991. [33] Canada recognized Azerbaijan’s independence in December 1991, and diplomatic relations between the countries were established in August 1992. [34] Until 2020, Canada pursued a strictly neutral and balanced foreign policy towards Azerbaijan and neither openly supported, nor publicly condemned Azerbaijan in political matters. For instance, during the 2020 Karabakh war, Canada called both Armenia and Azerbaijan to stop the fighting and hostilities, avoiding the attribution of blame to any of the sides in particular. [35] After 2020, Canada's foreign policy towards Azerbaijan remained unchanged. At first, it may seem as though Azerbaijani diaspora’s work during and after the war was practically meaningless, as the diaspora failed to sway the Canadian foreign policy towards favoring Azerbaijan over Armenia in political matters. However, it is important to consider the influence of the diaspora of Armenia, Azerbaijan’s rival in the 2020 war, on the Canadian government.

During the 2020 conflict, Armenian diaspora worked tirelessly to undermine Azerbaijan and portray Azerbaijan as a ruthless warmonger. Interestingly, Armenian diaspora condemned Azerbaijan and Turkey, Azerbaijan’s closest ally, simultaneously. For example, on the 9th of October, an article named “Armenia calls on Canada to pressure its NATO ally Turkey” [36] and written by an Armenian author Anahit Harutyunyan was published on Toronto Star website. In this article, Harutyunyan asserted that “numerous cities” are under “heavy shelling by illegal weapons… forbidden by numerous global and legal frameworks” and that Azerbaijan is “focused on bombarding religious sites that are kilometers away from the line of contact.” He also states that “high-ranking Turkish military officials, mercenary fighters and terrorists from the Middle East have been transferred to Azerbaijan to assist with waging war against Karabakh.” Furthermore, Harutyunyan claimed that while “Azerbaijan continues to reject any peaceful settlement, preferring to… resolve the conflict through arms and exclusionist policies,” Armenia insists on solving the conflict “through peaceful negotiations.” Another article titled “Armenian Canadians call on Ottawa to act on Karabakh conflict” [37] was published on 13 October 2020 on the website of CBC, one of the largest news agencies in Canada. The article includes excerpts of an interview with the resident of Toronto Talar Chichmanian, who claimed that the NK conflict, which was “fueled partly by Turkey” will “lead to another genocide,” and that “Turkey is sending arms and Syrian mercenaries to help Azerbaijan.” The article also indicates that Sevag Belian, the executive director of the Armenian National Committee of Canada, claimed that “if we don't hold the aggressors [i.e. Azerbaijan and Turkey] accountable, they will continue committing their crimes with impunity.”

Armenian diaspora was, in fact, so strong that a Canadian city of Laval has even recognized the independence of the so-called “Artsakh” on 5 November, 2020 [38]. Despite Armenia’s propaganda and political pressure, Canada’s foreign policy towards Armenia and Azerbaijan remained unchanged. Needless to say, Canada’s foreign policy was affected not only by Armenian and Azerbaijani diaspora communities, but also by various geopolitical considerations and international obligations. Nevertheless, Azerbaijani diaspora in Canada played a significant role in providing the Canadian government with a factual, unbiased information on the Karabakh conflict, and thus in countering all of Armenian diaspora’s attempts to undermine Azerbaijan.

Integration and Identity. As mentioned earlier, Azerbaijani diaspora was culturally integrated into Canadian society quite well thanks to the work of organizations such as Tabriz Azerbaijani Music and Dance Ensemble, Alberta Azerbaijani Cultural Society, and others. Azerbaijan became more politically prominent in Canada due to the work of Azerbaijani diaspora, united under the leadership of NAC. After the 2020 conflict, Azerbaijani diaspora continued to work closely with the government of Canada. On the 6th of April 2023, Fuad Muradov, chairman of the State Committee on Work with Diaspora, met with Robert Oliphant, Parliamentary Secretary to the Ministry of Foreign Affairs of Canada [39]. During the meeting, Oliphant “highly appreciated the integration of the Azerbaijani diaspora into the Canadian society and told that he “positively assessed the works done by Azerbaijani
community in Canada for raising the image of their historical homeland.” Moreover, Oliphant “expressed hope for the further development of the bilateral relations.” Moreover, according to the Chairman of NAC Dmitriy Kirillov, members of Azerbaijani community in Canada were invited to participate in a Canadian Parliamentary session on the Lachin Road situation. [40] The fact that Azerbaijani diaspora members were able to participate in an official proceeding of the Canadian parliament indicates substantial political progress made by the diaspora. It is very likely that in the near future, all of the remaining political and cultural barriers that keep Azerbaijani diaspora from fully integrating into the Canadian society will be overcome and that the Azerbaijani community will become a full-fledged equal member of the Canadian society. In that case, Azerbaijan will most likely succeed in swaying Canada’s foreign policy towards favoring Azerbaijan in all the future political matters.

Conclusion. In this essay, I have demonstrated that even though Canadian foreign policy towards Azerbaijan remained neutral during and after the 2020 Karabakh War, Azerbaijani diaspora have made substantial progress on the Canadian political arena. During the 2020 Karabakh conflict, the Network of Azerbaijani Canadians have established a rapport with numerous high-standing members of the Canadian government. By having meetings with several Canadian parliamentaries during the war, the Azerbaijani diaspora succeeded in conveying the true information about the conflict, as well as the fact that Azerbaijan is defending its territories rather than trying to annex Armenia’s territory. Unfortunately, not all the efforts undertaken by Azerbaijani diaspora were successful. The diaspora’s humanitarian initiatives and social media communication, which were mainly directed at generating public support for Azerbaijan, failed to gain momentum. However, it is important to note that the failure of humanitarian initiatives and social media communication occurred largely due to the lack of awareness and disinterest of the Canadian population, rather than a poor work by Azerbaijani diaspora. Despite Canada’s unchanged neutrality during the 2020 Karabakh conflict, Azerbaijani diaspora’s work was successful in countering the propaganda of the diaspora of Armenia, Azerbaijan’s rival in the conflict. Armenian diaspora utilized various prominent media outlets, such as CBC, to spread disinformation and propaganda, as well as organized protest marches against Azerbaijan. The fact that Canada’s position remained unchanged under Armenian political pressure indicates that Azerbaijani diaspora has done really well in countering Armenia’s propaganda and delivering the truth about the conflict to the Canadian government officials. Obviously, geopolitical considerations and international obligation have played, perhaps, an even bigger role in shaping Canadian foreign policy. Nevertheless, Azerbaijani diaspora still had a sizeable influence on the Canadian foreign policy. After the 2020 war, Azerbaijani diaspora was still closely cooperating with the Canadian government. As a result, in 2023, MP Robert Oliphant praised the integration of Azerbaijani community into the Canadian society. More importantly, the fact that Azerbaijani community members participated in a Canadian government session on the question of Lachin road illustrates how successful Azerbaijani diaspora was in promoting Azerbaijan on the Canadian political arena. Such political progress will take place in many years to come and that ultimately, Azerbaijani diaspora members will become fully integrated members of Canadian society. As a result, Canadian government will most likely support Azerbaijan over its rivals in foreign policy matters.

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The economic object and the life support system of the population have a certain reserve of viability that allows them even in emergency situations that fully or partially retain their functional capacity. This ability is called persistence.

In the course of its activity, work must be done in a timely manner regarding the occurrence of a fire, the impact of a natural disaster on the facility, and man-made impact on the facility from the outside. Therefore, it is very important for the engineer to be experienced in order to maintain and improve the continuity of the production activity under these conditions.

An economic object is called a subject of economic activity that produces economic products (the result of human labor and economic activity) and performs various types of services. An economic product can be presented in the form of material or information (intellectual).

Examples of economic objects include various types of industrial, energy, transport, agricultural objects, scientific-research, project-constructor and social enterprises.

All economic objects - industry, transport, energy, agro-industry are designed in such a way that their strength and safety are maximally high. However, taking into account the accepted factors (the impossibility of excluding the risk of an emergency situation in the case of all potential dangers), accidents in economic facilities almost always occur and lead to serious consequences that damage the facility.

Severe consequences for economic objects can also be caused by an external impact on them in the event of an emergency situation outside the object (natural disaster, accidents at other objects, conducting military activities). In all the mentioned cases, apart from the direct impact, the loss of economic objects leads to the disruption of production there, which makes it lose stability in its functioning.

In general, the ability of these facilities to recover in the event of damage under the conditions of solid operation of an industrial facility in emergency situations is understood as the facility's ability to release certain types of products in the volume and nomenclature provided for in the plan, according to the conditions. For objects not related to the production of material objects (transportation, communication, electric power, other life-important systems, science, education, etc.), the robustness of operation is determined by the ability of the object to perform its function and restore it. Therefore, economic objects with personnel, buildings, facilities, heat and energy resources enter the quality base that makes up the technological (technical) system and appropriately determines their strength in the enterprise. Under the name of technological (technical) system strength, it is understood the possibility of maintaining its working capacity in emergency situations.

Modern economic objects often contain complex engineering-economic or other complexes, and their strength directly depends on organized sustainability.

Examples of such elements include production personnel, buildings and facilities of production workshops, system support elements (raw materials, fuel, component elements, electricity, gas, etc.), elements of the production management system, shelters for the protection of workers and servants.

The sustainable operation of an economic object depends on the safety of the production process carried out on the object, the degree of danger of processed, transported, stored raw materials and materials, their quantity and behavior. The continuity of activity on the object is also affected by the nature of the construction of the area (structure, density and type of construction), covered residential and other production facilities, transport communications, and the level of safety implemented.
in the production process facility. Continuity of activity also depends on the personnel situation, as well as the level of safety specialists and qualified personnel, technology and production discipline, the influence of management and engineering technicians on work performance, and some production characteristics.

The level of robustness is also determined by the pace and results of scientific research and design work and the state of its application, which is ultimately related to the renewal and modernization of production techniques and technology.

In a specific emergency situation, the nature and extent of the cause of the economic object leading to the loss of stability of the activity, the distance from the parameters of the cause factors of the source of the emergency (natural disaster, man-made accident) to the epicenter of the formation of the cause factors, the technical characteristics of the building, facilities and equipment, the planning of the facility, meteorological and other conditions, also depends on the skills of the disaster response personnel.

In emergency situations, the extent and nature of destruction and loss in an economic object will depend not only on the influence of the causative factors, but also on the previously mentioned conditions and the robustness of the activity of this object.

Improving the activity of the economic object is achieved by organizing the conditions for the elimination of the emergency situation and by implementing measures aimed at the maximum reduction of the possible destruction and loss from the source of emergency factors, which are carried out in order to shorten the period of work on the restoration of the economic object. Such measures should be implemented during daily operations, as well as in emergency situations.

Emergency situations in peacetime - motivated natural disasters and production when accidents happen, as well as ensuring the stability of work in the most important enterprises and farms during the war is an important issue related to the country's economy: this is also considered one of the main tasks facing the Ministry of Foreign Affairs. In peacetime, the state of emergency (FV) arising from a natural disaster, a major industrial accident, disaster and other reasons is of a limited (local) nature and covers a certain object, city and region. During the war, the emergency caused by the effect of weapons of mass destruction and modern means of destruction can cover a large area - the entire republic. Every object on the territory of our republic, of various spontaneous events, including the most catastrophic of them, may fall under the influence of the earthquake. In general, every part of our country is considered to be earthquake-probable areas up to 8 magnitudes, and a quarter of the territory is considered to be up to 9 magnitudes. Only 20% of the population lives in the 9-point zone, and more than 5% lives in flood-prone regions. There is also a possibility of accidents in many chemical, fire, and explosion industries in our cities and regions. Here we must try to ensure the stability of various sectors of the country and economic objects, depending on the generated FV. Increasing the stability of the work consists in increasing the capacity and capabilities of the objects and bringing them to the level of the requirements of the relevant normative documents. In order to increase the stability of the work, a complex of engineering, technical, technological and organizational measures is developed in advance and implemented in a timely manner. The main goals in taking such measures are as follows:

➢ prevent industrial accidents;
➢ to reduce the loss and damage that may occur during accidents, natural disasters, as well as the effect of modern weapons
➢ quick elimination of disasters, accidents, as well as the consequences of enemy attacks to create conditions;
➢ to ensure the restoration of the disrupted production process in a short period of time;
➢ to ensure the normal living conditions of workers and their family members in extreme conditions.

Increasing the resilience of industrial facilities and sites in emergency situations is as important as it is a wide-ranging and complex problem.

This includes the correct placement of productions in the area, the creation of substitute productions and enterprises, the provision of reliable material and technical supplies, transport
connections, to additional fuel type, starting from preparatory measures for switching to other raw materials and technologies, protecting workers and servants in the facilities, and ending with the elimination of disaster consequences. Some of them are planned to be completed during the design and construction of the facilities, while others are planned to be completed on time. All these measures are implemented in accordance with the normative documents approved by the competent authorities. The degree of damage to national economic facilities in emergency situations during peace and war that may arise as a result of all this will depend not only on how strongly they are located in the region of a spontaneous event, but also on the degree of preparation of these enterprises for protection. The core of this preparation is the measures taken to increase the stability of the work, including the physical (static) continuity of its buildings and facilities. In facilities where such measures have been taken, there will be relatively less damage, personnel protection will be reliable, therefore, the facility will be repaired in a shorter time. American experts think that, from the first nuclear strike on the territory of the United States, 70% of the country's energy and up to 60% of all industries lose their ability to work. From a repeated blow, these destructions and losses reach 95%. As a confirmation of this, an example of the air raid against Iraq in the east of the country using conventional means of destruction can be cited. At this time, Iraq lost most of its industrial potential. Therefore, peacetime, the development of military economic potential and its preservation in wartime are one of the main issues facing our country, and ensuring the sustainable operation of its economic facilities during an emergency, both in peacetime and in wartime, is the main and complex task of the Ministry of Foreign Affairs. is one of the reasons. In order to solve this issue, it is necessary to prepare various complex protection measures within the country in advance, to carry out purposeful activities in cities and residential areas, in all areas of economic objects, including in the construction industry, in the direction of Their sustainable operation during an emergency situation. The goal here is to minimize the consequences that may arise during peacetime and wartime FV.

The issue of stability of the economy is solved on a nationwide scale in all industries. In this regard, a number of concepts are distinguished, of which:

- stability of objects
- stability of the fields
- Sustainability of the republic's economy.

Stoppage of work at the facility- accidents of the enterprise, the ability to stand spontaneous events and the damaging effects of modern weapons, to release products in the planned volume even under the conditions of their influence, and to restore production as soon as possible when the engineering and technical equipment is weakly or moderately damaged. The stability of the work of objects that do not produce material benefits (transportation, communication, health care, educational institutions, etc.) means their ability to perform their function in emergency situations. The stability of the work of farms means the ability to maintain and ensure the production of nationally important products in the event of failure of some parts of the facilities in the event of possible destruction and disruption of industrial relations. The stability of the republic's economic activity generally means its ability to maintain the level required for defense and economy. The concept of stability of farms and facilities is primarily to ensure their ability to maintain the planned productivity during FH. However, it should be taken into account that the main component of such resistance is the physical resistance of each object and industrial complex against the effects of natural disasters, industrial accidents and damaging factors of modern weapons.

It is known that, various factors can affect the stable operation of objects. The most basic of them are the following.

- reliable protection of workers and carpenters from possible injuries;
- industrial complex parking (buildings, facilities, equipment, power plants, communication lines, etc.)
- continuity of the facility's necessary supply for the planned product (raw materials, fuel components, electricity, water, gas, heat) and other industrial enterprises (which supply raw materials and require finished products).
• important management of the industry and PP force - it should be noted that this issue is solved not only at the scale of the facility, but also at the scale of the farm and the country. » protection of objects from secondary damage factors (from fire, explosion, flooding, fire hazard, etc.);
• readiness for rescue and other urgent work when the facility receives weak and moderate damage;
• timely transition of the facility to military regime. In addition, the stable operation of the object during the FH, the district where it is located, internal plan of the territory, constructions in the territory of the object, etc. can affect As one of the urgent and important issues, the issue of increasing the stability of the enterprises' activity during an emergency situation is important for all objects and every sector of the economy. Thus, economic objects are closely related to each other and complement each other, their normal activity strengthens the power of the country. Here, the main attention should be focused on industries that are necessary for the needs of the population and produce military products. When solving the issue of increasing the stability of facilities and farm areas, a strict engineering and technical report approved by the relevant normative documents and according to the request of the Ministry of Finance should be prepared. For example, "Design norms in seismic regions" (Construction norms and rules - IN and Q-II-7-81, IN and Q -II-11-77, which define the design norms of civil defense engineering and technical measures) and Other documents are precisely in this area are the documents that create the basis for the work to be done. It should also be noted that the implementation of many of these measures requires considerable funds, time, manpower and specialists. Such measures reflected in the economic development plans of the areas should be organized and implemented by relevant ministries, companies and departments.

The task of the body of the Ministry of Foreign Affairs is part of the production workforce, is to participate in the development and implementation of engineering and technical and other measures aimed at the protection of equipment, raw materials, and finished products. The implementation of engineering and technical medicine provides solutions to all the main issues in the direction of protecting the population, increasing economic stability and carrying out emergency rescue and other urgent works.

Literature
Organization of intelligence is one of the important tasks of all PP heads, headquarters and commanders.

The head of civil defense determines the specific goals of the intelligence, which information to collect first, and its duration, as well as the forces to be used for this.

The chief of the PP headquarters is fully responsible for the precise organization of intelligence, and the direct organizer of this work is the deputy chief of the PP headquarters. He plans intelligence activities in accordance with the decision of the head of the Ministry of Internal Affairs and the specific instructions of the chief of staff, prepares groups and squads for action, sends them for intelligence, collects, analyzes and summarizes the intelligence information received from them. This information about the situation in the disaster regions or damage centers is immediately presented to the heads of the Ministry of Defense and the higher headquarters, as well as delivered to the subordinate headquarters and squad commanders.

The basic document for organizing intelligence is the intelligence plan. The plan is drawn up in advance at the relevant PP headquarters, agreed with the higher headquarters and approved by the head of the PP.

The scheme of the object, the map of the region is added to the plan, where the locations of control points, security devices, intelligence units, specific activity routes in these units, assembly points after completing their duties are indicated with conventional signs. It is based on this scheme that the head of the headquarters of the Ministry of Defense gives verbal orders to unit commanders to conduct reconnaissance. The order provides brief information about the situation, the purpose of the intelligence, its specific tasks and execution period, and the rules for establishing communication on the routes and informing about the results of the intelligence. In cases where intelligence units are sent to radioactive poisoning centers, the permissible radiation dose of personnel is also determined. Radiation and chemical monitoring posts, PP intelligence teams, intelligence teams (departments) of services and detachments, as well as enterprises of the surveillance and laboratory control network (MLNSH) are involved in intelligence work in the city, district and objects.

**Radiation and chemical monitoring posts (RKMP)** - they are created in all objects and start working immediately when danger arises. Their main tasks are timely detection of radioactive and chemical poisoning, continuous control of changes in the situation in the surveillance sector, and regular reporting to the headquarters. Other duties may be assigned to him during natural disasters and industrial accidents. The post should be placed in such a place that it can be observed from all sides, and the post itself should be located near the PP control post. A covered trench is usually built here for the observers to hang out and rest after the shift. The staff of the post consists of its chief and two observers. They are equipped with observation by visual method, as well as radiation and warning devices, compass, clock, special limb that shows direction and angle, observation journal, as well as other equipment necessary to perform their duties.

**Intelligence group** manga is sent for the purpose of learning the situation that has arisen directly in the facility, in another area of operation, as well as in the center of damage after an enemy attack, on the movement routes as a result of a natural disaster, accident. The reconnaissance group consists of its commander and a communication and several reconnaissance squads of 3 people each. Each manga is intended for reconnaissance in 3 security facilities 500 m apart, or in a strip of up to 800 m (in an area consisting of 2-3 city blocks). The group is equipped with personal protective equipment, radiation and chemical detection devices, a set of limit signs, individual dosimeters, as
well as a scheme of the movement route, and a reconnaissance scheme when conducting reconnaissance in the object.

When exploration is carried out in the regions of poisoning, the boundaries of the zone with a radiation level of 0.5 X-ray hours, or where chemical poisoning is detected, are marked with limit signs.

After measuring the poisoning, the scout places a threshold mark and records the type of poisoning, the level and the time of measurement on the mark. The limit sign must be placed on the side of the road in a well-visible place. The sign is placed so that its face faces the area with no or little contamination. The commander of the group, continuing the movement, records the place where poisoning is measured in the route scheme, the type of poisoning and the time of measurement in the intelligence log and informs about this to the PP headquarters of the object through communication.

On the territory of the object, scouts determine the type and level (degree) of poisoning in various workshops and facilities, especially in the areas where rescue work will be carried out, and monitor the change in the situation. To start exploration, the location of the exit point is determined near the object. Here, the commander of the group gets acquainted with the situation and orders the mangakas to conduct reconnaissance in the facility. Explorers study the situation in the object's workshops, shelters, places where rescue will be carried out (nature of destruction, fires, places where people are left, etc.), and measure the levels of poisoning. Such places are usually determined in advance and shown in the exploration scheme (plan) of the object as mentioned above.

After the reconnaissance, the reconnaissance group (mangasi) comes to the assembly point, informs the head of the headquarters about the execution of the reconnaissance and presents the reconnaissance scheme. After that, if necessary, he checks the degree of poisoning of the vehicle and personnel, if necessary, organizes special cleaning works, calculates the radiation doses to which the personnel are exposed based on the dosimeters, and prepares the team for the performance of new tasks. The characteristics of the intelligence conducted during various natural disasters and accidents are mainly manifested in its specific tasks.

It is possible to cope with these tasks by carefully inspecting the accident sites, paying special attention to places where people gather, storages and water sources, taking air and soil samples and sending them for inspection.

The main tasks of the exploration conducted after a strong earthquake are to find out the extent of the destruction of buildings and structures, the places where people were left under the avalanches and their condition, whether there are secondary sources of damage (fire, flood, chemical poisoning), the location and degree of accidents in gas, water, and electricity networks, the type, volume of rescue works, etc. is to determine.

Flood and flood reconnaissance units determine the boundaries of disaster areas, people in need of assistance, as well as areas where agricultural animals are left, discover material resources to be removed from the flood zone, search for routes for the use of watercraft, etc.

Part of the intelligence work on environmental health during peacetime and wartime is also performed by the republic's surveillance and laboratory control network. The duties, composition and procedure of this network are determined by the statute.

**Observation and laboratory control network (MLNS)** It is intended to carry out observation and laboratory control of the poisoning of the environment with radioactive, chemical, highly effective toxic and bacterial substances, and to provide information to the relevant state authorities for taking protective measures.

The following organizations are mainly involved in MLNS: sanitary-epidemiological centers and stations of the Ministry of Health, laboratories of the Ministry of Agriculture, veterinary control posts and plant protection stations, radiometry laboratory and teams of the State Hydrometeorological Committee, structural divisions of city and district police departments of the Ministry of Internal Affairs, special divisions of the Ministry of Defense, the chemical-radiometric laboratory of the headquarters of the Ministry of Defense of the Republic, radiation and chemical observation posts of ministries, local executive authorities and facilities, as well as field laboratories of a number of others republican organizations.
Depending on the specific conditions, three modes of operation - daily, high readiness and emergency mode - have been defined for the observation and laboratory control network.

**Daily routine** - it covers both environmental, man-made and epidemically normal working conditions. In this regime, chemical, radiation, epidemic, epizootic, epiphytotic observation and laboratory control are carried out in the environment with the forces of the Ministry of Defense, Health, Agriculture, Internal Affairs, state hydrometeorological service and structural divisions of the Ministry of Internal Affairs. Affairs and Communications.

**In high readiness mode** - when man-made, epidemic conditions worsen sharply, as well as when emergency situations arise, surveillance and control in the natural environment and potentially dangerous objects are strengthened, preparations are made to switch the network to a special (emergency) mode of operation.

**In emergency mode** - and in addition to the forces operating in the daily regime, also the ministry, committee, company, Academy of Sciences, etc., included in the network of observation and laboratory control. Both observation and laboratory control are carried out by the relevant forces of the departments.

**Literature**

Abstract
The duration of drying processes is considerable in time, from 8 to 36 hours, and it can be assumed that unforeseen circumstances are likely to occur in this interval. For this reason, and also during the setting of the temperature regulators in the system, the possibility of remote monitoring and changing its parameters was sought. In the proposed version of the process control system in the experimental convective dryer, a personal computer with a Windows operating system and MATLAB and LabVIEW software packages are used.

Keywords: convective dryer, grain, microcontroller, sensors for temperature, WEB application.

Введение. При выборе подходящего приложения для удаленного управления рабочим компьютером следует учитывать несколько ключевых характеристик, определяющих поведение всей системы [1,2]:

стабильность - не случайно она стоит на первом месте, так как в определенных вариантах система может находиться в труднодоступном месте. Требование стабильности трудно измерить, но, как и в большинстве случаев, цель состоит в том, чтобы быть готовым на 99,99% к адекватному ответу в любой момент.

безопасность – хотя потенциальное нарушение безопасности не может нанести непоправимый ущерб, желательно избегать его любой ценой.

доступность - часто корпоративные/корпоративные сети защищены межсетевыми экранами, которые настроены на фильтрацию отправки и получения данных на определенных
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портам. Это может привести к потенциальным проблемам и осложнениям в различных конфигурациях рабочих станций.

Потенциальные проблемы — в системе могут возникать различные проблемы, негативно влияющие на ее работу. Полная изоляция проблем практически невозможна, но при выборе необходимо уменьшить их влияние. Такие проблемы - отсутствие подключения, ограничение количества пользователей, изменение настроек и конфигурации сети и т.д.

Цена — если выбран продукт, который не предлагает бесплатную лицензию (даже если он предназначен специально для образовательных целей), цена будет иметь большое значение. В большинстве случаев разработчики предлагают бесплатные копии для образовательных (или некоммерческих) целей.

Популярность — чем меньше условий использования у данной системы, тем проще ею пользоваться. Желательно, чтобы выбранное приложение имело версии для разных операционных систем, в том числе для мобильных устройств, таких как планшеты и смартфоны.

Материал и методы. Собранные знания и накопленный опыт управления процессами сушки в конвективной сушилке и разработки технологий и средств их практического применения получают свое совершенствование при встраивании управления в микроконтроллер. Локальное приложение на модуле микроконтроллера запускается и считывает данные из модуля осушителя. Он собирает данные с датчиков температуры, скорости и в целом о состоянии окружающей среды в сушилке и окружающей среды в помещении, где расположена сушилка (рис.1). Он также получает информацию о весе продукта в сушилке от весов, а также о скорости, влажности и температуре сушильного агента. Потребление энергии также можно добавить с помощью подходящего электронного измерителя мощности (POWR2 от Shenzhen Sonoff Technologies) с интерфейсом для передачи записанных данных (текущий имеет только дисплей для визуализации показаний). Он преобразует эти данные в структурированную форму и сохраняет их в базе данных [3-5].

Полученные результаты. Этот модуль не имеет пользовательского интерфейса и работает в фоновом режиме. Вмешательство пользователя-оператора не требуется. Он устроен таким образом, что при запуске процесса сушки он запускается автоматически, а по завершении процесса автоматически закрывается. 

Рис. 1. Архитектура интеллектуальной системы управления сушкой.

С целью большей автономности, после экспериментальной проверки предложенных алгоритмов с помощью Lab VIEW и MATLAB, предлагается WEB-приложение, реализующее весь функционал управления конвективной сушилкой. Преимущество такого подхода в том,
что для запуска этого приложения достаточно иметь установленный WEB-сервер на персональном компьютере или, в более дешевом варианте, с микрокомпьютером. Это не проблема, поскольку такие веб-серверы разрабатываются с разными версиями в зависимости от используемого оборудования. Все работают достаточно стабильно и могут запускаться на компьютерах с не особо высокими параметрами, а также на микрокомпьютерах и микроконтроллерах [6].

Обсуждение. Преимущество такого подхода в том, что само приложение запускается на сервере. Все пользователи используют его через свой браузер. Не обязательно каждому пользователю устанавливать его на свой компьютер, а затем настраивать. Достаточно запустить браузер, и в действительности не существует мобильного устройства или компьютера, операционные системы которого не предлагают или не поддерживают браузер. WEB-адрес необходимо ввести в адресную строку, и теперь пользователь сможет получить доступ к приложению и его функциям. В случае возможных обновлений и расширения функций не обязательно информировать всех пользователей поочередно и делать новые установки - каждый из них без проблем видит обновки при запуске приложения. Естественно, разные группы пользователей имеют доступ к разным функциям. Некоторые могут только контролировать процесс сушки, а другие могут также обеспечивать соответствующие управляющие воздействия, изменения температуру сушки или скорость агента сушки. Сам мониторинг процесса может осуществляться посредством табличного представления значений параметров за определенный/выбранный интервал времени процесса или в графической форме. В WEB-приложении реализованы функции контроля доступа групп пользователей, доступа к базе данных, где с одной стороны считаются данные процесса, хранящиеся в локальном модуле, а с другой стороны информация о действиях каждого пользователя записан. Собранные метаданные обязательно фиксируют, какой именно пользователь, когда именно он менял и какие настройки процесса. Кроме того, можно зафиксировать, какие элементы пользовательского интерфейса он использовал, куда нажимал мышкой или курсором на своем мобильном устройстве, с какого IP-адреса подключался и многое другое [7,8].

WEB-приложение также выполняет некоторые прогностические функции. Он обращается к API (интерфейс прикладного программирования) для местного прогноза погоды, откуда берет данные на ближайшие несколько дней по часам и при запуске процесса сушки предоставляет пользователю информацию об ожидаемой продолжительности процесса и о возможных отклонениях. от обычного процесса сушки из-за очень высоких температур или, например, повышенной влажности воздуха, что повлияет на условия в помещении с сушилкой. Подключение к этим API в Интернете осуществляется с помощью так называемых ключей API. Это уникальный идентификатор, который используется для идентификации пользователя или программы, вызывающей API. Эти ключи используются для идентификации самого приложения, использующего API, а не отдельных пользователей приложения. Разные платформы, предоставляющие такие интерфейсы в качестве услуги, используют ключ по-разному. При этом важно, что для этих прогнозов не обязательно идентифицировать всех пользователей, и этот ключ заложен в приложение. Предложенное решение уже реализовано в построенной платформе сбора данных об атмосферном воздухе с архитектурой, предложенной на рис.2.
Рис. 2. Архитектура системы сбора данных и обработки информации.

Еще одну дополнительную и важную функцию выполняет WEB-приложение – можно задать адрес электронной почты, на который будет отправлено сообщение в случае нетипичных отклонений в ходе процесса.

Заключение. Дополнительный модуль управления локальной базой данных используется в микрокомпьютерах и микроконтроллерах, поскольку они имеют ограниченный объем памяти. Возможно, база данных достигла критического объема и из-за этого все приложения на устройстве начинают работать слишком медленно. Это усложнило бы и запутало бы процесс сушки, поэтому после каждого цикла сушки собранные данные отправляются в облачную базу данных и удаляются из локальной.

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PREDICTIVE MODELING OF HR-PROCESSES

Gurev Dmitrii Konstantinovich
Postgraduate student,
Department of General Mechanics
Lipetsk State Technical University
Korneev Andrey Mastislavovich
Supervisor,
Doctor of Technical Sciences, Associate Professor
Department of General Mechanics
Lipetsk State Technical University

Abstract
Predictive modeling of HR processes is the use of mathematical modeling methods to predict future events and make decisions in the field of personnel management. For example, using a predictive model, you can estimate the likelihood that a new employee will stay with the enterprise for more than a year, or predict which employees are most likely to be productive and successful in the future. Also, one of the problems that modeling can help solve is employee turnover.

Ключевые слова: HR-процессы, предиктивное моделирование, математические методы, прогноз риска ухода сотрудника, прогноз качества найма, управляющие воздействия

HR-процессы (от англ. Human Resources) — это процессы системы управления человеческими ресурсами на предприятии. Они включают в себя найм, обучение, развитие и увольнение сотрудников, а также за создание условий для эффективной работы и мотивации рабочих и специалистов[2].
2. Обучение и развитие сотрудников. Отдел по развитию персонала отвечает за организацию обучения новых рабочих и специалистов и поддержание их профессиональных навыков на высоком уровне, также дает понимание о траекториях развития и возможностей для роста.

3. Оценка и мотивация персонала. Разрабатываются системы оценки работы сотрудников и мотивации их на достижение производственных целей.

4. Управление конфликтами и решение проблем. Отдел кадров помогает сотрудникам решать конфликты и проблемы в рабочей среде, создавая условия для более эффективного производства.

5. Увольнение сотрудников. Отдел кадров занимается оформлением увольнений и проводят выходные интервью для сбора обратной связи и улучшения HR-процессов.

В целом, HR-процессы помогают предприятиям привлекать и удерживать лучших сотрудников, создавать условия для их эффективной работы и развития, а также повышать общую производительность труда.

Рис. 1. Предиктивное моделирование в HR-процессах

Предиктивное моделирование HR-процессов - это использование методов математического моделирования для прогнозирования будущих событий и принятия решений в области управления персоналом. Например, с помощью предиктивной модели можно оценить вероятность того, что новый сотрудник продержится на предприятии более года, или предсказать, какие специалисты скорее всего будут продуктивными и успешными в будущем. Также одна из проблем, с которой может помочь справиться моделирование, — это текучесть кадров[5].

Для создания предиктивных моделей на основе HR-процессов используются данные о прошлых наймах, обучении, продуктивности и увольнениях сотрудников. Эти данные анализируются и обрабатываются с помощью специальных программ и математических методов.

Применение предиктивного моделирования HR-процессов может помочь предприятиям принимать более обоснованные решения в области управления персоналом, улучшать процессы найма и удержания талантливых специалистов, а также повышать эффективность производства в целом[13].

Можно выделить следующие основные области применения предиктивного моделирования в HR-процессах:

1. Прогноз качества найма. Снижение рисков найма за счёт предсказания качества новых сотрудников по источнику, роли, профилю или прошлому опыту.
2. Прогноз риска ухода сотрудника. Оценка вероятности ухода конкретных специалистов. В результате принимаются управляющие решения для предотвращения увольнения эффективных специалистов. Минимизируются затраты на сотрудников, которых предприятие не планирует удерживать.
3. Прогноз лидерских качеств. Выявление сотрудников, наиболее подходящих в будущем на роль руководителей.
4. Прогноз производительности сотрудников. Предсказание будущей производительности работника на основании его прошлых результатов и достижений.
5. Прогноз нарушений техники безопасности. Предсказание условий и особенностей среды, которые являются драйверами нарушения правил промышленной безопасности.
6. Прогноз эффективности обучения. Определение последствий прохождения специалистами обучающих программ.
7. Прогноз эффективности предприятия по вовлечению сотрудников. Выявление наиболее эффективных способов вовлечения сотрудников.

Предиктивное моделирование в HR-процессах позволяет принимать решения на основе данных и применения различных математических методов. Данные управляющие воздействия буду являться взвешенными и как следствие наиболее эффективными, основанными на фактах, а не на субъективных предложениях. Использование математических методов даёт возможности для точного прогнозирования и анализа влияния изменений на персонал, оценки готовности сотрудников к новым задачам и технологиям, а также разработки коммуникационных стратегий, адаптированных к потребностям различных групп сотрудников.

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CLARIFICATION AND EVALUATION OF THE CONDITIONS THAT ARISE DURING EMERGENCY SITUATIONS

Huseynova Leyla Mammad
Azerbaijan State Pedagogical University

Aydin Özdeemir
Baskent University

The purpose of clarifying and assessing the conditions of emergency situations is to determine the extent of the area of the disaster, the level of destruction of buildings and structures, and the losses among the facility's staff and the population.

As a rule, these works are carried out in 3 stages.

In the first stage, natural and man-made emergencies are predicted. At this time, average statistical conditions (average annual weather conditions, average statistical placement of the population in houses, streets, transport, work, etc., average population density) are taken. Work at this stage is carried out until emergency situations occur.

In the second stage, the prediction of the results and the assessment of the conditions are carried out immediately after the emergence of the emergency source.

In the third stage, the results of forecasting and actual conditions necessary for the implementation of emergency rescue and other urgent works are specified based on intelligence information.

Regardless of the source of the emergency, it affects people, animals, the environment, buildings, etc. There are 7 main influencing factors:

➢ Pressure effect (explosion of explosives, gas clouds, conventional and mass destruction means, etc.);
➢ Thermal effect (thermal radiation during man-made and natural fires; nuclear explosion, etc.);
➢ Toxicological effect (man-made accidents in hazardous chemical production, use of chemical weapons, release of toxic gases during volcanic eruptions, etc.);
➢ Radioactive impact (man-made accidents in radioactive-dangerous facilities, nuclear explosions, etc.);
➢ Mechanical impact (shrapnel, collapse of buildings, floods, landslides, etc.);
➢ Biological impact (epidemic, bacteriological weapon, etc.);
➢ Beam effect.

Prediction and assessment of radiation conditions:

Radiation condition - occurs when a nuclear weapon is used and an accident occurs at a nuclear fuel production facility, resulting in poisoning of people and other living things, various objects with radioactive substances, and radioactive pollution of the environment.

Assessment of radiation conditions is the determination of the scale and degree of radioactive poisoning of the territory, the enterprise, as well as the effect of poisoning on the activity of the group and population.

The assessment of radiation conditions usually includes the following: determining the boundaries of radioactive poisoning zones and the level of radiation in them; determination of the radioactive radiation dose of personnel of the units, population, animals and losses that may occur among them; determination of the most appropriate activities of groups, as well as population in conducting economic activities in the poisoned area.

The boundaries of radioactive poisoning zones are determined by reporting the level of radiation there or by radiation reconnaissance.

Civil defense units and headquarters of enterprises receive information about radioactive poisoning of the area in their districts, usually from the district civil defense headquarters, and verify it with radiation intelligence.
If necessary, the degree of poisoning of the territory, people, animals and other objects can be determined approximately in advance by the civil defense headquarters of the enterprise. The basis of pre-determination is the degree of radioactive poisoning in the explosion region and in the wake of the radioactive cloud, the expected dimensions, and the calculation through reporting and forecasting methods. The first data for pre-determination are basically the following: explosion (accident) strength, type and coordinates of the center, average wind speed, direction. The PP headquarters of the enterprise receives this information from the headquarters of the district or assigns it itself.

If the average speed ($v$) and direction of the wind, the distance ($R$) from the center of the explosion to the facility are known, then the time of deposition of radioactive substances from the explosion to the territory of the facility is determined by the following formula:

$$t = \frac{R}{v}$$

People are exposed to radiation in 2 ways:
- Internal;
- Foreign.

**External radiation** radioactive substances are outside the body and irradiate it from the outside. During internal radiation, radioactive substances enter the body through air, water, food, open wound and irradiate it from the inside. Human internal and external radiation occurs from natural and artificial sources of ionizing radiation.

A source of ionizing radiation is a device and a radioactive substance that emits or has the ability to emit ionizing radiation.

To determine the parameters of radioactivity, light technical, electromagnetic, seismic, acoustic, radiolocation, etc. detection devices are used.

The sources that generate radiation exposure are diverse and there are different methodologies and technical methods of their prevention.

Radioactive contamination caused by an accident during storage, transportation, use and violation of other rules of nuclear fuel:

In the case of accidents resulting in an increase in the level of radiation, measures should be taken to minimize the radiation dose, the number of irradiated persons, radioactive pollution of the environment, and financial and social losses.

Determining radiation conditions by the forecasting method includes collecting data on nuclear explosions (coordinates, strength, type of explosion, time) and average wind parameters (direction and speed) and mapping the layout of the possible contamination area.

As a result of forecasting, the extent and area of possible radioactive contamination is determined.

Information necessary for the assessment of radiation conditions during an accident at the NPP:
- Coordinates of the location of the NPP, relief, distance from the settlement, date of construction;
- Type of reactor, its energy level
- The time when radioactive substances start to jump
- Wind direction and speed
- Air temperature and degree of vertical stagnation.

Accurate information on radioactive poisoning obtained from intelligence agencies using dosimetric devices allows for an objective assessment of radiation conditions.

The following information should be taken into account in environmental pollution when an accident occurs at the NPP:
- Measurements of radioactive contamination (length, width, area) and their location in the area;
- The power of gamma radiation at any time and place;
- External radiation dose of people at any point of the infection site;
- Time of beginning radioactive contamination of the area;
- The number of people at the site of radioactive contamination;
The radioactive contaminated area should be divided into appropriate zones:
1. Radiation control zone - 1 mZv – 5 mZv. In this zone, in addition to the monitoring of the environment, the radioactivity of agricultural products, and the internal and external radiation of the population, measures are taken to reduce the radiation dose.
2. Limited habitable zone - 5 mZv – 20 mZv. In this zone, as in zone 1, monitoring works and measures for the protection of the population are carried out. Access to this area is not restricted for permanent residence, but information is provided on possible health hazards.
3. Transfer zone - 20 mZv - 50 mZv. Permanent residence is prohibited in this area, and children and young people are generally not allowed to enter.
4. Restricted zone - 50 mZv and more. It is not allowed to live in this area. The use of the nature of this area for any purpose is governed by special acts provided for in the legislation.

Radioactive contamination during the use of nuclear weapons:
During the application of nuclear weapons, ionizing radiation is caused by penetrating radiation and radioactive contamination of the area.
Penetrating radiation consists of a flood of gamma rays and neutrons. Gamma rays and neutrons are different in their physical properties, but what they have in common is that they can spread up to 4 km in any direction in air. The effect of gamma rays on humans is characterized by the absorbed dose. A flood of gamma rays and neutrons pass through atoms and molecules in various organs and ionize their cells, which causes radiation sickness.
The effect of gamma rays on humans is characterized by the absorbed dose. During nuclear explosions in the air and on the ground, the dose of gamma radiation is the same at an equal distance from the center of the explosion, but depends on the density of the air. Air density is lower in summer than in winter, so the level of radiation dose at the same distance from the explosion center is higher than in winter.
In materials whose density is even greater than the density of air, gamma rays and neutrons are weakened even more. This happens because denser materials have more atoms in the same volume, and gamma rays and neutrons affect them more.
The main source of radioactive pollution in the blast region is radionuclides (Aluminum-28, Manganese-56, Sodium-24, Iron-59) which are activated elements on the earth's surface, resulting from a nuclear reaction. Radionuclides are created as a result of neutrons emitted from the blast zone.

<table>
<thead>
<tr>
<th>Defense material</th>
<th>2 times reduction thickness, cm</th>
<th>Density, g/cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>lead</td>
<td>one</td>
<td>11.3</td>
</tr>
<tr>
<td>concrete</td>
<td>6.1</td>
<td>3.33</td>
</tr>
<tr>
<td>Steel</td>
<td>2.5</td>
<td>7.86</td>
</tr>
<tr>
<td>land</td>
<td>9.1</td>
<td>1.99</td>
</tr>
<tr>
<td>Water</td>
<td>18</td>
<td>1.00</td>
</tr>
<tr>
<td>wood material</td>
<td>29</td>
<td>0.56</td>
</tr>
<tr>
<td>Weather</td>
<td>15000</td>
<td>0.0012</td>
</tr>
</tbody>
</table>

In the event of a wind that does not change its direction and speed in a flat area, as well as when predicting a zone of radioactive contamination, the trace of a radioactive cloud is in the form of an ellipse. At this time, the pollution zone is divided into 4 areas:
- Weak pollution zone;
- Heavy pollution zone;
- Hazardous contamination zone;
- Very dangerous contamination zone.
Clarification and assessment of chemical conditions:

Chemical conditions are caused by the release (spill) of highly effective toxic or chemical substances or by the use of chemical weapons.

The condition caused by the application of poisonous substances by the enemy is called chemical condition. The essence of the assessment of chemical conditions is that it affects people, animals, soil, plants and water sources, etc. determining the degree of exposure of chemical substances to objects, as well as selecting the most appropriate activities of groups and the population in conducting rescue and other urgent work in the event of chemical poisoning. In the assessment of chemical conditions, the chiefs of staffs and squad commanders of all facilities participate in order to organize the protection of facilities in a timely manner, as well as clarify the activities of the squads and the results of the enemy's use of chemical weapons and the decisions to eliminate their remains.

Chemically poisoned area:

Chemical conditions are studied on the basis of data from chemical exploration, but in some cases in advance. Such learning includes:

- to determine the degree of protection of the personnel of the units and the population from poisonous substances;
- studying facilities that were attacked by chemical weapons;
- to determine the type and approximate density of toxic substances, time, means and methods of their application;
- to study the character of the terrain and the weather conditions.

They specify the nature and direction of the groups' activity as a result of the assessment of chemical conditions.

The region (object), type, methods, scale of application of toxic substances are usually determined by observation, and then specified by the data of chemical intelligence. The type of toxic substances is determined by chemical intelligence devices, as well as by its application methods. If the enemy uses devices that spray drugs from the aircraft, then the poisonous substance belongs to the types of V-type gas and mustard gas. The PP headquarters of the district sends information about the speed and direction of the wind, the temperature of the air in the layer close to the ground to the civil defense headquarters of the object.

They study the nature of the new districts and territories where the gangs will operate by observing maps, schemes and directly.

When evaluating the chemical conditions, special attention is paid to the study of the depth and direction of the spread of toxic air in the region of poisoning, the persistence of toxic substances in the area, as well as the nature and extent of poisoning of objects. The dangerous distance of the spread of toxic air is defined as the road from the border of the region where the toxic substances are
applied to a safe place in the direction of the wind, without protective equipment for the personnel of the units and the population.

The dangerous distance of cloud propagation refers to:
• the size of the region where chemical weapons are used;
• the amount of toxic substances that turn into steam and fog (creating an aerosol) and their toxicity;
• degree of vertical stagnation of air;
• the topography of the land and the nature of the vegetation.

The toxic air cloud is divided into two parts: the first and the second. The first cloud was formed during the explosion of chemical ammunition. It takes less time to affect unprotected people, animals and other objects. The second cloud is formed as a result of evaporation of droplets of poisonous substances from the ground and objects. It also spreads in the direction of the wind and causes damage during the evaporation of toxic substances.

All these should be taken into account in the assessment of chemical conditions. Assessment rules may vary depending on the conditions of use of chemical weapons. But they often do it in the following order:
• determine the type of substance, its approximate amount, its application methods and scale;
• Using the prediction method, they study the area and time of the dangerous spread of the toxic air cloud, as well as the region where it will stay, from the area, the region where chemical weapons are applied in the direction of the wind.

They use this forecast information to alert non-military personnel and the population.

After the enemy's attack, the reconnaissance group studies the type of poisonous substances with the help of special devices and marks the boundaries of the poisoned area. After that, all measures are taken to bring the detachments to military readiness, provide them with medical assistance and carry out special cleaning.

The assessment of chemical conditions includes:
1. Determining the extent and nature of chemical contamination; analysis of the impact of objects, PP forces and the population;
2. Making the most appropriate decisions to protect people.

Key points to consider when evaluating chemical conditions:
1) Type and amount of chemical substance, means of application of chemical weapons and its type;
2) The place and time of the flow (dumping) of toxic substances, the application of chemical weapons; The level of safety of the population;
3) The topographical conditions of the area and the nature of the buildings facing the spread of contaminated air;
4) Meteorological conditions (wind direction and speed, ground and air temperature, degree of vertical stagnation of air).

Air has 3 degrees of vertical stagnation: inversion, isotherm, convection.

The degree of vertical stagnation of air can be determined from the weather data using the following graph:

<table>
<thead>
<tr>
<th>Wind speed, m/s</th>
<th>at night</th>
<th>During the day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intellecual Gloom y rainy</td>
<td>Intellecual Gloom y rainy</td>
</tr>
<tr>
<td>0.5</td>
<td>inversion</td>
<td>convection</td>
</tr>
<tr>
<td>0.6 - 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 - 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 and more</td>
<td>isotherm</td>
<td>isotherm</td>
</tr>
</tbody>
</table>
Inversion—it usually appears in the evening, about 1 hour before sunset, and disappears 1 hour after sunrise. During an inversion, the lower layers of the air are colder than the upper layers. This, in turn, prevents it from spreading to the height and allows the infected air to remain highly concentrated.

Isotherm—it is characterized by a stable balance of air, it is more characteristic during rainy weather, it can also occur in the morning and evening, during the transition from inversion to convection (mornings) and vice versa (nights).

Convection—it mainly arises 2 hours before sunrise and disperses about 2 - 2.5 hours before sunset. It usually occurs on clear summer days. During convection, the lower layers of the air are warmer than the upper layers. This creates conditions for the spread of infected air and the reduction of its effect.

The main purpose of clarifying and evaluating chemical conditions in facilities with PPE is to organize protection of people who may be in the centers of chemical damage.

During the assessment of the chemical conditions by the forecasting method, it should be assumed that the entire QTKM stock will be dispersed, and that the weather conditions suitable for spreading (inversion, wind speed 1 m/s) should be present.

In the event of an accident, the assessment is carried out according to the actual conditions, that is, the amount of the actual spilled toxic substance and the actual weather conditions should be taken into account.

In the assessment of chemical conditions in facilities with PPE, the safety level should be determined according to the number of people who fall into the chemical contamination zone during an accident.

<table>
<thead>
<tr>
<th>The level of chemical safety of the facility</th>
<th>The number of people who fell into the chemical contamination zone during the accident, thousand people</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>75 and over</td>
</tr>
<tr>
<td>II</td>
<td>From 40 to 75</td>
</tr>
<tr>
<td>III</td>
<td>Less than 40</td>
</tr>
<tr>
<td>IV</td>
<td>It doesn’t count</td>
</tr>
</tbody>
</table>

Clarification and assessment of chemical conditions during the use of chemical weapons:
Clarification and evaluation of the chemical conditions during the use of chemical weapons includes chemical infection zones and attacked areas, the depth of spread of infected air, the time of approach to other areas, the stability of the poisonous substance in the area, the stay of people in FMVs, among workers, the population, and the personnel of the forces of the Ministry of Defense. is the identification of possible losses.

Determining the area of application of a poisonous substance by the enemy is carried out based on the information of the intelligence forces or the headquarters of the Ministry of Defense.

The depth of spread of contaminated air is measured by the distance from the windward boundaries of the region of application of the chemical weapon to the boundaries of the spread of the toxic air cloud.

The extent of chemical contamination is determined by the area of the toxic air cloud and the area of chemical contamination.

The duration of chemical contamination depends on the scale of the use of chemical weapons, the type of toxic substance, meteorological conditions and the area.

The danger of chemical contamination is measured by the chemically contaminated area and possible human casualties

Assessment of bacteriological conditions
A biological condition is a condition that occurs after the use of a bacteriological (biological) weapon. They assess the bacteriological conditions in order to clarify the extent and degree of bacteriological poisoning of roofs, animals, territory, and farm objects, to determine the effect of bacteriological means on the activity of civil defense teams in rescue and other urgent work, as well as the population's performance of agricultural work. Bacteriological conditions of people, animals, plants, etc. it is also evaluated to implement the measures that organize its protection in time.

It should be noted that the center of bacteriological poisoning is canceled on the scale of the city, district and republic. Agricultural leaders, headquarters, detachments are directly involved in the elimination of the bacteriological poisoning center.

The assessment of bacteriological conditions includes the following:
- to determine the source of spread of bacteria and the type of bacteria;
- determine the border of the bacteriological poisoning region;
- transfer the contamination district to the land use plan or general situation scheme;
- specify the quarantine regime;
- to designate agricultural production facilities for special cleaning;
- as well as determining the rules and scope of treatment and prevention measures. Medical and veterinary intelligence determine the boundaries of the poisoning center, mark them in the area and transfer the necessary information to the plan or map.

Quarantine is imposed by the decision of the chief of civil defense of the city, district (republic). The head of the facility organizes the elimination of the bacteriological outbreak that has arisen in his territory. Here, special attention should be paid to the regime measures taken to isolate the source of poisoning and the organization of agricultural work for the quality of the necessary sanitary-hygiene and anti-epidemic measures. Special cleaning of agricultural production facilities is ensured on the basis of intelligence data and laboratory control. Special cleaning is carried out first on people, then on animals, stables and plants. Teams are allocated for this work, rules for the performance of the work are set, as well as machines and special disinfectants are allocated.

If it is necessary to carry out treatment-prophylactic measures, special attention is paid to the following:
- to organize continuous medical observations of the population and veterinary observations of agricultural animals;
- find, isolate, hospitalize and treat infectious patients and suspects; organized emergency prevention of population and animals (with antibiotics and other special drugs);
- inject protective vaccines.

The main characteristic of biological conditions is the number of sanitary losses. Sanitary casualties include military personnel who lose their combat abilities and are hospitalized for one day or less as a result of injury, injury, contusion, illness. Biological conditions depend on the scale of the attack applied by the enemy. The following are mainly taken into account in the assessment of conditions:
- Area of infection
- Average population density
- The level of protection of the population in the infected region

According to operational calculations, human losses in the emergency zone can be determined according to the following rule:

\[ S = K \cdot I \cdot (1 - H) \cdot (1 - P) \cdot E \]

Here, \( S \) – Sanitary losses of the population (neph.)
\( K \) – Number of infected and contact population
\( I \) – Contagiousness index
\( H \) – Non-specific protection factor
\( P \) – Specific protection factor
\( E \) – Emergency prevention coefficient
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The value of K is equal to the product of the value of the area of the bacteriologically infected area and the value of the population density in that area.

Contagiousness index I is the level of probability that a person will get sick after contact with an infected patient.

The non-specific protection coefficient H depends on timely implementation of sanitary-hygienic and anti-epidemic measures, protection of drinking water and food products against infection, separation of the population into groups when airborne infection occurs, and personal protection against insects.

The specific protection coefficient P takes into account the effectiveness of various types of drugs that are considered suitable for the prevention of infectious diseases.

The emergency prevention factor E corresponds to protection with antibiotics against the relevant diseases.

**Civil Defense intelligence**

*exploration*- it is one of the main measures taken to ensure the activity of PP forces. The purpose of the reconnaissance carried out in the PP system is to collect accurate information about the situation that has arisen or may arise after a major industrial accident, natural disaster or enemy attack. These are necessary for the heads of PP to make the right decision about organizing the protection of the population and rescue operations.

The main tasks of PP intelligence in peacetime:

- Conduct periodic observation and laboratory control of contamination of air, water, soil, livestock and crop products with radioactive, chemical and bacterial substances in the environment;
- To regularly monitor the epidemic and epizootic situation in regions with probable infectious diseases;
- It is to find out the situations that arise in regions where a strong industrial accident or natural disaster has occurred.

During the war, after an enemy attack, the tasks of intelligence are to obtain information about the following:

- the type of weapon used, when and where the strike was carried out, the strength and coordinates of the nuclear explosion;
- levels of radiation, concentration of toxic substance, direction of spread of toxic air cloud;
- boundaries of the lesion;
- how damage conditions have changed in regions where rescue and other works are carried out;
- the condition of the security facilities, the people there, ways to help them;
- the condition of communal energy networks, communication lines, as well as the routes where PP units and relocated population will move;
- fire places, their direction of spread;
- to what extent hydrotechnical facilities are damaged, whether or not catastrophic inundation and flood zones have been created, etc.

Intelligence should be active, continuous, timely and purposeful, and the main thing is that the information it collects should be accurate. In order to achieve the fulfillment of these requirements, it is necessary to equip and prepare intelligence forces (intelligence groups, squads, observation posts, control laboratories, etc.) in advance, to plan and properly organize their activities, as well as to use various types, methods, forces and means of intelligence.

Depending on what forces and means are used, the types of ground intelligence, air intelligence and sea (river) intelligence have been determined.

**Ground intelligence** - is considered the most accurate, more complete type of intelligence and is organized by all PP headquarters.

**Aerial reconnaissance** - it is carried out from airplanes and helicopters in order to quickly detect the general situation in damage centers, natural disaster and accident regions. Such intelligence is usually organized by the headquarters of the Republic’s Ministry of Internal Affairs.
**Exploration from the sea (river).**—aims to study the situation on the coasts, ports, facilities here, is carried out by means of high-speed ships and boats.

Due to the nature of the tasks performed, general intelligence is to obtain immediate initial information about the situation in the areas where emergency situations have occurred. For this purpose, the MoD military units, non-military detachments, as well as the intelligence teams, squads, observation and laboratory control network of the regions, objects are involved.

**Special intelligence** usually organize PP services, radiation and chemical observation posts, engineering and epidemiological reconnaissance groups, veterinary and phytopathological teams, etc. forces perform. At this time, the specific situation at the intelligence sites is clarified in detail by specialists, summarized and delivered to the headquarters of the Ministry of Defense.

**Literature**

Emergency events and natural disasters pose a threat to the population and the national economy, causing human casualties and large material losses. Therefore, these factors require the prediction of emergency events, the preparation of preventive measures, the organization of civil defense, the preparation and protection of the population, and material wealth. Sets forth the requirements for the planning of protection and the implementation of other urgent measures.


Civil defense in the Republic of Azerbaijan is a part of the national defense system and is organized on the basis of the following principles:

1) territorial principle (organization of civil defense measures in the entire territory of the Republic of Azerbaijan);

2) the principle of a different and complex approach (planning and coordinated implementation of civil defense measures in the Republic of Azerbaijan, taking into account the military-strategic, economic and other characteristics of individual regions, cities, production and social objects);

3) the principle of massiveness and compulsion (civil defense measures should cover the entire population of the Republic of Azerbaijan and be mandatory); 4) the principle of constant preparedness (the civil defense system of the Republic of Azerbaijan should be ready to start immediate and effective action during emergencies);

5) the principle of immediate warning (immediately informing the population of the Republic of Azerbaijan about emergency events that may occur or have occurred);

6) the principle of interaction (close and coordinated action of state bodies of the Republic of Azerbaijan and civil defense forces involved in providing civil defense).

Elimination of emergency incidents and their consequences is carried out as a result of the joint activity of civil defense management bodies and relevant executive authorities.

In order to protect the population, material resources and territory during emergencies, civil defense measures are carried out in a planned manner in territorial and field management bodies.

Basic principles and methods of population protection.

The main principles of protection are:

- Preliminary preparation and implementation of protection measures in the entire territory of the country;
- that the nature, scope and duration of the protection measures are at a differential (different) speed, ie corresponding to the degree of danger;
- joint implementation of PP measures in order to ensure more reliable protection of the population and stable work of the national economy. Preparation of protection measures in advance - from the creation of a fund (reserves) of mass protection devices in peacetime and keeping them constantly ready for use; reliable preparation for the relocation of the population, including workers and servants, and their timely relocation; It is crucial to create stocks of personal protective equipment for the protection of the population.

The implementation of protective measures at a differential speed means that the nature and extent of these measures should be determined depending on the political, economic and military importance of cities and national economic objects, as well as local conditions.
Comprehensive implementation of protection measures consists of applying all methods of protection against the consequences of emergency events at an effective speed, and implementing them at a speed related to all other measures for the implementation of the main tasks of the PP. Complex measures for the protection of the population. The term “protection of the population” refers to the area, time, purpose, resource and damage reduction of the affected areas, protection of the population from larger disasters, reduction and elimination of man-made accidents, accidents and accidents. The main part of public protection measures includes warning and emergency measures and informing the population about possible tragedies and dangers in an operational situation. At the same time, the basis of the settlement of the population is natural conditions and other local methods, as well as the ecological possibility for preparation and protection measures.

The following measures are more important to protect the population from emergency situations:

1) creation of a reliable warning system;
2) creating reserves of security devices;
3) planning and timely implementation of resettlement measures by the combination method, preparation of safe non-urban zones for receiving and settling the resettled population;
4) equipping the population with personal protective equipment;
5) general and mandatory teaching of protection methods to the population;
6) ensuring protection of food and water from radioactive, chemical substances, highly effective toxic substances, and bacterial agents;
7) organization of radiation, chemical and bacteriological observations, intelligence and laboratory control;
8) Implementation of regular measures, sanitary-hygiene measures and anti-radiation measures.

When being warned that there is a threat of an emergency, the population should act according to the following rules, depending on the nature of the threat:

- keep mass media (radio speaker, radio receiver) always connected to the network;
- prepare to be transferred to an out-of-town (safe) zone;
- determine the location of the shelter (shelter) in case of an emergency, start building an anti-radiation shelter in rural areas;
- acquire personal protective equipment, including medical protective equipment, and prepare them for use;
- should continue preparations for radiation protection.

When announcing the eviction order:

- Must stop production activity (in accordance with the relevant order of the management of the enterprise);
- Removal from the city to a safe zone, etc. should be organized.

In order to reduce the loss as much as possible in the zones of radioactive poisoning, it is necessary to observe certain regimes of radiation protection and the rules of correct behavior of the population. For any reason, people who remain in the zone of radioactive poisoning must always use personal protective equipment that protects the respiratory organs and the surface of the body. Before entering the poisoning zone, it is necessary to take anti-radiation medicine pills in EU-2 personal pharmacy; eating food, drinking water, smoking cigarettes, standing for a long time, resting, etc. in open areas contaminated with radioactive substances, is prohibited. After leaving the poisoned zone, it is necessary to carry out partial sanitary cleaning, as well as partial or complete deactivation (degassing) of clothes, shoes, personal protective equipment, and then undergo dosimetric control. The implementation of these measures makes it possible to significantly reduce the level of radioactive damage.

Recommendations for protection regimes in radioactive poisoning zones will be determined depending on the specific conditions (moderate, strong or very dangerous poisoning zones are created). For example, people in the moderate poisoning zone (zone A) should not stay in open areas. The duration of stay in security facilities can be several hours (up to 6 hours), after which it is allowed
to return to ordinary residential buildings. At this time, it is not allowed to stay outside the buildings, in open places for more than 4 hours. The regime of such restrictions ends after one day.

In the zone of strong poisoning (zone B), it is necessary to hang out in protective equipment for 1-3 days, but after that, on the 4th day, it is allowed to return to ordinary houses, the time of staying outside the buildings is limited to 3-4 hours a day. Enterprises, departments, including PP the medical service works according to a special regime determined by the headquarters of the Ministry of Health; Work in open areas is suspended for several days. In the dangerous poisoning zone (Zone V), people must stay in protective facilities for 3 days, and sometimes more, but after 5 days they are allowed to return to ordinary residential buildings.

In the very dangerous poisoning zone (Q zone), the power of radiation doses is very high and poses a significant danger to people for a long time. In such a zone, people had to stay in security facilities for at least 6 days, they are allowed to return to their normal living quarters after 6-7 days; people should be moved from this zone as soon as possible (without allowing excessive radiation).

In the centers of chemical and bacteriological poisoning, stricter protection regimes are established. In connection with such a regime, for example, people who have been in the chemical poisoning zone should be immediately placed in protective equipment, or wear personal protective equipment - gas masks, skin protection equipment, and if necessary, use antidotes; they should find an opportunity and partially sanitize and then try to get out of the toxic area. Outside the poisoned zone, they undergo full sanitation, while degassing clothing, footwear and personal protective equipment. It is forbidden to remove personal protective equipment, eat food, drink water, smoke cigarettes, and stay for a long time in poisoned areas.

In the bacteriological (biological) infection zone, in addition to the measures taken in the chemical poisoning zone, people must undergo complete sanitary cleaning, disinfect clothes and shoes.

The main methods of protecting the population during emergencies:
• hanging in security facilities;
• use personal protective equipment;
• It consists of moving the population from large cities and dangerous areas to a safe zone.

Literature
Abstract
In the modern world, trends in the use of renewable energy are increasing. Kazakhstan, as a participant in the global process of decarbonization of energy industry and transition to a green economy, has set a goal to achieve zero greenhouse gas emissions into the atmosphere by 2060. To date, the pace of RES implementation in the energy sector of Kazakhstan has reached the level when the generation from RES in relation to total generation has reached about 11%. However, further growth is associated with many difficulties and technical and economic uncertainties that are characteristic of countries with existing unevenness in daily load schedules and the lack of an adequate number of shunting and regulatory generation sources. One of the solutions is the use of combined schemes with the use of energy storage devices, the development of schemes for the joint use of traditional sources and RES. This issue is especially relevant for heat supply schemes due to the high unevenness of thermal loads. Thus, as the most promising scheme under study, a variant of the scheme using compressed liquid air energy storage devices together with gas turbine installations and various elements of the third circuit based on the organic Rankine cycle, the Kalina cycle or other options for using secondary energy resources is proposed. The results show a minimum efficiency of the combined circuit of at least 40-50%.

Annotation
В современном мире усиливаются тренды использования ВИЭ. Казахстан, как участник глобального мирового процесса по декарбонизации энергетики и переходу к зеленой экономике, поставил цель к 2060 году достичь целей нулевых выбросов парниковых газов в атмосферу. На сегодняшний день темпы внедрения ВИЭ в энергетический сектор Казахстана достигли того уровня, когда генерация от ВИЭ по отношению к общей генерации достигла порядка 11%. Однако дальнейший рост сопряжен с множеством трудностей и технико-экономических неопределенностей, которые свойственны странам с имеющейся неравномерностью в суточных графиках нагрузки и отсутствием должного количества маневровых и регулирующих источников генерации. Одним из решений является использование комбинированных схем с применением накопителей энергии, разработки схем совместного использования традиционных источников и ВИЭ. Особенно актуален этот вопрос для схем теплоснабжения ввиду высокой неравномерности тепловых нагрузок. Так, в качестве наиболее перспективной исследуемой схемы предложен вариант схемы с использованием накопителей энергии сжатого воздуха совместно с газотурбинными установками и различными элементами третьего контура на базе органического цикла Ренкина, цикла
Калины или других вариантов использования вторичных энергоресурсов. Результаты показывают минимальный КПД комбинированной схемы не менее 40-50%.

**Keywords:** Renewable energy resources, combined energy supply schemes, liquid air energy system, energy efficiency

**Ключевые слова:** Возобновляемые источники энергии, комбинированные схемы теплоснабжения, криогенные энергосистемы, энергоэффективность.

**K вопросу использования ВИЭ в Казахстане.**

В современных условиях вопрос использования ВИЭ является одним из важнейших для развития энергетических комплексов всех стран. Принятые в большинстве стран мира концепции краткосрочного и долгосрочного развития энергетического сектора так или иначе включают в себя развитие генерации на базе возобновляемых источников энергии. Это можно очень хорошо отследить в утвержденных и принятых в различных странах концепциях и программах достижения показателя «NetZero» [1], как стремление частных и государственных производителей энергии уменьшить выбросы парниковых газов и снизить воздействие на окружающую среду, в первую очередь энергетического сектора своей страны. В стремлении достигнуть этих целей по чистым нулевым выбросам, активно развиваются в различных странах кампании по поддержке и развитию проектов строительства генерирующих мощностей на базе возобновляемых источников энергии.


С момента принятия концепции развития объектов генерации на базе ВИЭ в Казахстане можно отметить весомый рост показателей генерации электроэнергии на базе ВИЭ, количества проектов с ВИЭ и общий показатель доли ВИЭ в составе энергетического сектора в целом. Так с момента «условного» старта развития рынка ВИЭ в 2010 году отмечается рост показателей использования и генерации на базе ВИЭ практически в 10 раз. Из различных статистических данных видно, что на текущий момент генерация на базе ВИЭ в общей структуре сектора выработки энергии в стране занимает порядка 10-11%, к примеру как показано в отчете IRENA по Казахстану на 2021г.. рис. 1 [6]
По данным из Обзора рынка возобновляемых источников энергии в Республике Казахстан [7] на конец 2022г. в стране функционирует 130 объектов генерации электроэнергии на базе возобновляемых источников энергии. Их общая установленная мощность составляет 2388 МВт, из них [8]:

- 46 объектов ветрогенераторной мощностью – 957,5 МВт
- 44 объекта солнечных электростанций мощностью – 1149 МВт;
- 37 объектов гидроэлектростанций мощностью – 280 МВт;
- 3 объекта биоэлектростанций мощностью – 1,82 МВт.

Сложности внедрения ВИЭ в энергетический сектор Казахстана.

Суммарно на базе ВИЭ на текущий момент генерируется порядка 7-11% электроэнергии в стране [6, 7]. Однако тем не менее рост генерации и широкое распространение использования ВИЭ ограничены. Это вызвано рядом ключевых факторов, в том числе связанных с высоким тарифом и стоимостью строительства объектов ВИЭ, наличием более дешевой альтернативы в рамках традиционной энергетики на электроэнергетическом рынке, нестабильностью работы ВИЭ и их небольшими показателями коэффициента установленной мощности и значительной зависимостью от природных условий в части постоянства генерации энергии. Если первые аспекты частично на сегодняшний день компенсируются развитием новых форм поддержки ВИЭ, формированием тарифов и глобальной тенденцией снижения стоимости строительства объектов генерации на базе ВИЭ, то с вопросом непостоянства и фактической непредсказуемости выработки электроэнергии от возобновляемых источников энергии возникают серьезные проблемы, которые в свою очередь значительным образом влияют на рынок балансирующей мощности и соответственно на привлекательность использования ВИЭ в целом.

Последнее следует рассматривать как один из важнейших технических вопросов, ограничивающих возможности широкого использования ВИЭ в энергетическом секторе в Казахстане. Так, в первую очередь следует еще раз подчеркнуть необходимость понимания того факта, что широкое внедрение ВИЭ в энергетическую структуру страны возможно через
интеграцию в единую энергетическую систему, где ключевыми факторами являются стабильность и надежность обеспечения энергией своих потребителей. На базе потребностей населения страны, включая все экономические сектора (ЖКХ, индустрию, сельское хозяйство и пр.) формируются суточные графики электропотребления, которые служат основой для генерации всех энергетических объектов страны. С точки зрения доступной мощности ВИЭ однозначно включаются в такую систему, однако с точки зрения стабильности генерации возникают значительные проблемы с провалами и пиками мощности, когда в определенные часы отключения ВИЭ появляется нехватка электроэнергии, или в часы максимальной генерации от ВИЭ появляется избыточная мощность. Невозможность регулирования выработки по времени выдачи энергии от ВИЭ становится сложной задачей поиска вариантов компенсации таких временных интервалов и усложняет работу балансирующего рынка электроэнергии. Решаются обычно такие задачи за счет наличия перетоков мощности, в том числе из других регионов и даже из энергосистем соседних стран.

На технологическом уровне решением такой задачи является наличие «пиковых маневренных источников», которые способны выдать определенное количество электроэнергии в короткие сроки для покрытия потребностей потребителей в данные промежутки времени. Традиционно к маневренным мощностям относятся в основном объекты современной традиционной энергетики и гидроэлектростанции из состава традиционных ВИЭ.

Для Казахстана на базе ГЭС генерируется порядка 13% всего объема электроэнергии, и в связи с географическим расположением объектов ГЭС их использование в полном объеме для решения проблемы разуплотнения суточного графика нагрузки невозможно. В качестве пиковых источников генерации на современном этапе широко используются парогазовые и газотурбинные установки, которые в Казахстане на текущий момент - нет. Значительную долю энергетического сектора страны занимают традиционные пылеугольные и газовые ТЭС, с преобладанием первых. Используемое основное оборудование на данных ТЭС — это паровые турбины и энергетические паровые котлы, регулирование которых имеет свои особенности.

Так для паровых турбин маневренность будет определяться рядом ключевых факторов, в рамках которых будут определены допустимая скорость набора или сброса нагрузки в МВт/мин, максимальный и допустимый диапазоны регулирования, как правило уровень снижения нагрузки по отношению к номинальной, и временные ограничения по пуску энергоблоков и турбоагрегатов в зависимости от комплексной оценки состояния энергоустановки. С учетом различных статистических данных можно отметить, что наибольший регулировочный диапазон для паротурбинных ТЭС составляет 40%, а с учетом того, что основную долю генерации в Казахстане занимают именно пылеугольные ТЭС, построенные в большинстве своём 20-30 лет назад, то маневренность должна быть снижена с учетом факторов морального и физического износа оборудования, индивидуальных показателей надежности работы станций. Тогда регулировочный диапазон для большинства случаев будет снижен до 10-20% максимум, особенно с учетом того, что все ТЭС проектировались и были построены с учетом работы в базовом графике выработки электроэнергии.

Возможные направления использования ВИЭ в схемах генерации.

В целом проблематика использования ВИЭ в объединенной энергосистеме страны и проблемы «синхронизации» выработки ВИЭ с суточным графиком нагрузок являются общими и хорошо известны. В различных странах предпринимаются различные меры по нивелированию данной проблемы и продолжению наращивания доли ВИЭ в составе национальных энергосистем. Так, основываясь на ряде статистических данных [9] можно определить наиболее «востребованные» и практически интересные для реализации варианты решения:
Использование регуляторов в виде высокоманевренных генерирующих объектов для покрытия пиковых нагрузок или покрытия нагрузок в часы провала при отключении ВИЭ;

Использование регуляторов в виде систем накопления энергии, и выдачи требуемого объема в часы пиковой нагрузки или в часы провала при отключении ВИЭ;

Использование комбинированных систем централизованной и распределенной генерации с использованием традиционных источников совместно с ВИЭ.

Использование парогазовых и газотурбинных установок в качестве регуляторов в объединенной энергосистеме является качественным решением, позволяющим наряду с возможностями ГЭС в очень короткие временные промежутки обеспечить недостающий уровень выдачи мощности.

Другие регуляторы в виде различных накопителей на сегодняшний день являются сложным техническим решением ввиду отсутствия эффективных отработанных технологий хранения и выдачи большого количества энергии (в промышленных масштабах), но, с другой стороны, обладают очень высоким потенциалом. Среди наиболее актуальных исследований в данной области можно выделить технологии накопления на базе электро-химических аккумуляторов, накопители механической энергии, кинетической энергии, тепловой энергии и прочее. Ключевой особенностью накопителей является их возможность накапливать энергию в часы провалов или минимального потребления, и выдачи в пиковые часы максимальной мощности в минимальные промежутки времени [10].

Наиболее привлекательным оказывается комбинированный вариант использования ВИЭ совместно с накопителями и маневренными генерирующими станциями. Хорошую эффективность могут показать также схемы традиционных энергетических установок, работающих в базовом режиме, к которым осуществлено подключение генерации на основе ВИЭ.

Вопрос комбинирования и совмещения в едином комплексе энергоснабжения различных видов генерирующих устройств, особенно дополненных устройствами накопления энергии, следует считать наиболее актуальным и ценным с точки зрения оптимального перехода к «зеленой экономике» и выполнению целей декарбонизации. Так, при использовании традиционных схем совместно с ВИЭ удается компенсировать низкий коэффициент использования установленной мощности за счет высокого коэффициента традиционной схемы; и наоборот недостающие показатели экологической эффективности традиционной системы возможно несколько увеличить за счет использования в комбинации с ВИЭ.

Основным вопросом, требующим решения и исследования является оптимизация комбинированных схем с точки зрения технико-экономических показателей, рентабельности и энергетической эффективности. С этой точки зрения научной группой НАО «Алматинский университет энергетики и связи имени Гумарбека Даукеева» в рамках выполнения работ по государственному гранту по теме АР19680488 «Исследование эффективности и разработка оптимальных схем решений комбинированных систем теплоснабжения с учетом использования ВИЭ в условиях Казахстана» изучаются вопросы разработки и оптимизации схем энергетических установок с использованием ВИЭ применительно к системам теплоснабжения. Вопросы теплоснабжения в отличие от обеспечения электрической энергией создают дополнительные сложности в условиях распределения теплоносителя и его накопления с сохранением требуемых параметров [11].

Так, из числа наиболее актуальных и получивших хорошие результаты по итогам первого года исследований комбинированных схем, являются комбинированные схемы генерации с использованием газотурбинных технологий и криогенных технологий, в частности использование накопителей сжатого жидкого воздуха (LAES), которые также могут быть использованы совместно с Органическим циклом Ренкина, циклом Калины для повышения энергетической эффективности всего комплекса и увеличения коэффициента использования установленной мощности с учетом неравномерности теплового графика потребления. Пример схемы представлен на рис. 2 [12].
Результаты проведенных исследований показали, что системы использования энергии сжатого воздуха позволяют комбинировать их с большим количеством других как традиционных, так и возобновляемых источников генерации тепловой и электрической энергии. Наивысший КПД, полученный при использовании традиционной ГТУ и LAES достигает уровня выше 40% в базовом неоптимизированном варианте, а при оптимизации параметров, использовании наиболее эффективных решений в части использования вторичных энергоресурсов позволяет увеличить КПД до уровня 50-55%. Наиболее актуальным и интересным с точки зрения исследования можно назвать систему использования LAES в качестве источника тепловой и электрической мощности в совместном комплексе с тремя газовыми турбинами и компрессорами, а также органическим циклом Ренкина [12].

В качестве более традиционной схемы генерации тепловой энергии можно также показать эффективный вариант комбинации на базе водогрейной котельной солнечных коллекторов для подготовки горячей воды в системе ГВС. Так, на примере полученных данных исследований авторами разрабатывается эффективная схема автоматизированной водогрейной котельной с использованием солнечных коллекторов для подготовки горячей воды для системы ГВС в летний период и для подпитки системы теплоснабжения в переходные межотопительные периоды. Полученные предварительные модельные расчеты показали возможность замещения до 25% тепловой мощности котельной за счет ВИЭ, при этом использование автоматизированной системы контроля процесса горения и распределения теплоносителя позволит синхронизировать расходы энергетического топлива котельной под конкретные режимы работы, а полученный опыт использования накопителей тепловой энергии позволит создать систему с высоким коэффициентом использования установленной мощности и сниженными выбросами парниковых газов. Кроме того, эффективность таких традиционных схем котельных может быть повышена также за счет разработки авторов в области используемых горелочных устройств, позволяющих снизить уровень образования оксидов серы и азота, а также создания возможности сжигания
различных видов газообразного топлива в устойчивом режиме, в том числе биогаз, водород и другие синтетические и комбинированные виды топлив [13].

Выводы

Все названные аспекты использования ВИЭ в автономном режиме работы имеют определенные сложности как с точки зрения надежности энергоснабжения от таких систем, низкого коэффициента использования установленной мощности, и до вопросов экономической целесообразности в Казахстане инвестирования в их строительство.

На пути к целям NetZero и политике декарбонизации следует рассмотреть возможности плавного или равномерного перехода к «зеленой экономике», или поиска путей трансформации существующей энергосистемы с возможностью использования комбинированных схем энергоснабжения, на базе современных маневренных генерирующих установок и ВИЭ, а также в особенности систем когенерационного типа и комбинированных установок систем теплоснабжения, что усложняет неравномерность тепловых нагрузок.

Одним из исследуемых вариантов современных эффективных комбинированных схем теплоснабжения можно назвать вариант системы использования накопителей энергии сжатого воздуха в комбинации с газотурбинными установками и элементами органического цикла Ренкина, элементов установок на базе ВИЭ и устройств использования вторичных энергетических ресурсов.

Финансирование работы

Научная работа выполнена в рамках исполнения государственного гранта, финансируемого Комитетом науки Министерства науки и высшего образования Республики Казахстан по проекту АР19680488 на 2023-2025гг.

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DEVELOPMENT OF A MINIATURE ELECTRON-OPTICAL DEVICE FOR NANOSATELLITE BASED ON THE «SYNERGY» PLATFORM FOR RESEARCHING THE NORTH-WEST REGION OF RUSSIA

Malygin Dennis\(^1\)
Red’ka Dmitriy\(^2\)
\(^1\) LLC «Astronomikon Lab»
\(^2\) ETU «LETI»

191119, Russia, St. Petersburg, Transportnyi alley, 1, of. 408(7-H), w.s. 71

Abstract
A CubeSat mission is described in this paper, which deals with the space debris identification, classification and aggregation. The mission is responsible for debris observation close to the most populated orbit by on-board laser illuminator (lidar) system. An optical scheme of lidar was described. The energy balance and range of work were calculated. Architecture and properties of CubeSat were described.

Введение
Лазерная система дистанционного зондирования, или лидер, представляет собой бесконтактное средство измерения параметров удаленой мишени, в котором лазерное излучение направляется через пространство на мишень, а рассеянное мишенью излучение с этого расстояния зондирования собирается на фотоприемник. Лидар состоит из передатчика в виде лазерного излучателя и приемника — приемного телескопа со спектроанализатором и фотоприемником. Управление лидером и обработка сигнала с фотоприемника осуществляются специализированным устройством, бортовым компьютером.
Принципы работы лидарных систем

Большинство лидаров устроено и работает так, как показано на принципиальной схеме лидарных систем (рис. 1). Выходной лазерный импульс на одной или более частотах проходит через выходную оптическую систему и направляется на заданную мишень.

В задачи выходной оптической системы входят увеличение параллельности лазерных пучков, т.е. коллимирование, фильтрация пучков в пространстве, а также отсечение побочного излучения, и, если требуется, модуляция сигнала. Излучение после отражения или рассеяния от мишени возвращается к лидару и концентрируется приемной оптической системой, затем попадает на спектроанализатор, который позволяет выделить необходимый для исследования диапазон волн, освободив фононое излучение. Если в системе применяется спектроанализатор, то может использоваться как настраиваемый поли- или монохроматор, так и набор из узкополосных фильтров. Фотоприемник подбирается в соответствии со спектром излучения лазера и исследуемой спектральной областью [12].

По устройству лидарные системы делятся на моностатические и бистатические. Приемник и излучатель бистатического лидара расположены на противоположных сторонах относительно изучаемого объекта, такие приборы чаще всего используются для непрерывного наблюдения за состоянием части атмосферы, например, возле источников загрязнений.

В случае моностатического лидара как приемник, так и излучатель расположены в одном месте. В этом случае возвращение излучения происходит либо благодаря отражению от естественных отражателей, либо благодаря оптическим процессам, происходящим в самом исследуемом объекте. В последнем случае можно определить не только расстояние до мишени, но и ее состав или другие свойства.

Лидары классифицируют по типу явлений, на котором базируется его работа.

**Лидар на дифференциальном поглощении и рассеянии.** [13]

Метод дифференциального поглощения предполагает использование второй гармоники лазера, т.е. излучение двухволново: одна длина волны попадает в центр полосы поглощения исследуемого вещества (например, атмосферного газа), а другая попадает вне этой полосы. Метод основан на явлении резонансного поглощения лазерного излучения внутри линии поглощения исследуемого вещества. Метод дифференциального поглощения делится на два способа, применяемых на практике:

1. в качестве распределенного отражателя применяется атмосферный аэрозоль; такой режим позволяет определять дистанционным способом свойства газовых примесей с пространственным разрешением, пропорциональным длительности импульса (такие лидары называются *range-resolved DIAL*).

2. в этом режиме регистрируется отраженный от различных объектов сигнал; такой метод позволяет определить с высокой чувствительностью усредненных по длине трассы зондирования концентраций газовых примесей по отдельным направлениям (такой лидар называет *long-path averaged DIAL* или Трассовый метод дифференциального поглощения).
Рис. 2 – Схематическое изображение лидара дифференциального поглощения.

Лидар на методе комбинационного рассеяния света. [14]

Данный тип лидара работает на явлении комбинационного рассеяния света и называется рамановским лидаром (рис. 3). При использовании монохроматического когерентного излучения с заданной частотой часть энергии передается молекуле, причем эта часть соответствует разнице энергий разрешенных уровней молекулы, затем возможны два процесса:

1. происходит переизлучение на новой частоте, обратно пропорциональной постоянной Планка, т.е. длина волны увеличивается.
2. фотон приобретает энергию и переизлучается на меньшей длине волны, при этом населенность первого колебательного уровня должна быть значительной.


Так как спектр рассеянного света содержит не только спектральные линии, характеризующие падающий на молекулу свет, но и симметрично расположенные друг от друга линии, смещенные в красные и фиолетовые области, так называемые стоксова и антистоксова линии, которые различны для разных веществ, комбинационное рассеяние позволяет определить собственные резонансные частоты по разности частот первичной волны и дополнительных линий. Следовательно метод комбинационного рассеяния позволяет получать информацию об атомных и молекулярных составляющих, концентрациях, а также макропараметрах, таких как, например, температура исследуемого вещества.

Флуоресцентный лидар.

В основе флуоресцентного лидара (рис. 4) лежит явление флуоресценции – излучения, которое представляет собой избыток над тепловым излучением тела и продолжается в течение времени, значительно превышающего период световых колебаний. При поглощении кванта света атом или молекула может перейти на возбужденный уровень, а затем возвращается в исходное состояние, испуская квант той же величины, что и поглощенный. Такой процесс, происходящий без изменения частоты поглощенного, называется резонансной флуоресценцией. Процесс флуоресценции может и не быть резонансным. В формировании спектров люминесценции молекул важнейшую роль играет колебательно-вращательная структура электронных уровней. Поглощающая свет молекула может возвращаться, излучая
свет, не только в основное, но и в ряд возбужденных состояний. При этом флуоресцентное излучение происходит с длиной волны большей, чем длина волны возбуждающего света – стоксова флуоресценция. В случае, если исходным уровнем был возбужденный, то излучаемая длина волны может оказаться меньше поглощаемой – антистоксова флуоресценция. Флуоресцентные лидары могут быть применены для определения радиоактивного загрязнения верхних слоев атмосферы, для зондирования природных вод и других задач подобного рода [15].

Рис. 4 – Схематическая изображение флуоресцентного лидара.

Лазерный импульсный дальномер.

В данном случае применяется термин «дальномер», поскольку информацией, получаемой от зондируемого объекта, является только расстояние. Импульсные дальномеры (рис. 5) основаны на измерении интервала времени между моментом излучения лазерного импульса (старт-импульс) и моментом приема излучения (стоп-импульс). При формировании лазерного импульса часть излучения отводится на первый фотоприемник, запуская работу измерителя временных интервалов. Отраженное от объекта зондирования излучение попадает в приемный канал и затем на второй фотоприемник, останавливая работу измерителя временных интервалов. Исходя из измеренного прибором времени, можно определить расстояние до объекта.

Рис. 5 – Функциональная схема импульсного лазерного дальномера.

Лазерный фазовый дальномер.

Фазовые дальномеры (рис. 6) обладают меньшей дальностью действия, но при этом позволяют выполнять измерения с большей точностью. В таких лидарах используется непрерывный источник излучения, как правило, полупроводниковый лазер, при этом излучение промодулировано гармоническими сигналами. В случае фазовых лидаров расстояние определяется сравнением фазы модулирующего сигнала на выходе с приемника излучения с фазой опорного сигнала.
Области применения лидарных систем на космических аппаратах

Рассмотрим основные области применения лидарных систем, использующихся на базе КА в качестве полезной нагрузки [16]:

1. Сельское хозяйство
Лидарные системы дистанционного зондирования находят широкое применение в сельском хозяйстве:
- инвентаризация сельскохозяйственных угодий – выделение и идентификация сельскохозяйственных областей; в лидарной системе применяется панхроматический диапазон излучения: 0.56, 0.6, 1.55-1.7, 10-12 мкм.
- идентификация различных типов сельхоз культур – оценка урожайности, сбор информации для планирования засева угодий, оценка и прогноз урожая; применяются диапазоны излучения: 0.478-0.508, 0.566-0.638, 0.725-0.920 мкм.

2. Климатология
Климатология представляет интерес по изучения с помощью лидарного зондирования:
- обнаружение атмосферных газов, вызывающих повышение среднегодовой температуры, разрушение озонового слоя, образование смога, например, CO₂, CH₄, N₂O, CFM.
- контроль содержания атмосферного озона – уменьшение озона в атмосфере усиливает ультрафиолетовое излучение, падающее на Землю, что негативно влияет на окружающую среду и живых существ; а увеличение тропосферного озона приводит к усилению парникового эффекта и становится причиной загрязнения атмосферы.
- наблюдение за содержанием аэрозолей в атмосфере Земли – лидарные установки на космических аппаратах позволяют определять концентрацию и плотность аэрозолей в атмосфере; аэрозоли влияют на радиационный баланс Земли, формируют облачный покров.

3. Определение полезных ископаемых
Природные источники энергии классифицируются на две категории – ископаемые и источники свободной энергии, при этом лидарные системы применяются для поиска полезных ископаемых следующих видов:
- поиск территорий, пригодных для использования энергии ветра – лидарные системы на космических аппаратах позволяют определять и восстанавливать структуру атмосферных ветров либо по перемещению облаков, либо на основе данных о температурных полях.
- поиск территорий, пригодных для создания гидроэлектростанций – производится обнаружение крупных зон осадков, определение полноводности рек и другие задачи, связанные с контролем водных ресурсов.
- геологоразведочные задачи различных масштабов – обнаружение планетарных трещин, тектонических аномалий, выявление областей геологической активности, проводится нефтегазоэстологическое районирование и анализ подобных процессов.

4. Контроль водных ресурсов
Наблюдение за водными ресурсами подразумевает под собой отслеживание снежного и ледяного покровов, определение свойств источников грунтовых вод:
Проведение отдельных льдин — лидарное зондирование космического базирования позволяет изучать отдельные ледяные глыбы, информацию об их разломе, толщине и другой полезной информации.

- обнаружение грунтовых вод, глубины их залегания, мониторинг наводнений, контроль качества воды.

Поиск и анализ аналогичных миссий

Проблема обнаружения и каталогизации объектов на низкой околоземной орбите (НОО) с помощью систем, базированных на СМКА, исходя из базы данных сервиса «https://nanosats.eu», нашла отражение в проектах ARMADILLO и REMOVEDEBRIS.

Проект Техасского Университета ARMADILLO (рис. 7) предполагает запуск наноспутника 3U типа Cubesat, полезной нагрузкой является система пьезоэлектрического определения пыли, для поиска субмиллиметровых частиц. Особенностью этой миссии можно считать систему, ориентированную на идентификацию именно мелких частиц, т.е. меньше 1 мм. Такие габаритные размеры объектов не поддаются обнаружению с помощью классических наземных РЛС или лидарных систем и данные по их распределению и концентрации по низким околоземным орбитам практически отсутствуют.

Рис. 7 – Эскиз трехмодульного СМКА ARMADILLO.

По утверждению авторов проекта, объекты размером меньше 1 мм могут повредить чувствительные элементы оптики, что в конечном счете представляет опасность для результата миссии КА [18].

Наноспутник проекта REMOVEDEBRIS также состоит из трехмодульного CubeSat для мониторинга низкой околоземной орбиты. Основой для оптической системы проекта послужил флэш-лидар «Fosternav» (рис. 8), разработанный Европейским Космическим Агентством. Основное свойство таких лидаров заключается в том, что они составляют реальное изображение объекта с картой глубины, на короткое время (несколько нс) подсвечивая сцену, благодаря чему бортовой компьютер способен построить объемное изображение объекта в реальном времени.

По другим аналогичным миссиям, представленным в вышеупомянутой базе данных СМКА, отсутствуют подробные сведения о применяемых технологиях, потому данные сводятся в таблицу 1 с доступной информацией по этим проектам.
Рис. 8 – Ключевые отличия между классическим лидаром и флэш-лидаром.

Таблица 1

<table>
<thead>
<tr>
<th>Название проекта</th>
<th>Система определения объектов</th>
<th>Архитектура СМКА</th>
<th>Цели миссии</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlas V: AFSPC-5: Ultrasat</td>
<td>Камера</td>
<td>3U</td>
<td>Удаление объектов</td>
</tr>
<tr>
<td>GLADOS (Glint Analyzing Data Observation Satellite)</td>
<td>Спектрометр, камера</td>
<td>6U</td>
<td>Определение размера, формы, массы и будущего пути объектов</td>
</tr>
<tr>
<td>SORA (Spectrometry Observation for Reflectivity Analysis)</td>
<td>Спектрометр</td>
<td>12U</td>
<td>Определение материала, из которого состоят объекты</td>
</tr>
<tr>
<td>CADRE 1 (CubeSat Active Debris Removal)</td>
<td>Камеры в ИК и видимом диапазонах</td>
<td>8U</td>
<td>Проверка сенсоров стыковки, удалением объектов</td>
</tr>
</tbody>
</table>

Выбор орбиты

Одна из целей данной работы является проработка методов обнаружения максимально возможного количества объектов заранее определенного размера на трассе полета наноспутника. При этом параметры орбиты зависят от характеристик оптической системы, распределения и концентрации искомых объектов по орбитам. Стоит отметить, что множество частиц располагается на высоте от 700 до 1400 км [19]. Для получения представления о фактических параметрах орбиты КМ, обратимся к каталогу NORAD [20], содержащим данные в виде двухстороннего набора элементов (TLE), определяющего элементы орбиты, а именно к орбитальным параметрам частиц, появившихся в результате столкновения спутников Космос-2251 и Iridium-33, а также разрушенного в ходе испытаний Фэньюнь-1С. Исходя из этих данных, отчасти представленных на рис. 9, можно утверждать, что оптимальной НОО для СМКА будет солнечно-синхронная геосинхронная орбита высотой 895 км с углом наклона $i = 99^\circ$. 
Рис. 9 – Визуализация TLE-данных КМ с орбитальными параметрами в среде Orbitron
(а - для частей спутника Космос-2251, б - для частей спутника Фэнъюнь-1С).

Оптические системы лазеров
Оптическая система – совокупность деталей, преломляющие и отражающие поверхности которых обеспечивают требуемое преобразование оптических лучей в зависимости от назначения устройства, в котором они работают. В любой оптической системе используется какой-либо приемник излучения, причем свойства этого приемника определяются назначением оптической системы и диапазоном спектра, используемым для работы электрооптических приборов (ЭОП). Основными задачами, решаемыми с помощью ЭОП, в которые входят оптические системы, являются: 1) обзор определенной части пространства, в котором находится исследуемый искомый объект; 2) создание изображения участков пространства как для визуализации, так и для спектроанализа; 3) фокусирование потока излучения от объекта наблюдения на поверхности фотоприемника; 4) коллимация пучков требуемой формы и размеров; 5) разделение пучков лучей с целью их регистрации двумя или большим количеством приемников [17].

Характеристики оптических систем
Для оценки эффективности, качества и других свойств ЭОП используется ряд характеристик [17, стр.35]:
1. габаритные характеристики определяют основные параметры оптической системы и ее свойства, такие как габариты системы, положение и размер изображения, величину и форму поля зрения, размеры элементов оптической системы и их взаимное расположение; к габаритным характеристикам оптических систем относятся:
   - фокусное расстояние \( f \) – определяет размеры изображения, его масштаб и оптическую силу системы \( \varphi \), определяемую следующим образом: \( \varphi = \frac{1}{f} \).
   - угол поля зрения определяет ту часть пространства, изображение которой строится оптической системой в пределах плоскости изображения, ограниченных полевой диафрагмой: \( 2\omega = 2\arctg \frac{d}{2f} \), где \( d \) – диаметр отверстия полевой диафрагмы.
2. энергетические характеристики определяют свойства оптической системы как преобразователя воспринимаемого потока излучения; применительно к системам, работающим в видимом диапазоне спектра, их называют светотехническими (этой группой характеристик определяется ослабление поступающего потока излучения в системе и его распределение в плоскости изображения, т.е. светосила и коэффициенты пропускания).
3. аберрационные характеристики служат для оценки качества создаваемого оптической системой изображения в зависимости от габаритных характеристик и конструктивных параметров оптических деталей системы, таких как радиусы кривизны, толщина и тип оптического материала деталей; аберрационные характеристики позволяют определить, насколько точно оптическая система воспроизводит изображение наблюдаемого объекта, характер и величину
искажения изображения (аберрации – погрешности построения изображения оптическими системами, абберации бывают монохроматическими (не зависят от длины волны излучения и возникают вследствие различия в условиях преломления или отражения различных лучей пучка; к этой группе относятся сферическая абберация, кома, астигматизм, кривизна поля и дисторсия) и хроматическими (обусловлены дисперсией сложного излучения в оптических деталях – абберации положения, увеличения и явление вторичного спектра)).

4. пространственно-частотные характеристики применяются для оценки согласования оптических систем с их входными параметрами, определяющими свойства и качество изображения, с характеристиками приемников излучения, усилителей; используются для оценки разрешающей способности оптических систем, осуществляющих обзор пространства.

Элементы оптических систем

Рассмотрим основные составляющие элементы ЭОП [17, стр. 37]:
1. обтекатель предназначен для защиты оптической системы от воздействий внешнего среды, он позволяет задавать требуемые размеры зон обзора; обтекатели должны обладать высокой прочностью, а также высокой прозрачностью в заданном диапазоне спектра.
2. конденсор как правило устанавливается между объективом и приемником излучения; благодаря ему входное окно проектируется в плоскость приемника, таким образом при различных положениях объекта в поле зрения прибора расположение освещаемого участка на фотоприемнике не меняется (существование конденсора позволяет уменьшить влияние неоднородной чувствительности по поверхности приемника, т.к. поток излучения равномерно распределяется по поверхности чувствительного слоя).
3. фильтр позволяет селективно выбирать необходимый для работы оптической системы диапазон волн, подавляя фоновые потоки.
4. сканирующий элемент проектирует на фотоприемник участки просматриваемого пространства в пределах угла обзора; сечение пучка лучей, падающих на объектив из пространства предметов, должно оставаться неизменным в пределах всего поля обзора.
5. пучки лучей ограничиваются с помощью диафрагм, которые позволяют ограничивать сечение пучка лучей, ограничивать прохождение через оптическую систему наклонных лучей, ограничивать краевые нерасчетные лучи, создающие вредные ореолы и блики.
6. объектив – основной элемент оптических систем, который обеспечивает построение изображения объектов в своей фокальной плоскости; объектив должен обеспечивать высокую освещенность изображения, качественное изображение в пределах угла обзора.

Типы оптических систем

Далее рассмотрим основные типы оптических систем для ЭОП.
1. Линзовые оптические системы.

В линзовых оптических системах используются в основном линзовые элементы. Такой тип систем используется в датчиках астроориентации космических аппаратов. Преимущество линзовых систем в том, что они могут обеспечить высокое качество изображения, имеют высокую разрешающую способность при больших углах поля зрения. Количество компонентов в системе растет с увеличением требований к качеству получаемого изображения, что приводит к росту массы, габаритов и потерь потока излучения, а также к возможной зависимости качества изображения от погрешности коэффициентов преломления в них вследствие поглощения в линзах и отражения на границе раздела двух сред [17, стр. 65].
2. Зеркальные и зеркало-линзовые оптические системы.

При проектировании зеркальных ЭОП используются сферические, эллиптические, параболические зеркальные отражатели. Часто этот вид оптических систем применяется в устройствах ориентации КА, системах самонаведения и измерительной аппаратуре. В случае применения зеркал в качестве объектива, относительное отверстие зеркального объектива ограничивается его аберрационными характеристиками, при этом кружок рассеяния, обусловленный аберрациями, не должен превышать размеров приемника излучения. Пример зеркальных и линзовых приемных объективов показан на рис. 10.
Оптические системы с лазером.

Оптические системы с лазером, к которым относятся и лидарные системы, состоят из передающей оптической системы и приемной оптической системы. В приемной части необходимо обеспечить захват максимальной части падающего потока излучения и сконцентрировать его на поверхности чувствительного элемента. При приеме или формировании луча лазерного излучения используются специальные оптические системы: системы, служащие для уменьшения расходимости луча (рис. 10); и, системы, увеличивающие поверхностную плотность излучения.

Построение оптической схемы лидара

Рассмотрим принцип построения лидара, принимая в расчет то, что задача оптической системы состоит в обнаружении объектов и представлении конечных данных в виде трехмерной карты их расположения. При этом отметим, что трехмерное изображение позволяет построить флэш-лидар, за счет восстановления из выходного изображения карт глубин исследуемого объекта параметры, определяющие объем и расстояние до отдельных частей объекта излучения [19]. Другим вариантом для получения трехмерной карты является применение в оптической схеме МЭМС-зеркал, представляющих собой микrorазмерные зеркала, установленные на кристалле. Иными словами МЭМС-зеркал – миниаторные микросканеры, их существенным преимуществом является миниатюрность и малое потребление энергии. Однако, недостатки МЭМС-зеркал не позволяют использовать их в приемной оптической схеме в рамках данной работы: механический угол наклона МЭМС-зеркал очень мал и обычно составляет несколько градусов (например, одно двухосевое МЭМС-зеркало с апертурой в 1,7 мм имеет максимальный угол сканирования, равный 8 градусам [21]).

Еще одним способом получения трехмерного изображения является использование лазерного дальномера с ПЗС-матрицей в качестве приемника излучения, при этом лидер должен работать в режиме накопления сигнала. Работа лидара в таком режиме подразумевает многократное повторение зондирования цели, суммирование сохраненных результатов и их последующую компьютерную обработку, таким образом получая облако точек, формирующих изображение объекта [22]. Однако, объемное изображение в таком случае можно получить только при помощи механического движения лидарной системы, что в условиях применения на СМКА нежелательно.
Исходя из этого, оптимальным решением представляется построение оптической схемы на базе флэш-лидаров, так как в нем используется один лазерный импульс, подсвечивающий всю необходимую сцену для получения трехмерного изображения движущихся целей, причем в движении может быть и сама лидарная система [23]. В основном во флэш-лидерах в качестве приемников излучения используются фотодиодные матрицы. Для обеспечения съемки больших сцен и для достижения высокого разрешения, необходимо, чтобы каждый пиксель обладал своей схемой для измерения временных интервалов между моментом излучения лазерного импульса и моментом приема излучения, отраженного от объекта. Исходя из работы [24], точность разрешения флэш-лидаров ограничена несколькими факторами, включая ширину импульса лазера, полосой пропускания приемника, временным разрешением цепи подсчета, дробовым шумом приемника и т.д.


Однако, фотодиод способен замерять дальность только одной точки за раз, поэтому для получения трехмерного изображения к этой системе требуется сканирующая часть. Другой вариант осуществления трехмерного сканирования в данном случае состоит в применении микрополяризационной ПЗС-матрицы с большим разрешением совместно с поляризационно-модулируемой ячейкой Поккельса. ЯП представляет собой кристалл, расположенный между двумя призмами Николя, которые не пропускают свет в отсутствие электрического поля. Большое разрешение микрополяризационной ПЗС-матрицы, например, 1024х1024 точек, позволит получить трехмерные изображения с высокой точностью разрешения до нескольких миллиметров.

Принцип работы предлагаемой оптической системы.
Принципиальная схема предлагаемого флэш-лидарна показана на рис. 12.
Лазерный импульс проходит через коллимационные линзы, запуская генератор импульсов задержки (ГИЗ), который в свою очередь запускает ячейку Поккельса с определенным временем задержки (tзад), и переменное напряжение V(t) начинает прикладываться к ЯП в течение времени модуляции Tмод.
Как показано на рис. 13а, приложенное напряжение изменяется со временем, а вместе с ним и задержка фазы, так как на рис. 13б, потому что задержка фазы пропорциональна приложенному напряжению и может быть выражена следующим образом:

\[ \varphi(t) = \frac{2\pi n_0^2 r V(t)}{\lambda} = \frac{2V(t)}{V_\pi}, \]

где \( \varphi(t) \) – задержка фазы, \( n_0 \) – показатель преломления, \( r \) – электрооптический показатель ячейки Поккельса, \( V(t) \) – приложенное к ячейке напряжение, \( \lambda \) – длина волны лазера, \( V_\pi \) – напряжение поляризации полуволны.

Рис. 12 – Блок-схема системы флэш-лидарна.
Рис. 13 – а) График зависимости напряжения $V(t)$, приложенного к ячейке Поккельса от времени, б) График зависимости измеренной задержки фазы $\varphi(t)$ от времени: $t_{адд}$ – время задержки, $T_{мод}$ – время модуляции, $V_х$ – напряжение полуволны ячейки Поккельса, $\varphi_т$ – измеренное состояние поляризации, $T$ – время отклика; $t$ – время.

Отраженный импульс, возвращающийся от цели, принимается микрополяризационной ПЗС-матрицей через модулятор поляризации (МП), состоящий из линейного поляризатора, ячейки Поккельса и четырехволновой пластины. Когда возвращающийся импульс проходит через МП, он испытывает задержку фазы и его состояние поляризации изменяется на $\varphi_Т$, что соответствует времени отклика $T$ (время, соответствующее прохождению импульса до цели и обратно). В лазерных фазовых дальномерах расстояние до цели определяется сравнением фазы модулирующего сигнала на выходе с приемника излучения с фазой опорного сигнала. Так, расстояние $l$, проходящее лазерным импульсам за время $T$, равно: $l = c \cdot T$, где $c$ - скорость света. Тогда дальность до цели можно также выразить через задержку фазы: $l = c \cdot \frac{\varphi}{2\pi f_м}$, где $f_м$ – частота модуляции сигнала; т.к. отношение между задержкой фазы и временем задано, время отклика может быть получено из угла поворота поляризации.

В качестве микрополяризационной ПЗС-матрицы выбрана камера Mer-502-79U3M POL производства компании Mercury Series, исходя из того, что данная ПЗС-матрица обладает высокой чувствительностью для выбранной длины лазера, малыми габаритами и низким энергопотреблением [26]. Массив микрополяризаторов выбранный матрицы состоит из четырех линейных поляризаторов с углами, равными $0^\circ$, $45^\circ$, $90^\circ$, $135^\circ$, как показано на рис. 14.

ПЗС-матрица замеряет интенсивность лазерного импульса, проходящего через микрополяризаторы, и используя значения четырех интенсивностей, можно определить задержку фазы: $\varphi(t) = \frac{1}{I_0(I_{45} - I_{135})} (I_{45} - I_{135})$, где $I_0$, $I_{45}$, $I_{90}$ и $I_{135}$ интенсивности после прохождения микрополяризаторов соответственно углами $0^\circ$, $45^\circ$, $90^\circ$, $135^\circ$. Когда ГИЗ запускает ячейку Поккельса, напряжение, прикладываемое к ней, растет с нуля и за несколько наносекунд достигает напряжения полуволны. На протяжении этого времени модуляции $T_м$ МП изменяет значение задержки фазы $\varphi$ во времени.

Рис. 14 – Массив микрополяризаторов ПЗС-камеры Mercury.

На рис. 15 представлена оптическая схема системы флэш-лидара, где источник излучения – лазер, в предложенной схеме используется твердотельный лазер CVD-197-TOSF с длиной волны 850 нм. Аналогичный лазер также использовался в работе [27] в составе флэш-лидара для определения расположения космических объектов на НОО, следовательно, он применим к данной работе.
Рис. 15 – Оптическая схема флэш-лидара, построенная в ПО «Zemax».

Излучение лазера попадает на зеркало, притом прошедшая часть собирается фотодиодом для создания электрического сигнала старт-импульса. Старт-импульс с фотодиода является внешним источником включения ГИЗ. Затем ГИЗ включает ячейку Поккельса после определенного времени задержки \( t_{зад} \). Лазерный импульс копируетируется на линзах «Линза 1» и «Линза 2», причем последняя выполняет роль объектива. Диффузор располагается в фокусной точке линзы для уменьшения лазерного пятна. Лазерный луч достигает цели (КМ) и отражается от него. Отраженный от объекта луч падает на микрополяризационную ПЗС-матрицу через МП (линейный поляризатор, ячейка Поккельса \( Q1059\ PSG-850 \), четвертьволновая пластинка). После чего данные с ПЗС-матрицы и ГИЗ поступают на БК для обработки и формирования трехмерного изображения.

Светознтретический расчет оптической системы

Светознтретический расчет подразумевает определение предельной измеряемой дальности при заданных параметрах: импульсной мощности лазера, обнаружительных характеристиках приемника излучения, условиях применения лидарной системы. Примем ряд допущений для определения характеристик лидарной системы: так, допустим, что диаметр подсветки принимается как конус с плоским углом \( \gamma \) при вершине, в котором равномерно распределено зондирующее излучение: \( \gamma = \sqrt{\frac{4 \cdot \Omega_{пер}}{\pi}} \). При этом, если расходящийся лазерный пучок представляет собой конус, то между плоским углом расходимости \( \omega \) и телесным \( \Omega \) существует зависимость: \( \Omega_{пер} = 2\pi \cdot (1 - \cos \left( \frac{\omega}{2} \right) \). Источник лазерного излучения с мощностью \( P_л \), проходящий через оптическую систему с пропусканием \( \tau_{пер} \) создает зондирующий пучок с энергетической силой света: \( I = \frac{P_л \cdot \tau_{пер} \cdot \Omega_{пер} \cdot \Omega_{отр} \cdot R^2}{\pi} \). А на расстоянии \( R \) будет создаваться энергетическая освещенность: \( B = \frac{P_л \cdot \tau_{пер} \cdot \Omega_{пер} \cdot \Omega_{отр} \cdot R^2}{\pi} \). Принимая частьцу на НОО как объект, диффузно рассеивающий излучения подсветки, предполагается, что еф противность отражает излучения по закону Ламберта: \( P(\psi) = P_0 \cdot \cos(\psi) \), где \( P_0 \) – мощность пучка подсветки, падающего на отражающую поверхность, а \( \psi \) – угол относительно нормали к отражающей поверхности. При оценке работы лидара по диффузно отражающей поверхности, производится ее экстраполирование ламбертовской поверхностью [28]. Часть частицы площадью \( S_{км} \) и коэффициентом отражения \( \rho_{км} \) подсвечиваемые зондирующим пучком, будут иметь энергетическую силу света: \( I = \frac{P_л \cdot S_{км} \cdot \rho_{км} \cdot \tau_{пер} \cdot \Omega_{пер} \cdot \Omega_{отр} \cdot R^2}{\pi} \). При оценке работы лидара по диффузно отражающей поверхности, производится ее экстраполирование ламбертовской поверхностью [28]. Часть частицы площадью \( S_{км} \) и коэффициентом отражения \( \rho_{км} \) подсвечиваемые зондирующим пучком, будут иметь энергетическую силу света: \( I = \frac{P_л \cdot S_{км} \cdot \rho_{км} \cdot \tau_{пер} \cdot \Omega_{пер} \cdot \Omega_{отр} \cdot R^2}{\pi} \).
Приемный объектив диаметром $d_{об}$ будет собирать мощность отраженного сигнала, равную: $P_{пр} = \frac{P_л S_{км} \rho_{км} d_{об}^2 \tau_{пер} \tau_{пр}}{y^2 \Omega_{отр} T_4}$. С учетом пропускания приемной оптической системы $т_{пр}$ на фотоприемное устройство, а именно на ПЗС-матрицу, будет поступать мощность, равная: $P_{ФПУ} = \frac{P_л S_{км} \rho_{км} d_{об}^2 \tau_{пер} \tau_{пр} \tau_{пр}}{y^2 \Omega_{отр} T_4}$. 

Принимая во внимание [29], считаем минимально допустимое значение отношения сигнал/шум $\mu$ равным 1,5.

Рис. 16 – Геометрическая схема процесса формирования отраженного от частицы излучения, приходящего на фотоприемник.

<table>
<thead>
<tr>
<th>Наименование величины</th>
<th>Значение</th>
<th>Единицы измерения</th>
</tr>
</thead>
<tbody>
<tr>
<td>Мощность лазерного импульса, $P_л$</td>
<td>100</td>
<td>Вт</td>
</tr>
<tr>
<td>Коэффициент пропускания передающей оптики, $\tau_{пер}$</td>
<td>0,92</td>
<td>безразмерная</td>
</tr>
<tr>
<td>Угол расходимости лазера, $\omega$</td>
<td>0,34907</td>
<td>радиан</td>
</tr>
<tr>
<td>Телесный угол излучения, $\Omega_{пер}$</td>
<td>0,095</td>
<td>стерадиан</td>
</tr>
<tr>
<td>Площадь зондируемого объекта, $S_{км}$</td>
<td>0,005</td>
<td>м²</td>
</tr>
<tr>
<td>Коэффициент отражения, $\rho_{км}$</td>
<td>0,82</td>
<td>безразмерная</td>
</tr>
<tr>
<td>Телесный угол отраженного излучения, $\Omega_{отр}$</td>
<td>$\pi$</td>
<td>радиан</td>
</tr>
<tr>
<td>Диаметр приемного объектива, $d_{пр}$</td>
<td>0,041</td>
<td>м</td>
</tr>
<tr>
<td>Шумовой ток ПЗС-матрицы, $I_{шум}$</td>
<td>2,4·10^{-19}</td>
<td>А</td>
</tr>
<tr>
<td>Значение отношения $A/Вт$ для длины волны лазера $\lambda_л = 850$ нм</td>
<td>0,6</td>
<td>Вт</td>
</tr>
</tbody>
</table>

Используя данные таблицы 2, определим силу тока $I_{ФПУ}$, возникающую при приходящей на фотоприемник вычисленной мощности $P_{ФПУ}$: $I_{ФПУ} = P_{ФПУ} \cdot 0,6$. Таким образом для определения значения сигнал/шум для заданного расстояния: $\mu = \frac{I_{ФПУ}}{I_{шум}}$. 

Таблица 2

Исходные данные для расчета дальности действия флэш-лидара.
Результаты расчета значения падающей на фотоприемник отраженной от объекта мощности \( P_{ФПУ} \) и значения сигнал/шум \( \mu \) для различных дальностей объекта с линейными размерами \( l = 10 \) мм и \( l = 100 \) мм при постоянном коэффициенте отражения.

<table>
<thead>
<tr>
<th>( R, м )</th>
<th>( P_{ФПУ}, \text{Вт} )</th>
<th>( I, \text{А} )</th>
<th>( \mu )</th>
<th>( P_{ФПУ}, \text{Вт} )</th>
<th>( I, \text{А} )</th>
<th>( \mu )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3,22\times10^{-5}</td>
<td>2,90\times10^{-5}</td>
<td>1,21\times10^{14}</td>
<td>3,22\times10^{-5}</td>
<td>2,90\times10^{-5}</td>
<td>1,21\times10^{14}</td>
</tr>
<tr>
<td>100</td>
<td>3,22\times10^{-13}</td>
<td>2,90\times10^{-13}</td>
<td>1,21\times10^{6}</td>
<td>3,22\times10^{-11}</td>
<td>2,90\times10^{-11}</td>
<td>1,21\times10^{8}</td>
</tr>
<tr>
<td>500</td>
<td>5,16\times10^{-16}</td>
<td>4,64\times10^{-16}</td>
<td>1,93\times10^{3}</td>
<td>5,16\times10^{-14}</td>
<td>4,64\times10^{-14}</td>
<td>1,93\times10^{5}</td>
</tr>
<tr>
<td>1000</td>
<td>3,22\times10^{-17}</td>
<td>2,90\times10^{-17}</td>
<td>1,21\times10^{2}</td>
<td>3,22\times10^{-15}</td>
<td>2,90\times10^{-15}</td>
<td>1,21\times10^{4}</td>
</tr>
<tr>
<td>2000</td>
<td>2,02\times10^{-18}</td>
<td>1,81\times10^{-18}</td>
<td>7,55</td>
<td>2,02\times10^{-16}</td>
<td>1,81\times10^{-16}</td>
<td>7,55\times10^{2}</td>
</tr>
<tr>
<td>3000</td>
<td>3,98\times10^{-19}</td>
<td>3,58\times10^{-19}</td>
<td>1,56</td>
<td>3,98\times10^{-17}</td>
<td>3,58\times10^{-17}</td>
<td>1,56\times10^{2}</td>
</tr>
<tr>
<td>4000</td>
<td>1,26\times10^{-19}</td>
<td>1,13\times10^{-19}</td>
<td>0,472</td>
<td>1,26\times10^{-17}</td>
<td>1,13\times10^{-17}</td>
<td>47,2</td>
</tr>
<tr>
<td>5000</td>
<td>5,16\times10^{-20}</td>
<td>4,64\times10^{-20}</td>
<td>0,193</td>
<td>5,16\times10^{-18}</td>
<td>4,64\times10^{-18}</td>
<td>19,3</td>
</tr>
<tr>
<td>6000</td>
<td>2,49\times10^{-20}</td>
<td>2,24\times10^{-20}</td>
<td>9,32\times10^{-2}</td>
<td>2,49\times10^{-18}</td>
<td>2,24\times10^{-18}</td>
<td>9,32</td>
</tr>
<tr>
<td>7000</td>
<td>1,34\times10^{-20}</td>
<td>1,21\times10^{-20}</td>
<td>5,03\times10^{-2}</td>
<td>1,34\times10^{-18}</td>
<td>1,21\times10^{-18}</td>
<td>5,03</td>
</tr>
<tr>
<td>8000</td>
<td>7,87\times10^{-21}</td>
<td>7,09\times10^{-21}</td>
<td>2,95\times10^{-2}</td>
<td>7,87\times10^{-19}</td>
<td>7,09\times10^{-19}</td>
<td>2,95</td>
</tr>
<tr>
<td>9000</td>
<td>4,92\times10^{-21}</td>
<td>4,42\times10^{-21}</td>
<td>1,84\times10^{-2}</td>
<td>4,92\times10^{-19}</td>
<td>4,42\times10^{-19}</td>
<td>1,84</td>
</tr>
</tbody>
</table>

Из результатов таблицы 3 видно, что максимальная дальность лидарной системы при работе по точечному диффузному объекту равна 3 км при мощности лазерного импульса равной 100 Вт. График зависимости значения сигнал/шум от дальности объекта, с учетом его линейных размеров, а значит и площади, приведен на рис. 17.

В следствие того, что частицы могут состоять из различных материалов, следует провести анализ отношения сигнал/шум в зависимости от дальности объекта при различных коэффициентах отражения материала. Рассчитанные значения представлены в таблице 4.

Для качественной оценки возможного количества обнаруженных частиц, обратимся к [4, стр. 154]. Так, автор данной работы предлагает следующий вариант простой оценки числа частиц: \( \Delta N = S \cdot \rho \cdot V \cdot \Delta t \), где \( \rho \) – концентрация частиц на заданной орбите, \( V \) – скорость падающих частиц, \( \Delta t \) – интервал времени, а \( S \) – площадь конуса, через которую проходят частицы, равная: \( S = \frac{L^2 \cdot \omega}{2} \), где \( L \) – дальность действия лидара, а \( \omega \) – угол расходимости лазерного излучения.

![График зависимости отношения сигнал/шум от дальности для различных линейных размеров частиц.](image)
Результаты расчета значения падающей на фотоприемник отраженной от объекта мощности $P_{ФПУ}$ и значения сигнала/шум $\mu$ для различных дальностей объекта с коэффициентами отражения $\rho_{КМ} = 0,6$ и $\rho_{КМ} = 0,9$ при постоянном размере.

<table>
<thead>
<tr>
<th>$R$, м</th>
<th>$P_{ФПУ}$, Вт</th>
<th>$I$, А</th>
<th>$\mu$</th>
<th>$P_{ФПУ}$, Вт</th>
<th>$I$, А</th>
<th>$\mu$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$2,14 \times 10^{-6}$</td>
<td>$1,93 \times 10^{-5}$</td>
<td>$8,05 \times 10^{-13}$</td>
<td>$0,0032$</td>
<td>$0,0029$</td>
<td>$1,21 \times 10^{16}$</td>
</tr>
<tr>
<td>100</td>
<td>$2,15 \times 10^{-13}$</td>
<td>$1,93 \times 10^{-13}$</td>
<td>$8,05 \times 10^{-8}$</td>
<td>$3,22 \times 10^{-11}$</td>
<td>$2,90 \times 10^{-11}$</td>
<td>$1,21 \times 10^{8}$</td>
</tr>
<tr>
<td>500</td>
<td>$3,44 \times 10^{-16}$</td>
<td>$3,10 \times 10^{-16}$</td>
<td>$1,29 \times 10^{-3}$</td>
<td>$5,16 \times 10^{-14}$</td>
<td>$4,64 \times 10^{-14}$</td>
<td>$1,93 \times 10^{5}$</td>
</tr>
<tr>
<td>1000</td>
<td>$2,15 \times 10^{-17}$</td>
<td>$1,93 \times 10^{-17}$</td>
<td>$8,05 \times 10^{1}$</td>
<td>$3,22 \times 10^{-15}$</td>
<td>$2,90 \times 10^{-15}$</td>
<td>$1,21 \times 10^{4}$</td>
</tr>
<tr>
<td>2000</td>
<td>$1,34 \times 10^{-18}$</td>
<td>$1,21 \times 10^{-18}$</td>
<td>$5,03 \times 10^{0}$</td>
<td>$2,02 \times 10^{-16}$</td>
<td>$1,81 \times 10^{-16}$</td>
<td>$754,8$</td>
</tr>
<tr>
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<td>$2,65 \times 10^{-19}$</td>
<td>$2,39 \times 10^{-19}$</td>
<td>$0,99$</td>
<td>$3,98 \times 10^{-17}$</td>
<td>$3,58 \times 10^{-17}$</td>
<td>$149,1$</td>
</tr>
<tr>
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<td>$8,40 \times 10^{-20}$</td>
<td>$7,56 \times 10^{-20}$</td>
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<td>$1,26 \times 10^{-17}$</td>
<td>$1,13 \times 10^{-17}$</td>
<td>$47,2$</td>
</tr>
<tr>
<td>5000</td>
<td>$3,44 \times 10^{-20}$</td>
<td>$3,10 \times 10^{-20}$</td>
<td>$0,13$</td>
<td>$5,16 \times 10^{-18}$</td>
<td>$4,64 \times 10^{-18}$</td>
<td>$19,3$</td>
</tr>
<tr>
<td>6000</td>
<td>$1,66 \times 10^{-20}$</td>
<td>$1,49 \times 10^{-20}$</td>
<td>$6,21 \times 10^{-2}$</td>
<td>$2,49 \times 10^{-18}$</td>
<td>$2,24 \times 10^{-18}$</td>
<td>$9,3$</td>
</tr>
<tr>
<td>7000</td>
<td>$8,95 \times 10^{-21}$</td>
<td>$8,06 \times 10^{-21}$</td>
<td>$3,35 \times 10^{-2}$</td>
<td>$1,34 \times 10^{-18}$</td>
<td>$1,21 \times 10^{-18}$</td>
<td>$5$</td>
</tr>
<tr>
<td>8000</td>
<td>$5,25 \times 10^{-21}$</td>
<td>$4,72 \times 10^{-21}$</td>
<td>$1,97 \times 10^{-2}$</td>
<td>$7,87 \times 10^{-19}$</td>
<td>$7,09 \times 10^{-19}$</td>
<td>$2,9$</td>
</tr>
<tr>
<td>9000</td>
<td>$3,28 \times 10^{-21}$</td>
<td>$2,95 \times 10^{-21}$</td>
<td>$1,23 \times 10^{-2}$</td>
<td>$4,92 \times 10^{-19}$</td>
<td>$4,42 \times 10^{-19}$</td>
<td>$1,84$</td>
</tr>
</tbody>
</table>

Рис. 18 – График зависимости значения отношения сигнал/шум от дальности для различных коэффициентов отражения частиц.

Используя данные, имеющиеся в работе [4, стр. 159], получим, что за 1 секунду через световой конус, образуемый лидарной системой, пройдет около 3 объектов размером больше 10 мм. Стоит учесть, что данная оценка носит приблизительный характер. В случае необходимости увеличения дальности действия предложенной лидарной системы, следует применить более мощный наносекундный лазер с мощностью импульса в несколько кВт.

Определение параметров СМКА

Исходя из выбранных параметров оптической системы, обозначим архитектуру СМКА для проведения энергетического расчета. При этом система энергетического расчета (СЭО) делится на три составляющие: генерация энергии, хранение энергии и ее распределение. Общий вид СЭО представлен на рис. 19, который предлагает дорожную карту для обозначения основных направлений при выполнении расчета.
Рис. 19 – Общая схема энергетической системы СМКА.

Для определения оптимальных параметров СЭО, выделим параметры орбиты, на которой будет находиться СМКА. Траектория орбиты определяет время, в которое наноспутник освещается Солнцем, и, следовательно, время, в которое могут подзаряжаться батареи. В первую очередь, следует определить орбитальный период, т.е. время, за которое СМКА совершает полный оборот вокруг Земли. Согласно третьему закону Кеплера, орбитальный период в секундах равен: \[ T = 2\pi \cdot \sqrt{\frac{a^3}{\mu_G}}, \] где \( a \) – большая полуось орбиты, а \( \mu_G \) – стандартный гравитационный параметр. Кроме того, т.к. выбранная ранее орбита является солнечно-синхронной, то время освещенности Солнцем равно орбитальному периоду, т.е. предполагается, что хотя бы \( \frac{1}{4} \) часть солнечных панелей всегда вырабатывает энергию и способна заряжать аккумуляторы. Значение орбитального периода для выбранной орбиты равно 101 минуте.

Будем считать, что полезная нагрузка СМКА, в которой потребителями энергии являются импульсный лазер и ПЗС-матрица, используется 30% времени от орбитального периода. Основываясь на [26] и [30], в момент работы импульсный лазер потребляет 25 Вт, а ПЗС-матрица – 2,5 Вт. Рассчитанные значения энергии потребления в Вт⋅ч для отдельных подсистем в момент работы и во время ожидания отражены в таблице 6. Так, общая энергия потребления в момент работы полезной нагрузки и остальных подсистем СМКА составляет 18,13 Вт⋅ч.

Таблица 6

<table>
<thead>
<tr>
<th>Подсистема</th>
<th>Мощность, Вт</th>
<th>Действие, %</th>
<th>Энергия, Вт⋅ч</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Активный режим</td>
<td>В ожидании</td>
<td>Активный режим</td>
</tr>
<tr>
<td>Компьютер</td>
<td>0,31</td>
<td>0,13</td>
<td>100</td>
</tr>
<tr>
<td>Антенна</td>
<td>2</td>
<td>0,06</td>
<td>50</td>
</tr>
<tr>
<td>Двигатель</td>
<td>0,18</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Сенсоры</td>
<td>0,36</td>
<td>0,1</td>
<td>50</td>
</tr>
<tr>
<td>Приемопередатчик</td>
<td>1,7</td>
<td>0,2</td>
<td>50</td>
</tr>
<tr>
<td>Полезная нагрузка</td>
<td>27,5</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>Общее значение:</td>
<td>32,05</td>
<td>0,49</td>
<td>-</td>
</tr>
</tbody>
</table>

В наноспутник выходят аккумуляторные батареи, минимальная емкость которых равна 44 Вт⋅ч, а также солнечные панели способные обеспечивать постоянную мощность, равную 7,2 Вт. Учитывая это, очевидно, что представленная в работе лидарная система не будет испытывать недостатка энергии при ее эксплуатации.

Заключение

В работе рассмотрена к использованию лидарная система, установленная на базе СМКА, способная обнаруживать космические объекты на низких околоземных орбитах и строить на основе данных о положении отдельных частиц трехмерную карту. Предложенное в работе решение позволяет произвести анализ и классификацию частиц размером от 10 до 100 мм, что
В свою очередь представляет сложность для радиолокационных систем наземного базирования.

В результате произведен анализ различных типов лидаров, позволяющих получить трехмерное изображение зондируемого объекта и выбран оптимальный для заданных целей тип лидара – флэш-лидар. Построена передающая и приемная оптические схемы флэш-лидара с учетом габаритных ограничений, накладываемых свойствами СМКА стандарта CubeSat, описан принцип их работы. Выполнен светоэнергетический расчет лидарной системы, в результате чего определена максимальная дальность действия лидара для КМ размером 10 мм, равная 3 км. С учетом этой дальности подсчитано, что лидарная система способна обнаруживать, при условии нахождения на солнечно-синхронной орбите высотой 895 км, около 3 частиц в секунду.

Произведен энергетический расчет подсистем СМКА в активном режиме и режиме ожидания. Таким образом определено, что выбранные подсистемы наноспутника позволяют обеспечить стабильную работу полезной нагрузки.

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The communication system of PP refers to a single organizational-technical unity of all existing communication forces and means, including the object's internal communication network. Such a system is created by using state and field communication lines, radio, radio-relay and wire communication nodes and stations, as well as table technical communication equipment of PP headquarters, mobile and signaling devices.

The main tasks of the communication system at all levels are to ensure the continuous management of subordinates, the organization and maintenance of interaction, as well as the timely delivery and reception of orders, signals and information. Communication is organized between the head of the superior organization, subordinate forces and troops, as well as interoperating bodies and forces.

The communication system should be kept ready for work at all times, it should allow reliable, uninterrupted, accurate and fast delivery of information. To achieve this, it is necessary to create communication nodes at the control points in advance, to use all means of communication in a complex manner, as well as to create reserves of means of communication.

For the organization of communication, radio-telephone (wired communication), mobile and signaling means of communication are used. These are called types of communication. Radio and telephone types are widely used in all structures of Civil Defense during emergency situations, and multi-wire communication agents at any distance even in the most complex conditions. Mobile means of communication, especially during rescue operations, are used to deliver various operational documents, verbal orders, information and news to executives and higher headquarters. Airplanes, helicopters, cars and other vehicles, and in some cases even pedestrians can be used as a means of mobile communication.

Signal communication means are used to warn the population, as well as to repeat instructions and signals. Signaling means consist of electric and manual sirens, signal flares, new light and sound signaling devices. The warning system of PP is also organized on the basis of communication tools. The warning system means a unified system of methods and tools that deliver signals and instructions to the public to the Ministry of Internal Affairs and Communications.

This system includes centralized warning devices, a radio-broadcast (broadcast) network and sirens. The main task of the system is to issue orders to the management staff of the Ministry of Defense, headquarters and services to transfer the management bodies, forces of the Ministry of Defense, facilities to different levels of readiness, as well as to provide signals, news and information to the entire population about the threat of enemy attack or air raids, poisoning, natural disasters and accidents. is to deliver information in a short period of time. The warning is organized according to the instructions of the head of the relevant PP or the higher headquarters. Warning signals are issued by all means of communication and broadcasting and repeated by local PP headquarters. In order to directly organize and implement communication and warning, communication services and non-military communication units are created in cities (districts, facilities) using the appropriate forces and means available in peacetime. The head of the enterprise, department (communication hub, telephone exchange, etc.) where the service is created is appointed as the head of the service. In facilities that do not have a base (communication hub, telephone exchange, etc.) to create such a service, the task of organizing communication and warning can be assigned to one of the assistants of the head of the Ministry of Defense headquarters. The head of the service is responsible for planning and timely implementation of communication and warning measures, keeping forces and means constantly ready, and repairing equipment. Means of communication
Electric sirens are conventional signaling means for warning the population about danger in AR territory. They are placed in the territory of cities and residential areas in such a way that the spread of sound is ensured in all directions as much as possible. C-40 sirens are used for this purpose; they spread the sound in a radius of 300-400 meters in the city. Usually, the electro-siren network is controlled from one center.

Alert people outside the home Another effective system is a network of street speakers. They are the main component of the radio broadcasting network of cities and settlements and are an important element of informing the population. It is known from experience that it is impossible to fully inform the entire population. Also, it is impossible to make sure that the population will adequately accept the danger signals given by warning devices and follow the rules of further behavior in accordance with the given information. Therefore, it is necessary to educate the population to recognize the given warning signals and act accordingly. Signals must be repeated many times and all means of warning must be used to fully ensure public warning. At this time, it should be taken into account that the effectiveness of various warning devices varies depending on the time of day. Night time electric signals and street amplifiers, evening television broadcasting, daytime electric signals, street amplifiers and radio broadcast networks are more effective. In order to warn and inform the population, all types of broadcast (cable, radio and television broadcast) are used during the FH, as well as telecast accompanied by sound signals. For this purpose, special equipment of the Ministry of Foreign Affairs is used.

Warning signals and texts are pre-written and stored in the control bodies. Sometimes "live broadcasting" during the FH is conducted directly from the governing bodies. Organization of communication and warning in the district, object, a single PP communication system should be created in the territory of the city (district). This can be achieved by concentrating all available forces and means, including indirect communication lines, in one center (PP communication services), planning their management in a centralized manner, and using all types of communication in a complex manner. The role and main tasks of communication in the facilities are essentially the same as in the city (district). Here, the communication system specifically includes the communication node (communication means) of the enterprise and the communication means of the PP units. The communication hubs of large enterprises usually have an industrial automatic telephone exchange (IPTS), a radio broadcasting hub, and technological communication lines (dispatching communication with workshops and departments).

The communication hub at the facilities' control points should have a switchboard (telephone exchange), radio communication devices (mainly microwave radio stations), signaling devices, and in important facilities, there should also be a last block warning device.

The means of communication of the PP forces consist of various types of telephone devices, telephone cables, microwave radio stations and other equipment provided on the table.

Communication is also used in facilities in the following manner: Wired communication - it is possible to communicate with the management of the district (city) ministry (higher management): shelters of the facility, observation post, heads of workshops and departments at their workplaces, and PP services of the facility. Radio communication - a radio network of the head of the PP is usually organized in the facility, and the radio stations of the detachment commanders are connected to it. The radio station of the heads of the object PP is included in the radio network of the city (district) head.

Radio communication is used especially during marching and rescue operations at damage sites. Mobile communication is used as additional means in the main directions with technical communication equipment, and in cases where such equipment is not available, as the main type of communication. Means of signal communication - sirens, flares and flags are used both for warning and as auxiliary means for conveying orders and commands of the Ministry of Defense.

Warning signals can be issued both by the republican PP office and delivered to regional departments, cities and district centers, and signals, information and news can be given by city, district and facility PP headquarters themselves. In the first case, the signals sent from the republican PP office or its regional departments to the district centers should be repeated by the local headquarters,
and all facilities and population in the area should be notified. Management staff is notified by phone in work and apartments. Signals, news and information are delivered to the population from their places of work and residences by the respective heads of MM, as well as by the local radio broadcasting network. Heads of production, social and other organizations are informed by the headquarters of the Ministry of Education of the region, and in some cases, of the parallel ministry. In the facilities, in turn, a pre-equipped warning system is created, as well as a communication and warning scheme is drawn up. In order to quickly deliver signals and orders, important objects are connected to the PP centralized automatic warning system. Such a system can be created in the object itself.

The composition of the centralized automatic warning system consists of S-40 and S-28 electric sirens, remote control and mandatory call apparatus (MN-MCHA) and communication lines (channels). S-40 electric siren is intended to be placed on the streets, its sound can be heard from 300-700 meters.

The S-28 siren is connected in noisy workshops of industrial enterprises. The P-160 device for remote control and forced calling ensures the central activation of electric sirens, remote forced change of the program of the radio broadcast node to issue warning signals, as well as forced issuing of call signals to the office and apartment phones of the management staff.

Thus, the use of all these tools means that there is a danger in the regions and objects "Attention of all!" a unified system of delivering the warning signal to the population is created. The main method of warning the population in the event of a natural disaster or an accident, or in the event of such a threat, as well as about an enemy attack, is the provision of verbal news through radio and television. Before such news, "Attention of all!" signal should be announced. Using the available means of notification - electric and manual sirens, or tape recorders with these signals, use the signal, as well as "Air alarm", "Air danger has cleared", "Chemical alarm", "Radiation danger", as well as various natural disasters and conveys the content of news about industrial accidents to listeners, in such cases the basic rules of conduct must be observed. A local (local) warning system should also be created in the areas where potentially dangerous objects are located. This system consists of warning devices of objects and territory combined into a single structure. Its purpose is to timely notify the employees of the facility, as well as the heads of enterprises, departments and organizations located in the zones of possible poisoning or catastrophic flooding, as well as the population, about the occurrence of emergency situations.

The installation scheme and working principle of the local warning system, for example, in chemically hazardous enterprises, may be as follows: a radio transmission (radio broadcasting) node of a chemically hazardous facility - a special cable line laid in advance from here to a residential area and the last notification means - electric sirens, loudspeaker devices on the streets and radio reproducers in apartments. Here, electric sirens are only "Attention!" to signal, and street and apartment radio reproducers are for announcing event verbal news and information, as well as rules of conduct.

Danger signals and information can be given either directly from the object's radio broadcasting node or through the city's (district's) central radio broadcasting node. In case of strong accidents, it is also possible to use mobile vehicles with loud speakers in order to warn the population in regions not covered by the city's local warning system and to prevent them from entering the toxic zone. It is more appropriate to deliver operational information to the officials through the mandatory call telephone stand installed in the automatic telephone stations of the facility and the city.

The procedure for using the local warning system is as follows: "There is a uniform instruction on the procedure for the dispatcher on duty in the event of an accident with the spread of strong, effective, toxic substances in a chemically dangerous facility." According to this document, when emergency situations arise in such objects, the dispatcher on duty of the enterprise has the authority to independently decide to notify all employees in the object, as well as heads of other enterprises, departments and organizations located within a radius of up to 2.5 km, as well as the population.

Therefore, in such cases, without waiting for any additional instructions, he should contact the management of the enterprise, its employees, emergency services (gas rescue, firefighting, medical
services), PP forces, heads of other departments and organizations, local government bodies, the emergency situation commission of the city (district) and PP headquarters. He must inform his duty officer as well as the population.

The PP headquarters regulates the subsequent behavior by announcing the pre-recorded signal and the texts of the news by technical means.

Emergency warning signals

One of the most important tasks of civil defense is to timely warn the population about an expected or occurring disaster. The procedure for reporting an accident is determined by taking into account its scale and spread. In general, the following warning signals are used in the PP system:

1) attention to all
2) air alarm
3) air alarm has subsided
4) chemical alarm
5) radiation danger

In all cases, the main means of warning about the danger is the radio and television network. In order to quickly attract people's attention and to get them to immediately gather around radios and televisions, sound signals are given in emergency situations using sirens and vehicle whistles. Such a signal is called an "attention to all" signal.

As soon as they hear these alarm signals, everyone should immediately turn on radios and televisions and listen carefully to the news and information provided by government agencies and civil defense headquarters about the emergency. Along with the news about the danger, brief and clear tips and instructions are also given about the rules of behavior of the population.

Warning signals should be fully understood in advance. Everyone should know that warning signals are issued during disasters in times of peace and war. However, one of them differs from the other, and it is important for the public to know this.

First of all, let's note that it is possible to give advance notice about a number of natural disasters. For example, the possibility of spring floods is known a month in advance and appropriate measures are taken. Or it is possible to deliver news about the threat of flood in 10-20 minutes, sometimes 1-2 hours in advance. Let's also note such an important aspect that during the war, people are alert to all kinds of extreme situations, they act flexibly on civil defense signals and information.

It is necessary to know that the content of the information and instructions announced by the civil defense headquarters after the "attention to all" signal, depending on the type of natural disasters and accidents and the specific situation that arose at that time, may be different. Therefore, every person should listen to them carefully, be discreet, act quickly and organized.

During the war, the situation changes. Authorities inform the population about an enemy attack. This news is delivered to the population through radio, television and press. When there is a threat of enemy attack, the situation is very diverse and sometimes very complicated.

When there is a fear of the enemy using nuclear, chemical, bacteriological and other weapons during the war, warning signals of the civil defense are immediately issued, for this purpose, radio, television, all means of communication, sound and light signals are used. In such cases, depending on the situation, "Air alarm", "Air alarm over", "Radiation danger", "Chemical alarm" signals of the civil defense can be issued after the "attention to all" signal. It is important for the entire population to know these signals and follow their requirements. This can greatly reduce casualties. If long-term signals are given (electric sirens, whistles from establishments, etc.), this is an "ATTENTION TO ALL" warning signal, and it is necessary to wait for further information. Then local government bodies, MES management bodies use mass media to provide information about the MES and how to act in the situation. "ATTENTION EVERYONE!" As soon as you hear the signal, the radio and TV should be connected to the power line immediately. After the sound signal, the population is informed by speech about the emergency situation, the situation, and the rules of behavior of the population. Act according to the provided information and rules of conduct. During the elimination of FH, mass media should always be connected to the power line. Local radio broadcasting networks should be switched to non-stop operation mode.
If there is no electricity, an independent power source should be used. An air alert warns that an enemy air raid is expected. First, the sirens called it "Attention!" delivers. Then such an announcement was made on radio and television. "Attention! Attention! Attention! The Civil Defense Headquarters speaks! Citizens, the weather is exciting! Weather excitement is announced! This announcement is repeated several times. An instruction is given to disperse the population.

At this time, those in the houses should immediately close the windows, turn off the heating devices, turn off the lights, and take the food, water, protection and natural aid supplies they have previously supplied and go to the nearest shelter. All units in production must be stopped, the current must be cut off, and each crew and shift must go to their designated shelter in a predetermined order. If it is not possible to stop any unit, turbine, furnace, technological line due to the production mode, they are switched to a relatively safe mode of operation, kept under the control of predetermined people and make appropriate places for the protection of those people.

During the "air alarm" classes are suspended in all educational institutions, everyone goes to security facilities. People in public places (cinemas, markets, shops, etc.) and in vehicles should go to the nearest branch. If there are no such shelters, use underground passages, tunnels, etc. to escape should be used. During "weather alarm", the population in the villages should gather in their family homes. It is advisable to keep cattle in stable conditions. It is better to drive the cattle and herds in the pastures to the forests during the weather disturbance. In order to protect livestock in the field conditions, they are protected from ravines, ditches, caves, etc. Recommended for use. In general, it is necessary to try so that cattle do not stay in plains and open fields. In all cases, it is possible to leave the dive sites only after the "air alarm is over" signal is given. At this time, it is announced through the local radio network and loud speakers: "Attention! The Civil Defense Headquarters speaks! The threat of an air raid is over. The excitement of the weather is over!"

In the places where the enemy struck and the damage center was created, "The air alarm is over!" signal is given. In such cases, those protected in the shelters are given information and recommendations about the rules of behavior in relation to the situation. Remember that at this time it is extremely important to follow the instructions of the local civil defense authority. Otherwise, people are exposed to radioactive or chemical poisoning.

"Chemical alarm" signal is issued when there is a danger of chemical or bacteriological poisoning, or when such poisoning is detected immediately. You need to listen carefully to the information given. Don't panic. It is necessary to cover the respiratory organs with a wet towel or clothes and try to leave the poisoning zone, if it is not possible, it is necessary to take shelter on the upper floors of buildings; if the alarm sounds when you are at home, still protect the respiratory organs with a wet towel or clothes and only then seal the apartment. Then, it is necessary to act according to the advice given by the Ministry of Foreign Affairs or local authorities through mass media. (if the poisonous substance is chlorine, it should be taken into account that it settles on the lower floors of buildings and basements; therefore, it is necessary to soak a cotton gauze with a 2% soda solution and use it as a means of protecting the respiratory organs.) should be removed quickly. Civil defense or police post personnel show them which direction to go. In their absence, people should leave the poisoned zone in a direction perpendicular to the direction of the wind. After that, people have to undergo sanitary cleaning.

The population is not allowed to leave the bacteriological infection center on its own. Because in such areas, a quarantine or observation regime will be imposed, and the rules of people's further behavior will be determined. As we mentioned, the family shelters intended for shelter in the villages should be strengthened in advance and hermetic should be ensured. Inside, all conditions should be created for the comfort of the family, radio and television equipment should be operated. Because, information about the course of events, as well as the elimination of the threat of chemical or bacteriological poisoning, or instructions about the rules of behavior after that will be given by those means. It is important to take care of livestock when the "chemical alarm" signal is issued. Appropriate measures should be taken to protect food and fodder resources and water sources.

The "radiation alarm" signal is given when radioactive poisoning is detected in this or that area or when such poisoning is expected within 1 hour at the latest. As in the case of "Air Alarm" and
"Chemical Alarm" signals, "Attention All!" signal, and then «Radiation danger information is displayed. At this time, all means of communication and warning are used, and in places it is repeated with sound and light signals. Then the following announcement is made: "Attention! The Civil Defense Headquarters speaks! Citizens! Radiation hazard! Danger of radiation!." After that, the recommendations and instructions of the Civil Defense headquarters about the protection measures taken, as well as the rules of behavior of the population, are conveyed to the population. People should immediately put on a respirator, a radioactive dust mask or a cotton containment bandage, or, if not available, a gas mask and go to a radiation shelter or radiation ward.

In the area poisoned with radioactive substances, the modes of protection and behavior of the population are determined and announced by the civil defense depending on the level of radiation. The goal is to prevent people from being exposed to radiation in excess of safe doses. In the center of an infectious disease, the entire population is obliged to observe the established mode of behavior.

When infectious diseases are detected: window and door areas should be well conditioned, household items that are rarely used in the household should be glued and kept in places where hands and feet do not get tangled. Food and drinking water should be stored in tightly closed containers. Food and drinking water should be stored in tightly closed containers. It is important to boil or preserve food before use; Cut the bread into small pieces and heat it on the flame (in the oven, in the oven), wash the fruits and vegetables well or pour boiling water over them. Boil water or milk for at least 30 minutes. Dishes should be boiled after washing clean. Before eating, after coming into contact with people, it is necessary to wash hands with soap, clean clothes and shoes often, bathe regularly and keep underwear clean, and avoid dirtying the apartment, yard, workplace, and common areas. It is recommended that each person use separate dishes, household and toilet items.

People should be limited in contact with each other. You can leave the apartment (house) only in the most important cases. When leaving the house, it is necessary to wear personal protective equipment for respiratory organs, to protect the surface of the body, to remove clothes and shoes and leave them outside for disinfection. As soon as the symptoms of an infectious disease appear (fever, headache, loss of appetite, nausea, vomiting, stomach upset), it should be immediately reported to the medical institution, the patient should be placed in a separate room or a certain part of the room, personal belongings, clothes, bedding, utensils it is necessary to disinfect the kitchen, furniture and apartment.

All persons in contact with the patient must undergo complete sanitation. If you have been exposed to harmful factors, then "attention to all!" without waiting for the signal, act immediately according to your previous knowledge. It is necessary to listen carefully to the given information. If an evacuation is announced, you should immediately go to the announced place. You need to take with you documents, toiletries, warm clothes, food and water for a day. All these things should be packed in a bag so that it is easy to carry it for a long time if necessary.

Tell your neighbors about the information you heard, and inform everyone along the way to the evacuation site. Try to appreciate every minute. If you are in a deserted area, you need to carry documents and necessary items to the upper floors. If you are in the forest or desert during subasma, you need to climb higher. If you fall into the current, you should try to stay afloat using aids. It should be taken into account that the information given during the FH changes depending on the situation, and therefore it is necessary to always listen carefully to the information given.

**Literature**

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