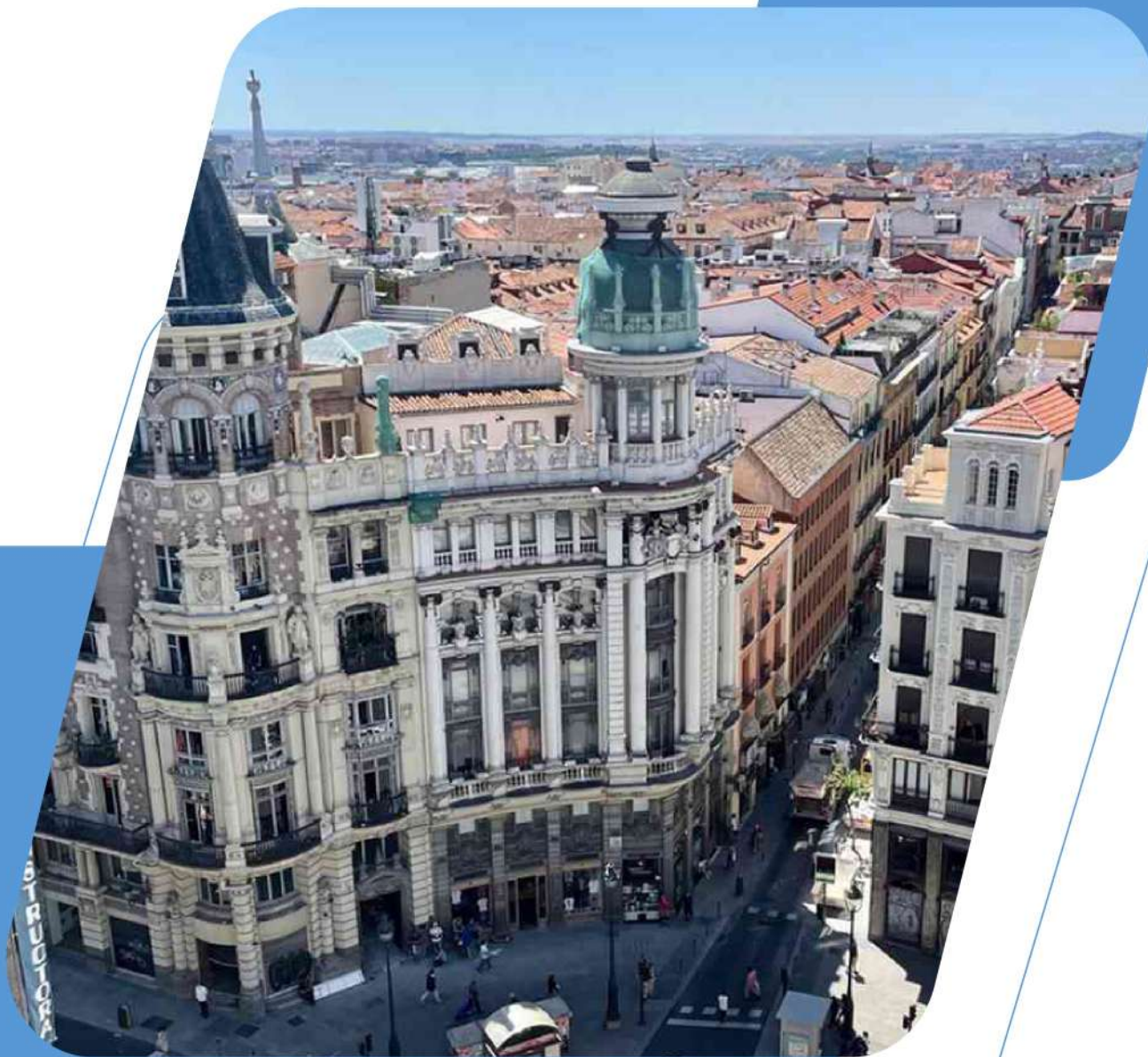




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# MODERN SCIENCE: THEORETICAL AND PRACTICAL VIEW

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## Arts

### THE FIRST STEPS OF FLUTE CREATIVITY IN ALBANIA

**Rozana Kuka**

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#### **Abstract**

Based on research, archival and library studies within the country, previous studies in this field, as well as interviews and discussions with musical personalities and academics, it appears that authentic compositions for the Flute instrument did not exist until after the opening of the "Jordan Misja" Artistic High School in 1946. Before this year, the only compositions for Flute and Piano were four adapted, harmonized, and processed pieces based on Southern Albanian folk musical materials, created by Thoma Nasi in the 1920s and published in 1930. (Figure 1)

The issue lies in whether such arrangements can be considered authentic creativity and how to define the balance between creativity and adaptation...

There are no clearly defined boundaries, as both are forms of artistic expression and thought. When an author refers to a source, particularly folklore, to create an artistic figure, it represents authentic creativity rooted in folklore.

There are numerous examples of both local and international composers who have drawn inspiration from folk music themes to create scenic and symphonic works, such as Zadeja's Symphony and Harapi's Rhapsody for piano and orchestra.

In this context, we are dealing with the harmonization and adaptation of works for the flute, structured within the framework of classical music forms. These represent the initial stages of creative development.

I believe that Thoma Nasi's adaptations for flute (violin) and piano represent genuine creations in this regard, as they are clearly harmonized, structured within specific forms, adhere to defined analytical boundaries, and are ultimately presented in a concert format with piano accompaniment.

**Keywords:** Flute, classical forms, regional modes, Southern Albanian kaba, pentatonic scale.

**Introduction:** Thoma Nasi (1892–1964) was born in Dardhë, Korçë, and graduated in flute from the "New England" Conservatory in Boston between 1916 and 1918. His flute compositions remain relatively unknown. I have managed to secure four of his works—compositions and adaptations for flute (violin) and piano. Upon reviewing the original scores<sup>1</sup> of these creations for flute (violin) and piano of Th. Nasit, it is evident that they are accompanied by the note "adopted" by Prof. Thoma Nasi (adopted by Prof. Thoma Nasi).

In his speech at Harvard, he spoke about his travels to isolated mountainous regions to collect and compile musical themes, "which I hope to develop"<sup>2</sup>. These four compositions for flute (violin) and piano are based on themes from various Albanian regions, three of which have been selected for analysis.

**Methodology:** The methodology I have used is closely related to the nature of the work. The method of analyzing theoretical sources from various authors (Dieter de la Motte, William E. Caplin), as well as the research and scientific method, among others.

The historical-comparative analysis of reference materials, along with the processing of the analysis and data.

<sup>1</sup> Provided by Prof. Dr. Zana Shuteriqi Prela.

<sup>2</sup> From the speech held by Thoma Nasi at Harvard.





Figure 1

Let's take a closer look at each of these flute miniatures, a term that perfectly fits them.

In the section titled "The Nightingale" (Figure 2), as a musical form, we have an instrumental SKETCH that is constructed and developed based on the principle of variation. Here, the thematic phrase shifts across two metric units, placed opposite each other as question and answer. On the other hand, the continuous harmonic variation from one variation to the next brings a fresh perspective to the thematic material. The sketch begins with the piano, with the theme being presented twice in the right hand without ever resolving to a perfect cadence. The thematic phrase consists of two measures, where the first measure resolves on the third degree ( $Bb+$ ), and the second measure resolves on the tonic ( $G-$ ), but in a melodic fifth interval, leaving the musical thought open to continue into the next variation.

The theme appears on the solo instrument, precisely in the dominant of the main tonality, transitioning into the major subdominant with a sixth (where the fifth is missing), before resolving to the tonic, reinforced by the progression T-D-T. The same structure is maintained in the fourth appearance of the theme (in the third variation), where the major subdominant is replaced by the double dominant of  $G-$ , which then moves to  $D7$  and finally resolves to the tonic, further reinforced by the progression T-D-T.

The fourth variation is nothing more than a preparation for the modulation to C major of the theme, achieved by transitioning to the major tonic (from  $G-$  to  $G+$ ) in the first measure, before resolving in the second measure of this variation to C major.

The fifth variation confirms the modulation to C major, but in this case, for the new key (C major), there is a shift toward the sixth degree, and the full progression is:  $D7$  to VI-II-D-T.

In the sixth variation, through a well-placed contrast, we move to A minor in the first measure, before returning to C major as an interrupted cadence. Here, the major dominant is replaced by the minor dominant, which leads back to C major in the second measure with the major dominant (D-T).

The seventh and final variation confirms the final transition of the thematic material to A minor, holding a tonic pedal in accompaniment ( $A-$ ), and in the last measure, the progression S-D6-T is used, specifically:  $F+-E6-A-$ .

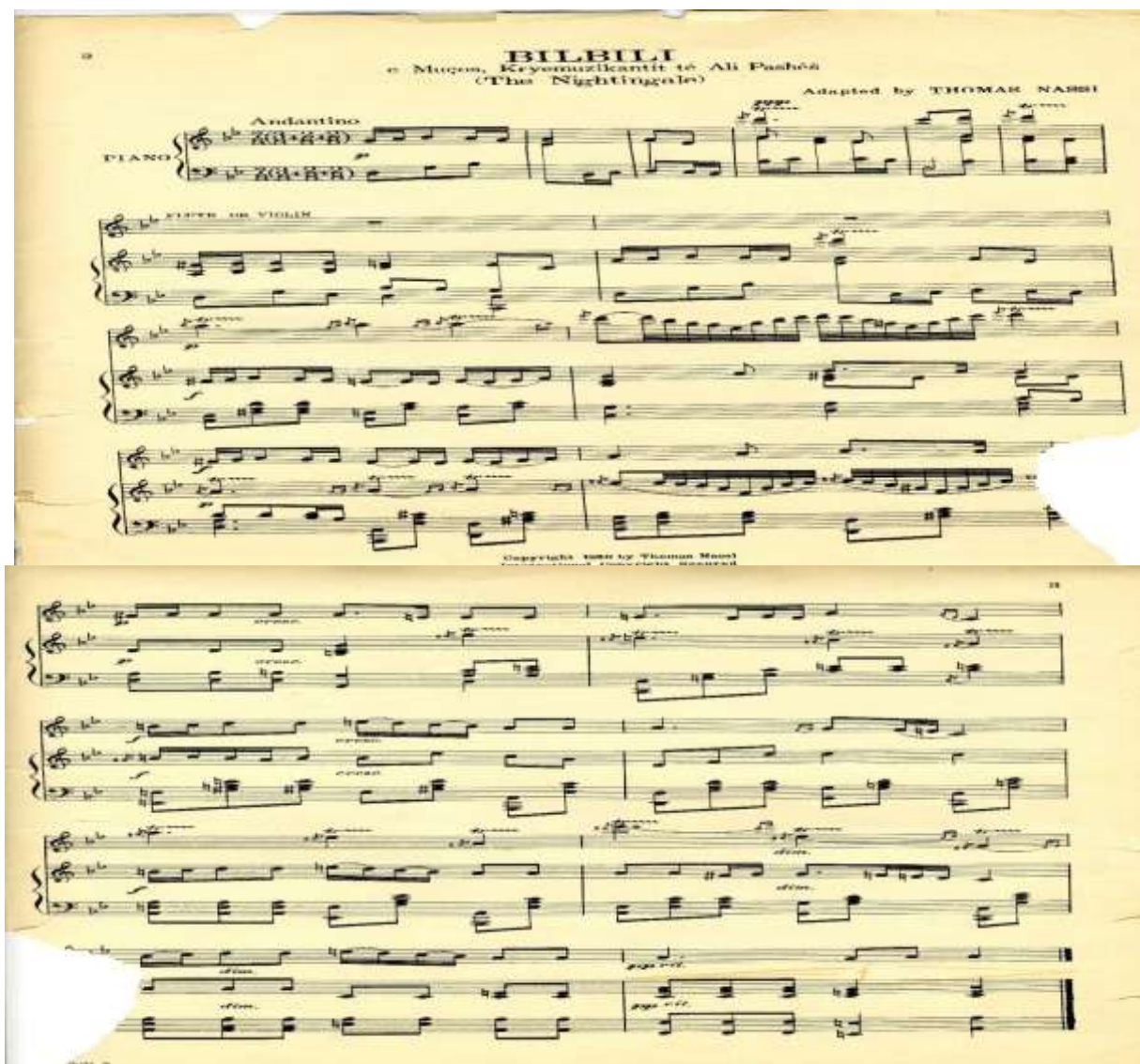


Figure 2

The section titled "The Lament" (Figure 3), is also an instrumental sketch, but structured in a Two-Part form, where the thematic materials are clearly interconnected.

The first section, *Andante lamentoso*, is based on a modo-tonal harmony. It exhibits dual tendencies, which make it distinctive, giving it an elegiac lyrical character. The frequent use of the pentatonic scale, intertwined with the hexatonic scale, as well as the coexistence of major and minor, emphasize this character. The melody moves within the aforementioned modes, supported by accompaniment from multifunctional harmony (incorporating multiple modes and functions simultaneously), which subtly underscores the doubts and instability of the grieving character. This first section consists of two phrases. Notably, in the first phrase, the first sentence does not match the second in length. The first sentence is seven measures long, while the second extends to nine measures, an irregularity arising from the thematic content. As music, this enters the realm of programmatic music (lament), which often leads to a departure from the symmetrical contours of musical development. In fact, if we examine the second sentence of the first phrase, we realize that emotional fluctuations lead to an unpredictable development of the musical thought. The second sentence flows more freely with more frequent harmonic changes. The second phrase is a freer development of the thematic material from the second sentence of the first phrase, both in terms of melody, register, and harmony. The two thematic phrases of the second section of the first part move through all three registers of the instrument, emphasizing the pain and emotional instability. This causes the second section to be asymmetric in comparison to the first (the first contains 16 measures, while the second spans 24 measures). This asymmetry arises from the emotional content of the theme itself, which calls for a resolution by expanding the development of the theme, culminating in the final peak of the second section, in the melodic fifth interval of G+.

The second section of this sketch is clearer, both thematically and rhythmically and harmonically.



Both thematic phrases appear to be derived from the musical material of the first section, yet rhythmically, it is more dynamic, suggesting that life goes on. This is further reflected in the piano accompaniment, which features a more rhythmic and dance-like texture. Harmonically, the coexistence of major and minor modes, as well as the construction of the theme in the pentatonic scale, makes the sketch unified in its content, constantly reminding us that within joy lies the pain and nostalgia for the losses in life.



Figure 3



The third section, titled "SUITE WITH ALBANIAN FOLK DANCES" (Figure 4) by the author, recalls European Baroque Suites, which were built upon the folk dances of Europe, such as Allemande, Gigue, Sarabande, etc. In this suite with four dances, the same structure as the old suites is preserved: it begins with two slow dances (moderato), followed by an allegretto, and ends with a fast dance (allegro). The author has also carefully considered the tonal structure, starting with the first dance in A major, the second in D major, the third in A minor, and concluding the fourth dance in A minor before resolving back to A major, creating harmonic unity throughout the suite.

The first dance is structured in a two-part form, with both thematic materials built upon the pentatonic scale, accompanied by tonal harmony in the piano part. This harmony often shifts to bifunctional harmony, overlapping A major with A minor. This characteristic is also present in the two previously analyzed sketches (The Nightingale and The Lament), reflecting the folk traditions of the southern regions. However, it is also common in the piano accompaniment to see tonal harmonies with functional progressions such as T-D-T or s-D-T, possibly as a result of the influence of the school where the author was trained. These same features are evident in the other three dances, which create a joyful atmosphere, while, above all, maintaining an authentic Albanian character.



Figure 4

**Conclusion:** In conclusion, based on the analysis of these three pieces, I would say that it is clear that each is an authentic composition rooted in the folk intonations of southern Albania. It is noticeable that their richness derives from a complete reliance on the source material of the southern folk songs, guided by clear principles of logical thematic-harmonic progressions. In every modulation, there is a distinct harmonic pull toward the tonic, whether through the subdominant, the third degree, or the dominant etc. The piano accompaniment emphasizes these harmonic transitions, especially in the first piece, highlighting the colorful atmosphere of the natural environment where the nightingale resides, the elegiac lyrical character of the grieving figure in the second piece, and the joyful character of the dances from the southern Albanian regions. It is evident that the author is deeply familiar with this genre (kaba and the improvisational nature of southern Albanian folk music), painting a vivid and captivating landscape of this wonderful environment. Thoma Nasi remains a pioneer of cultivated Albanian music and the foremost creator of flute and accompaniment works in our country.

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## Mathematical sciences

### METHODOLOGICAL GUIDELINES FOR TEACHING THE SOLUTION OF CONSTRUCTION PROBLEMS

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### САЛУ ЕСЕБІН ШЕШУДІ ҮЙРЕТУГЕ ӘДІСТЕМЕЛІК НҰСҚАУЛАР

**Серікбаева Берекет Алдабергенқызы**

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#### **Abstract**

A geometric construction problem is a problem that requires finding specific geometric elements (such as a point, line, circle, triangle, etc.) based on given conditions. These elements must satisfy the given constraints, and a specified set of tools must be used to construct them. Typically, these tools include a ruler and a compass, but in some cases, the set of permissible tools may be restricted or expanded.

Teaching students to solve construction problems presents significant methodological challenges. This is because two main objectives must be achieved: first, solving the given problem, and second, teaching students how to solve construction problems. This involves familiarizing them with general problem-solving methods, analyzing the desired figure, and demonstrating how to find the solution through reasoning and conjecture.

This article examines the fundamental elementary constructions used in solving construction problems, the stages of solving such problems, and provides illustrative examples.

#### **Аңдатпа**

Геометриялық салу есебі — бұл берілген деректер бойынша белгілі бір геометриялық элементтерді (нүкте, түзу, шеңбер, үшбұрыш және т.б.) табуды талап ететін есеп. Бұл элементтер берілген шарттарға сәйкес болуы тиіс және оларды салу үшін көрсетілген құралдар жиынтығын қолдану қажет. Көбінесе бұл құралдар сызғыш пен циркуль болады, бірақ кейде қолдануға болатын құралдар жиынтығы шектелуі немесе керісінше кеңейтілуі мүмкін.

Оқушылармен салу есептерін шешу кезінде үлкен әдістемелік қиындықтар туындайды. Себебі бұл кезде екі негізгі мақсат көзделеді: біріншіден, берілген есепті шешу, екіншіден, оқушыларды салу есептерін шешуге үйрету, яғни оларды есеп шешудің жалпы тәсілдерімен таныстыру, ізделінетін фигураны талдау, ой-тұжырымдар мен болжамдар арқылы есептің шешімін табуды көрсету.

Бұл мақалада салу есептерін шешуде қолданылатын негізгі элементарлық салулар, салу есептерін шешу кезеңдері, мысалдар қарастырылады.

#### **Аннотация**

Геометрическая задача на построение — это задача, требующая нахождения определенных геометрических элементов (точка, прямая, окружность, треугольник и т. д.) на основе заданных данных. Эти элементы должны соответствовать указанным условиям, и для их построения необходимо использовать определенный набор инструментов. Чаще всего такими инструментами являются линейка и циркуль, но иногда набор доступных инструментов может быть ограничен или, наоборот, расширен.

При решении задач на построение с учащимися возникают значительные методические трудности. Это связано с двумя основными целями: во-первых, решение данной задачи, и, во-вторых, обучение учащихся решению таких задач, то есть знакомство их с общими способами решения, анализ искомой фигуры, формирование гипотез и выводов для нахождения решения задачи.

В данной статье рассматриваются основные элементарные построения, используемые при решении задач на построение, этапы решения задач на построение, а также приводятся примеры.

**Keywords:** solving construction problems, analysis, construction, proof, investigation, elementary constructions (EC).

**Кілт сөздер:** салу есептерін шешу, талдау, салу, дәлелдеу, зерттеу, элементар салулар (ЭС).

**Ключевые слова:** решение задач на построение, анализ, построение, доказательство, исследование, элементарные построения (ЭП).

### **Кіріспе**

Адам мен қоғамның өмірі күн сайын әртүрлі мазмұны, маңызы және оларды шешу әдістері бойынша ерекшеленетін есептерді шешуден тұрады. Көптеген есептер адам тарапынан мақсатты әрекет арқылы шешіледі, ал кейбірі күтпеген жағдайда пайда болып, жоспарланбаған шешімдер қабылдауды қажет етеді.

Есептерді шешу – интеллектінің ерекше қасиеті, ал интеллект – адамға берілген ерекше сый. Сондықтан **«есептерді шешуді адамның ең жақсы әрекетінің бірі ретінде қарастыру қажет»**. Математикалық есептердің ішінде үлкен топты **геометриялық есептер** құрайды, олар геометрияның өзіне тән ерекшеліктерімен сипатталады.

Біріншіден, кез келген геометриялық есептің мазмұнын **объектілер** (фигуралар, олардың элементтері мен жиынтықтары, қасиеттері және оларды байланыстыратын қатынастар) құрайды. Бұл объектілер шынайы физикалық кеңістіктің математикалық модельдері болып табылады.

**Геометрия** алгебрадан айырмашылығы, кеңістікті, оның құрылымын және пішіндерін қабылдау арқылы **нақты шындықпен** тығыз байланысты.

Екіншіден, кез келген геометриялық есепті шешу барысында, мейлі ол есептеу, дәлелдеу немесе салу есебі болсын, есепте айтылатын фигураның сызбасына (**чертежіне**) немесе **моделіне** сүйенуге болады.

Есептің шешімін іздеуді, барынша толық барлық шарттарға жауап беретін фигураны салудан бастау қажет. Шарттарға және талаптарға сәйкес келетін егжей-тегжейлі сызба (чертеж), салынған фигураның элементтерін өлшеуге немесе оның қасиеттерін құралдармен тексеруге мүмкіндік береді. Бұл гипотезаларды ұсынуға көмектеседі, оларды кейін дәлелдеу немесе жоққа шығару қажет болады.

Үшіншіден, сызба сызу үшін арнайы құралдарды қолдану қажет: сызғыш, бұрыш өлшеуіш, транспортир, циркуль және басқа да құралдар, әсіресе салу есептерінде.

Геометриялық салу есептері Евклидтік геометрияда және проективті геометрияда маңызды рөл атқарады.

Белгілі болғандай, геометриялық салу есебі — бұл берілген деректер бойынша белгілі бір геометриялық элементтерді (нүкте, түзу, шеңбер, үшбұрыш және т.б.) табуды талап ететін есеп. Бұл элементтер берілген шарттарға сәйкес болуы тиіс және оларды салу үшін көрсетілген құралдар жиынтығын қолдану қажет. Көбінесе бұл құралдар сызғыш пен циркуль болады, бірақ кейде қолдануға болатын құралдар жиынтығы шектелуі немесе керісінше кеңейтілуі мүмкін.

Оқушылармен салу есептерін шешу кезінде үлкен әдістемелік қиындықтар туындайды. Себебі бұл кезде екі негізгі мақсат көзделеді: біріншіден, берілген есепті шешу, екіншіден, оқушыларды салу есептерін шешуге үйрету, яғни оларды есеп шешудің жалпы тәсілдерімен таныстыру, ізделінетін фигураны талдау, ой-тұжырымдар мен болжамдар арқылы есептің шешімін табуды көрсету.

Екінші мақсат бірінші мақсаттан айтарлықтай күрделірек және оны жүзеге асыру үшін орта мектепте мұғалімнен үлкен еңбек пен жүйелі жұмыс талап етіледі, себебі салу есептерін шешу оқушылар үшін жаңадан басталатын жұмыс түрі. Көптеген жағдайларда жаңа есепті



шешу жолын табу оқушылар үшін шағын жаңалық болып табылады және сонымен бірге зерттеу процесі болып табылады.

Қиындықты одан әрі арттыратын жағдай – бұл есептің шешімін табу көбінесе өте күрделі процесс болып табылады және ол оқушылардан үлкен назар аударуды талап етеді. Бұл жұмыс сәтті жүзеге асуы үшін оқушыларды есептерді шешуге қызықтыру қажет, олар бұл жұмыс неғұрлым қызықты екенін түсінуі тиіс. Сондықтан оқушылардың тапқырлығын, бастамашылдығын, өз бетімен шешім табуға деген ұмтылысын әрдайым қолдау керек.

### **Негізгі бөлім**

Орта мектепте оқытылатын салу есептерін шешудің негізгі әдістеріне мыналар жатады:

1. Нүктелердің геометриялық орындар (қиылысулар) әдісі;
2. Геометриялық түрлендірулер әдістері:

- a) Орталық симметрия әдісі;
- б) Осьтік симметрия әдісі;
- в) Параллель көшіру әдісі;
- г) Айналдыру әдісі;
- д) Ұқсастық әдісі;

### 3. Алгебралық әдіс.

Салу есептерін шешуде қолданылатын негізгі элементарлық салуларды сипаттайық:

**ЭС 1.** Екі белгілі нүкте арқылы түзу жүргізу.

**ЭС 2.** Берілген сәуледе оның басынан ұзындығы берілген кесіндіге тең кесінді белгілеу.

**ЭС 3.** Екі белгілі түзудің қиылысу нүктесін анықтау.

**ЭС 4.** Берілген сәуледен белгілі бір жарты жазықтыққа берілген бұрышқа тең бұрыш салу.

**ЭС 5.** Үш қабырғасы бойынша үшбұрыш салу.

**ЭС 6.** Екі қабырғасы және олардың арасындағы бұрышы бойынша үшбұрыш салу.

**ЭС 7.** Бір қабырғасы және оған іргелес екі бұрышы бойынша үшбұрыш салу.

**ЭС 8.** Берілген жазыңқы емес бұрыштың биссектрисасын салу.

**ЭС 9.** Берілген кесіндінің орта перпендикулярларын салу.

**ЭС 10.** Берілген кесіндінің ортасын салу.

**ЭС 11.** Берілген нүкте арқылы өтетін және берілген түзуге перпендикуляр болатын түзу салу. Бұл жағдайда берілген нүкте сол түзу бойында жатуы мүмкін немесе жатпауы мүмкін.

**ЭС 12.** Берілген нүкте арқылы өтетін және берілген түзуге параллель болатын түзу салу.

**ЭС 13.** Гипотенузасы бойынша тік бұрышты үшбұрыш салу.

**ЭС 14.** Гипотенузасы және катеті бойынша тік бұрышты үшбұрыш салу.

**ЭС 15.** Белгілі центрі мен радиусы бар шеңбер салу.

**ЭС 16.** Белгілі түзу мен белгілі шеңбердің қиылысу нүктелерін анықтау.

**ЭС 17.** Шеңбердің бойындағы берілген нүкте арқылы өтетін жанама салу.

**ЭС 18.** Екі белгілі шеңбердің қиылысу нүктелерін анықтау.

Салу есептерін шешу кезінде келесі төрт кезеңнен тұратын белгілі шешу схемасын қолдану ұсынылады: 1) талдау; 2) салу; 3) дәлелдеу; 4) зерттеу.

Осы схеманың әрбір кезеңін қарастырайық.

**1.Талдау.** Ол ізделінді фигураны салуға мүмкіндік беретін байланыстарды табудан тұрады.

**2.Салу.** Ол ізделінді фигураны салу үшін орындауға жеткілікті негізгі салулардың бірізділігін көрсетуден тұрады.

**3.Дәлелдеу** салынған фигураның есептің барлық шарттарын қанағаттандыратындығын анықтаудан тұрады.

**4.Зерттеу** салуды әрқашан да таңдап алынған тәсілмен орындауға болатынын және есептің неше шешімі бар екенін анықтайды.

Салу есептеріне мысалдар келтірейік.

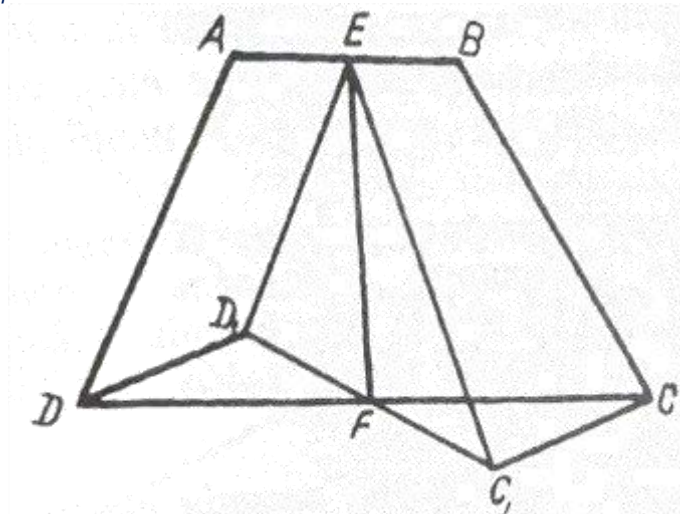
**1-мысал.** Барлық төрт қабырғасы және қарама-қарсы екі қабырғасының орталарын қосатын кесінді берілген жағдайда ABCD төртбұрышын салу керек.

**Талдау.** ABCD – ізделген төртбұрыш, EF – AB және DC қабырғаларының орталарын қосатын кесінді болсын. AD қабырғасын параллель жылжытып ED<sub>1</sub> және BC қабырғасын параллель жылжытып EC<sub>1</sub>

жағдайына келтіреміз, сонда DD<sub>1</sub>=AE, DD<sub>1</sub>||AE; CC<sub>1</sub>=BE, CC<sub>1</sub>||BE, DF = CF – бұлар шарт бойынша, демек,  $\triangle DD_1F = \triangle FC_1C$  (екі қабырғасы және олардың арасындағы бұрышы бойынша тең). Бұл үшбұрыштардың теңдігінен  $\angle DFD_1 = \angle CFC_1$  шығады. Демек, D<sub>1</sub>, F және C<sub>1</sub> – нүктелері бір

түзудің бойында жатады.  $D_1EC_1$  үшбұрышында екі қабырғасы мен үшінші медианасы белгілі болғанда оны салуға болады. Бұдан соң үш қабырғасы бойынша  $\triangle DD_1F$  және  $\triangle FCC_1$  үшбұрыштарын салып,  $DAED_1$  және  $BEC_1C$  параллелограмдарын салуға болады. Бұдан соң  $A$  және  $B$  нүктелері анықталады.

Салу.  $DEC_1$  үшбұрышын  $D_1E=AD$  және  $EC_1=BC$ , сондай-ақ  $EF$  медианасы бойынша саламыз. Бұл үшін ең алдымен  $2EF$ ,  $ED_1$ ,  $EC_1$  үш қабырғасы бойынша үшбұрыш салып, оны параллелограмға дейін толықтырамыз. Осы параллелограмның жартысы  $D_1EC_1$  – үшбұрышы болады. Қабырғалары  $\frac{1}{2}DC$  және  $\frac{1}{2}AB$  болатын өзара тең үшбұрыштар  $D_1F$  және  $FC_1$  кесінділеріне салынады. Бұлар арқылы  $D$  және  $C$  нүктелерін саламыз.  $DAED_1$  және  $BEC_1C$  параллелограмдарын салып,  $A$  және  $B$  нүктелерін табамыз.



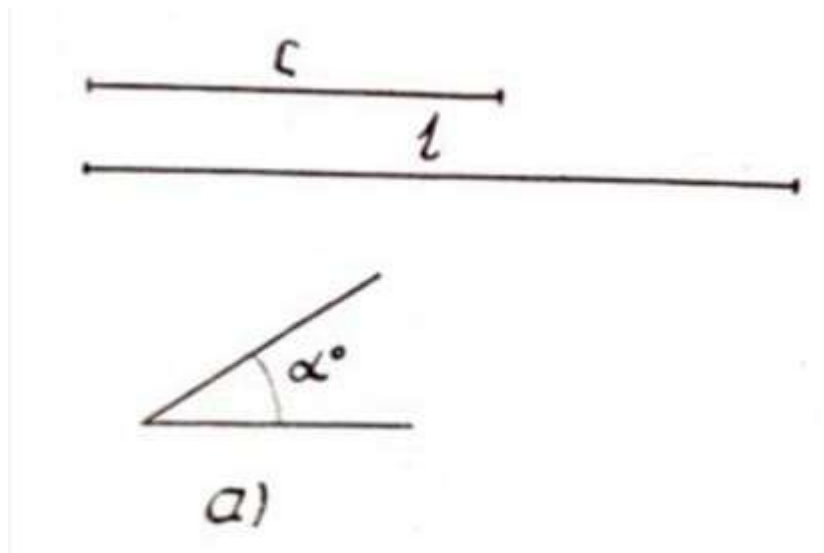
1-сурет

Дәлелдеу.  $ABCD$  төртбұрышы – ізделген төртбұрыш, себебі ол есептің барлық шарттарын қанағаттандырады.  $DF$  және  $FC$  бір түзудің бойында жатыр, себебі  $\angle DFD_1 = \angle FCC_1$  және  $DF_1$  және  $C_1F$  бір түзудің бойында жатыр.

Зерттеу.  $ED_1C_1$  үшбұрышын салу үшін  $2EF < AD + BC$  және  $2EF > |AD - BC|$  шарттарының орындалуы қажетті, ал  $\triangle DD_1F$  және  $\triangle FCC_1$  – салу үшін  $D_1F < \frac{1}{2}(AB + CD)$  және  $D_1F > |AB - CD|$  шарттары орындалуы қажетті. Егер бұл шарттар орындалса, онда есептің бір ғана шешімі бар болады.

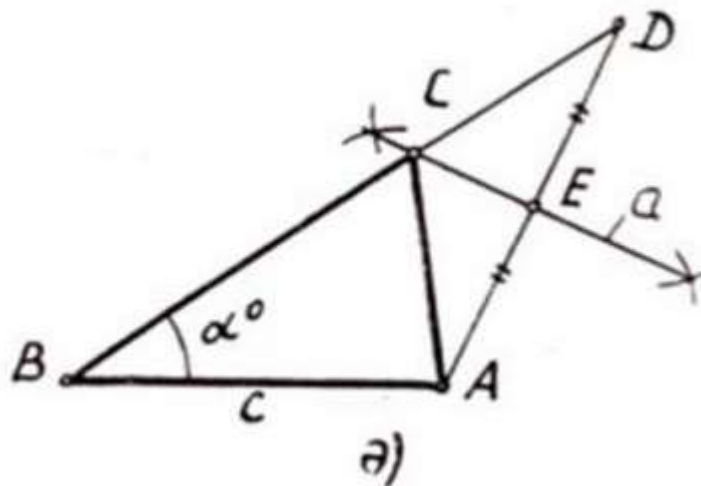
2-мысал. Үшбұрыштың бір қабырғасының ұзындығы  $c$ , оған іргелес бұрышы  $\alpha$  және қалған екі қабырғасының ұзындықтарының қосындысы  $l$  болсын. Осы үшбұрышты салу керек (2а. сурет).

Талдау. Есеп шешіледі, яғни  $ABC$  үшбұрышы іздеп отырған үшбұрыш екен делік.  $ABC$  үшбұрышының  $BC$  қабырғасын  $C$  төбесінен ары қарай созып, оның созындығына ұзындығы  $AC$  кесіндісінің ұзындығына тең  $CD$  кесіндісін салалық. Сонда  $B$ ,  $C$  және  $D$  нүктелері бір түзудің бойында жатады және  $|CD| = |AC|$ . Енді  $D$  нүктесін  $A$  нүктесімен қоссақ,  $ABC$  және  $ACD$  үшбұрыштарын аламыз. Соңғы  $ACD$  үшбұрышы теңбүйірлі үшбұрыш, өйткені оның  $AC$  мен  $CD$  қабырғалары тең. Олай болса, оның  $C$  төбесінен  $AD$  табанына түсірілген  $a$  перпендикуляр осы  $AD$  кесіндісінің дәл ортасы болатын  $E$  нүктесі арқылы өтеді. Енді есепті шешу кезеңдерін көрсету оңай. Ең алдымен үшбұрыш  $ABD$  салынады. Ол оның қабырғалары  $c$  және  $l$ , ал екеуінің арасында жатқан бұрышы  $\alpha$  болатын үшбұрыш. Оның қабырғасын ( $AD$  кесіндісін) тең екі бөлікке бөлетін  $E$  нүктесі табылады. Осы  $E$  нүктесінен өтетін  $AD$  түзуіне  $a$  перпендикуляр жүргізіледі. Осы  $a$  түзуі және  $BD$  кесіндісі  $C$  нүктесінде қиылысады. Екі  $C$  және  $A$  нүктелерін қосамыз.



2а. сурет

Салу. Қандай да бір түзу жүргізіп, оған  $AB$  кесіндісін саламыз.  $AB$  кесіндісінің ұзындығы  $c$  тең.  $B$  нүктесі арқылы  $AB$  түзуіне  $\alpha$ -ге тең бұрышпен көлбейтін түзу жүргіземіз де, оған  $B$  нүктесінен бастап ұзындығы  $l$  тең кесінді саламыз. Сонда алынған  $D$  нүктесі бір бұрышы  $\alpha$  болатын  $ABD$  үшбұрышының төбесі болатын. Енді  $AD$  кесіндісінің ортаңғы перпендикуляры болатын  $a$  түзуін салып, оның  $BD$  кесіндісімен қиылысу нүктесін аламыз. Осы табылған  $C$  нүктесін  $A$  нүктесімен қосып, іздеп отырған  $ABC$  үшбұрышын салуды аяқтаймыз (2а. сурет).



2а. сурет

Дәлелдеу. Табылған  $ABC$  үшбұрышының бір қабырғасы, яғни  $AB$  қабырғасы  $c$ -ға тең, ал оған іргелес бұрышы  $\angle ABC = \alpha$ . Салынған  $a$  түзуі  $AD$  кесіндісінің ортаңғы перпендикуляры болғандықтан, оның бойындағы  $C$  нүктесі  $A$  және  $D$  нүктелерінен бірдей қашықтықта орналасады, яғни  $|AC| = |DC|$ . Салуымыз бойынша  $|BD| = l = |BC| + |CD| = |BC| + |AC|$ . Сонда  $ABC$  үшбұрышының қалған екі қабырғаларының ұзындықтарының қосындысы берілген  $l$  кесіндісіне тең. Сонымен,  $ABC$  үшбұрышы есептің берілген шарттарын түгелдей қанағаттандырады.

Зерттеу. Егер  $l \leq c$  болса, есептің шешуі болмайды; өйткені үшбұрыштың кез келген екі қабырғасының қосындысы үшінші қабырғасынан үлкен болады. Сондықтан  $l > c$  болады. Осы жағдайда есептің шешуі болатынын және оның тек біреу екенін көрсетелік.  $ABC$  үшбұрышының  $AD$  қабырғасымен қиылысатын түзу  $a$ , оның тағы бір қабырғасымен қиылысуы тиіс. Егер  $a$  түзуі үшбұрыштың  $AB$  қабырғасымен  $F$  нүктесінде қиылысатын болса, онда  $|AB| = |AF| + |BF| = |DF| + |BF| > |BD| = l$  болар еді. Бірақ  $l > c$ ,  $|BD| > |AB|$ . Олай болса,  $a$  түзуі  $ABD$  үшбұрышының  $BD$  қабырғасымен қиылысады, яғни есептің шешуі болады. Түзу мен түзудің кесіндісі тек бір нүктеде қиылысуы мүмкін; олай болса, есептің шешуі де тек біреу ғана болады.



Оқушылардың салу есептерін тиімді меңгеруі үшін арнайы әдістемелік нұсқаулар қолданылуы қажет.

Алдымен оқушыларға теориялық негіздерді меңгерту маңызды. Геометриялық салу ұғымдарын, негізгі құралдарды – сызғыш, циркуль, транспортир сияқты құралдарды – қалай пайдалану керектігін түсіндіру алғашқы қадам болып табылады. Сонымен қатар, салу есептерін шешу барысында қолданылатын негізгі геометриялық теоремалар мен қасиеттерді қайталау қажет. Мысалы, үшбұрыштардың теңдік белгілері, параллель және перпендикуляр түзулердің қасиеттері, шеңберге қатысты теоремалар есептерді шешу барысында басты рөл атқарады.

Кез келген салу есебін шешу белгілі бір кезеңдерден тұрады. Ең алдымен, оқушылар есептің шартын талдап, қажетті элементтерді анықтауы керек. Осы кезеңде олар қандай фигуралар мен қатынастар берілгенін және қандай құралдарды қолдануға болатынын айқындайды. Одан кейін есептің негізгі салу кезеңі басталады. Бұл кезеңде оқушылар берілген шарттар негізінде қажетті фигураларды салады. Дегенмен, тек сызбаны құру жеткіліксіз, оның дұрыстығын дәлелдеу қажет. Осы мақсатта оқушылар өз сызбаларының есептің шарттарына сәйкес келетінін тексеруі керек. Соңғы қадам – қорытынды жасау. Мұнда шешімнің дұрыстығы бағаланып, оның қаншалықты тиімді екені қарастырылады.

Салу есептерін оқытуда көрнекіліктер мен заманауи технологияларды пайдалану өте маңызды. Қазіргі таңда интерактивті тақталар, GeoGebra, Desmos сияқты бағдарламалар арқылы есептердің визуализациясын жасауға болады. Бұл құралдар есептің шешімін динамикалық түрде көрсетіп, оқушылардың түсінігін арттырады. Сонымен қатар, есептерді қағазға қолмен сызу дағдыларын дамыту да назардан тыс қалмауы керек. Өйткені, қағаз бен қаламды пайдалану оқушылардың геометриялық сызу дағдыларын жетілдіріп, олардың геометрияны жақсы меңгеруіне көмектеседі.

Салу есептері деңгейлер бойынша жіктелуі керек. Оқушылар алдымен қарапайым салу элементтерін меңгергені жөн. Бұл кезеңде қиылысу, параллель түзулер салу, белгілі бір қашықтықта орналасқан нүктелерді табу сияқты тапсырмалар беріледі. Орташа деңгейдегі есептерге үшбұрыштар мен төртбұрыштарға қатысты салу есептері жатады. Мұнда оқушылар фигураларды белгілі бір элементтері арқылы салуды үйренеді. Күрделі тапсырмаларға бірнеше кезеңнен тұратын немесе эвристикалық әдістерді қажет ететін есептер жатады. Бұл есептер оқушылардың шығармашылық қабілеттерін дамытып, олардың математикалық ойлау қабілетін шыңдайды.

Салу есептерін үйретуде алгоритмдік ойлауды қалыптастыру маңызды. Әрбір есепті шешу үшін белгілі бір қадамдар жүйесін белгілеу арқылы оқушылардың құрылымдық ойлауын дамытуға болады. Бұл әдіс оларға кез келген салу есебінің шешімін жүйелі түрде табуға көмектеседі. Оқушыларға нақты алгоритмдер ұсыну, мысалы, "алдымен берілгендерді анықтау, содан кейін қажетті элементтерді салу, соңында шешімді тексеру" сияқты қадамдарды ұстану олардың математикалық сауаттылығын арттырады.

Шығармашылық пен зерттеушілік дағдыларды дамыту да маңызды аспектілердің бірі болып табылады. Бір есептің бірнеше шешу жолдарын қарастыру, жаңа тәсілдер ойлап табу оқушылардың геометрияны тереңірек түсінуіне көмектеседі. Сондай-ақ, оқушыларды өздігінен салу есептерін құрастыруға бағыттау олардың шығармашылық қабілеттерін арттырады. Бұл әдіс арқылы олар тек дайын есептерді шешіп қана қоймай, жаңа есептер ойлап тауып, өз бетінше шешу жолдарын іздестіретін болады.

Оқушылардың өз жұмыстарына рефлексия жасауына мүмкіндік беру де өте маңызды. Олар өз шешімдерін талдап, қателіктерін түсіну арқылы қателерін түзетуді үйренуі керек. Өзіндік бағалау жүйесін енгізу арқылы оқушылардың жауапкершілігін арттырып, оларды өз жұмыстарын талдауға ынталандыруға болады.

Қорыта айтқанда, салу есептерін шығарудың кезеңдерін пайдалана отырып, оны қандай әдіспен шығарған тиімді болатындығын анықтауға үйретуге болады. Ол үшін оқушыларды:

- салу есептерін шығарудың арнайы әдістерімен таныстыру;
- берілген есептерді сол әдістердің қайсысымен шығаруға болатынын анықтауды үйрету;
- қандай да бір әдіспен шығарылатын есептердің өзіндік белгілерін ажырата білуге үйрету

болады.

Салу есептерін тиімді оқыту үшін теориялық білімді практикамен ұштастыру, көрнекі құралдарды пайдалану, алгоритмдік және шығармашылық ойлауды дамыту қажет. Мұғалімдер оқушылардың деңгейіне қарай тапсырмалар беріп, олардың математикалық қабілеттерін дамытуға көңіл бөлуі керек. Сондай-ақ, оқушылардың мотивациясын арттыру үшін қызықты

және практикалық есептерді қолдану пайдалы.

Бұл әдістемелік нұсқаулар салу есептерін үйретудің тиімділігін арттырып, оқушылардың геометриялық ойлау қабілетін дамытуға ықпал етеді.

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## Medical sciences

### **EVALUATION OF PATIENT SATISFACTION WITH THE QUALITY OF MEDICAL CARE PROVIDED BY GENERAL PRACTITIONERS IN KYIV**

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### **ОЦІНКА ЗАДОВОЛЕНOSTІ ПАЦІЄНТІВ ЯКІСТЮ МЕДИЧНОЇ ДОПОМОГИ, НАДАНОЇ ЛІКАРЯМИ ЗАГАЛЬНОЇ ПРАКТИКИ-СІМЕЙНИМИ ЛІКАРЯМИ У М. КИЄВІ**

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**Вступ.** Ключовим компонентом якості медичної допомоги є задоволеність пацієнтів, особливо щодо лікаря первинної медичної допомоги, який є першим контактом у закладах охорони здоров'я. Оцінка якості медичних послуг значною мірою залежить від задоволеності пацієнтів. Думки пацієнта та його задоволеність наданими послугами мають важливе значення для оцінки якості послуг. Задоволеність пацієнтів може бути пов'язана з етнічними, регіональними та соціально-демографічними особливостями, які визначаються відмінностями в якості послуг, комунікації між пацієнтом та лікарем. Крім того, чинники, такі як вік, тяжкість захворювання, стать, стан здоров'я, медичне страхування також впливають на задоволеність пацієнтів.

**Мета дослідження** було вивчення рівень задоволеності пацієнтів якістю медичної допомоги, наданої лікарями загальної практики-сімейними лікарями (ЗПСЛ) у закладах охорони здоров'я, за результатами опитування пацієнтів з урахуванням статевих відмінностей.

#### **Матеріали та методи дослідження.**

Було проведено опитування 510 пацієнтів за анкетною для вивчення задоволеності та якістю надання медичної допомоги лікарями загальної практики-сімейними лікарями в центрах первинної медичної допомоги в м. Києві. Анкета була розроблена на кафедрі менеджменту охорони здоров'я Національного медичного університету імені О.О. Богомольця та яка містила 5 запитань, серед яких були питання щодо способу запису до сімейного лікаря (питання №1), причини звернення (питання №2), оцінки організації запису на прийом до сімейного лікаря (питання №3), щодо якості надання медичної допомоги лікарем (питання №4), щодо ставлення лікаря до пацієнта під час прийому (питання №5).

Розподіл за статтю включав 186 осіб чоловічої та 324 особи жіночої статі. Для оцінки результатів опитування була використана шкала сумарних оцінок Лайкерта (англ. Likert scale) у якій пацієнти оцінювали ступінь своєї згоди або незгоди з кожним судженням, від «дуже погано» до «дуже добре» за 5-ти бальною оцінкою т. Оцінка 4 та 5 балів були оцінені як позитивна оцінка відповіді на питання, 1-3 бали як негативна оцінка відповіді на питання та 0 балів – як не можуть оцінити.

Для аналізу використали методику Mann-Whitney. Аналіз результатів дослідження проводився з використанням ліцензійного пакету the statistical analysis package MedCalc v.19.4.1 (MedCalc Software Inc, Broekstraat, Belgium, 1993–2020).

#### **Результати дослідження**

Отримані результати щодо способу запису до лікаря ЗПСЛ свідчать, що 53,5% пацієнтів вважають зручним записуватися на прийом до лікаря через електронну систему запису, 27,6% – по телефону, і 18,9% – через реєстратуру (питання №1). При порівнянні відповідей за статтю за критерієм Манна-Уїтні результати вказують на відсутність достовірних гендерних відмінностей ( $p=0,89$ ). Тобто вказані групи не відрізнялися за статтю. В групі пацієнтів частка респондентів жіночої статі становила 53,7% та 53,2% респондентів чоловічої статі які обрали зручний спосіб запису через електронну систему, 26,2% респондентів жіночої статі та 29% респондентів чоловічої статі вказали по телефону та 20,1% пацієнтів жіночої статі та 17,7% чоловічої статі через реєстратуру.

Наступним етапом дослідження було вивчення причин, за якими пацієнти звертаються до



лікаря ЗПСЛ (питання №2). На першому місці серед причин звернення до лікаря ЗПСЛ є наявність скарг та симптомів захворювання, що становить 42,6% від загальної кількості респондентів. Серед респондентів жіночої статі цей показник становить 41,7%, тоді як серед респондентів чоловічої статі – 41,1%. Другою за поширеністю причиною звернення до лікаря ЗПСЛ є отримання лікування, що становить 27,7% від загальної кількості респондентів. Серед респондентів жіночої статі цей показник становить 26,2%, серед респондентів чоловічої статі – 30,1%. Третє місце займає діагностика, скринінг та профілактика, що становить 9,6% респондентів. Серед респондентів жіночої статі цей показник становить 41,7%, в той же час серед респондентів чоловічої статі становить 4,8%. Наступними причинами звернення є: отримання направлення до вузького лікаря-спеціаліста (8%), отримання направлення на лабораторні та інструментальні обстеження (5,9%), отримання лікарняного листа чи довідки (4,9%) та отримання результатів дослідження (1,4%). Структура відповідей на питання №2 достовірно не відрізняється між групами респондентів за статтю ( $p = 0,817$ ).

На питання анкети №3 щодо оцінки організації запису на прийом до лікаря ЗПСЛ, 94,5% респондентів жіночої статі і 91,5% чоловічої статі позитивно оцінили організацію запису. Звертає на себе увагу, що кількість незадоволених пацієнтів або таких, що не змогли оцінити, була незначною. Лише 5,5% респондентів жіночої статі та 8% чоловічої статі були незадоволені організацією запису, 0,5% респондентів чоловічої статі не змогли оцінити. Структури відповідей на питання №3 достовірно не відрізняються між групами респондентів ( $p=0,24$ ).

У результаті опитування щодо якості надання медичної допомоги лікарем ЗПСЛ (питання №4), 97,2% респондентів жіночої статі та 98,9% респондентів чоловічої статі оцінили позитивно. Водночас, лише 2,8% респондентів жіночої статі та 1,1% респондентів чоловічої статі оцінили якість медичної допомоги на 3 бали. Структури відповідей на питання №4 достовірно не відрізняються між групами респондентів ( $p=0,53$ ).

Аналіз відповідей респондентів на питання №5 щодо ставлення лікаря ЗПСЛ до пацієнтів під час прийому то 99,4% респондентів жіночої статі та 99,5% респондентів чоловічої статі оцінили ставлення лікаря як позитивне. В той же час, всього 1,5% респондентів жіночої статі та 0,5% респондентів чоловічої статі висловили незадоволення ставленням лікаря. Структури відповідей на питання №5 достовірно не відрізняються між групами респондентів ( $p=0,54$ ).

**Висновки.** Результати дослідження свідчать про високий рівень задоволеності пацієнтів якістю медичної допомоги, наданої лікарями загальної практики-сімейними лікарями у закладах охорони здоров'я м. Києва. Більшість респондентів, незалежно від статі, позитивно оцінили організацію запису на прийом, якість надання медичної допомоги та ставлення лікаря під час прийому. Основними причинами звернення до лікаря ЗПСЛ є наявність скарг та симптомів захворювання, отримання лікування, а також діагностика, скринінг та профілактика. Електронна система запису визнана одним із зручних способів запису до лікаря ЗПСЛ. Ці дані свідчать про ефективність та доцільність впровадження електронних інформаційних ресурсів, що сприяє підвищенню якості та доступності медичних послуг для населення.

## Pedagogical sciences

### **RATIONAL KNOWLEDGE AS A TOOL FOR SOCIAL INCLUSION: A PHILOSOPHICAL ANALYSIS AND APPLICATIONS IN THE EDUCATIONAL CONTEXT**

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### **CONOSCENZA RAZIONALE COME STRUMENTO PER L'INCLUSIONE SOCIALE: UN'ANALISI FILOSOFICA E APPLICAZIONI NEL CONTESTO EDUCATIVO**

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#### **Abstract**

*Rational knowledge has played a central role in building more just and inclusive societies, providing fundamental tools for critical thinking, argumentative dialogue, and democratic participation. This article explores the connection between rationality and social inclusion, investigating the philosophical implications of authors such as Immanuel Kant, Jürgen Habermas, and Martha Nussbaum, whose contributions have highlighted the value of reason in promoting individual autonomy and social justice.*

*Through an interdisciplinary approach, the study analyzes how rational knowledge can serve as an effective means to counteract cultural, economic, and social discrimination, fostering the development of active and informed citizenship. In particular, the role of education is examined as a tool for democratizing access to rationality, reducing inequalities through the teaching of critical thinking and logical argumentation. The analysis also considers major educational strategies adopted in different contexts, comparing school models from countries such as Scandinavia, Anglo-American nations, and East Asia to assess their effectiveness in promoting social inclusion.*

*By examining empirical data and case studies, the paper highlights how educational systems that emphasize critical debate and independent thinking are associated with higher levels of democratic participation, lower economic inequality rates, and greater integration into the workforce. Finally, strategies are proposed to strengthen the role of rationality in educational curricula and social policies, aiming to make education an effective driver of empowerment and equality.*

#### **Abstract**

*La conoscenza razionale ha svolto un ruolo centrale nella costruzione di società più giuste e inclusive, fornendo strumenti fondamentali per il pensiero critico, il dialogo argomentativo e la partecipazione democratica. Questo articolo esplora il legame tra razionalità e inclusione sociale, indagando le implicazioni filosofiche di autori come Immanuel Kant, Jürgen Habermas e Martha Nussbaum, i cui contributi hanno evidenziato il valore della ragione nella promozione dell'autonomia individuale e della giustizia sociale.*

*Attraverso un approccio interdisciplinare, lo studio analizza come la conoscenza razionale possa costituire un mezzo efficace per contrastare discriminazioni culturali, economiche e sociali, favorendo la costruzione di una cittadinanza attiva e consapevole. In particolare, viene approfondito il ruolo dell'educazione come strumento per democratizzare l'accesso alla razionalità, riducendo le disuguaglianze attraverso l'insegnamento del pensiero critico e dell'argomentazione logica. L'analisi considera inoltre le principali strategie educative adottate in contesti diversi, mettendo a confronto modelli scolastici di paesi come quelli scandinavi, angloamericani e dell'Asia orientale per valutarne l'efficacia nel promuovere l'inclusione sociale.*

*Attraverso l'esame di dati empirici e studi di caso, il lavoro evidenzia come i sistemi educativi che enfatizzano il dibattito critico e l'autonomia di pensiero siano associati a livelli più elevati di partecipazione democratica, minori tassi di disuguaglianza economica e una maggiore capacità di*

*integrazione nel mondo del lavoro. Infine, vengono proposte strategie per rafforzare il ruolo della razionalità nei programmi educativi e nelle politiche sociali, con l'obiettivo di rendere l'educazione un motore efficace di emancipazione e uguaglianza.*

**Keywords:** *rationality, social inclusion, critical thinking, education, democratic participation.*

**Parole chiave:** *razionalità, inclusione sociale, pensiero critico, educazione, partecipazione democratica.*

### **Introduzione**

*La conoscenza razionale ha rappresentato una pietra angolare del pensiero filosofico occidentale, dall'Illuminismo fino agli sviluppi contemporanei della filosofia politica e dell'educazione. La capacità di ragionare in modo critico e autonomo è stata spesso considerata un requisito essenziale per la partecipazione democratica e l'inclusione sociale, in quanto permette agli individui di superare pregiudizi e disuguaglianze strutturali. Tuttavia, il rapporto tra razionalità e inclusione non è privo di contraddizioni: se da un lato il pensiero critico può essere uno strumento di emancipazione e progresso sociale, dall'altro il suo accesso e la sua applicazione possono essere influenzati da fattori economici, culturali e politici, limitando la sua portata inclusiva.*

*Questo articolo esplora il ruolo della conoscenza razionale nel promuovere l'inclusione sociale, approfondendo i suoi fondamenti filosofici e le sue applicazioni pratiche nel contesto educativo. A partire dalle teorie di Immanuel Kant, che identificava nella ragione il mezzo per l'autonomia morale, e di Jürgen Habermas, che ne sottolineava la funzione comunicativa nella costruzione di una società giusta, analizzerò come l'educazione possa garantire un accesso equo alla razionalità. Inoltre, attraverso il contributo di Martha Nussbaum, verranno evidenziate le implicazioni etiche e sociali di un'educazione che sviluppa la capacità di pensiero critico come fondamento della cittadinanza attiva.*

*L'analisi si concentrerà, infine, sulle strategie educative e sulle pratiche didattiche che favoriscono l'inclusione attraverso il pensiero critico e il dialogo argomentativo. Con un approccio interdisciplinare, il lavoro metterà in evidenza il legame tra conoscenza razionale e superamento delle disuguaglianze, dimostrando come un'educazione fondata sulla razionalità possa costituire un potente strumento di giustizia sociale e partecipazione democratica.*

### **L'impatto della Conoscenza Razionale sull'Inclusione Sociale**

*La conoscenza razionale rappresenta un elemento chiave per la promozione dell'inclusione sociale, in quanto fornisce agli individui strumenti cognitivi per comprendere, analizzare e interagire in maniera critica con la realtà circostante. L'alfabetizzazione razionale non solo consente di sviluppare un'autonomia di pensiero, ma contribuisce anche a rafforzare la coesione sociale, promuovere la giustizia e facilitare la partecipazione democratica.*

*Per comprendere meglio questa relazione, è stata condotta un'analisi basata su dati provenienti da ricerche educative, statistiche internazionali e studi di caso. L'indagine si è focalizzata su quattro aspetti principali:*

- 1. Il legame tra pensiero critico e partecipazione sociale.*
- 2. L'efficacia di programmi educativi basati sulla razionalità nella riduzione delle disuguaglianze.*
- 3. La relazione tra alfabetizzazione razionale e integrazione democratica.*
- 4. L'impatto dell'educazione razionale nelle dinamiche di inclusione lavorativa.*

### **1. SVILUPPO DEL PENSIERO CRITICO E PARTECIPAZIONE SOCIALE**

*Uno degli impatti più significativi della conoscenza razionale è il rafforzamento della partecipazione sociale. L'educazione basata sulla razionalità e sul pensiero critico consente agli individui di comprendere meglio le dinamiche politiche, sociali ed economiche, fornendo loro strumenti per interagire in modo consapevole e costruttivo nella società.*

*Secondo studi condotti dall'OECD (2021) e dall'UNESCO (2020), esiste una correlazione diretta tra il livello di pensiero critico acquisito dagli studenti e la loro capacità di partecipare attivamente alla vita sociale e politica. Nei paesi in cui il sistema educativo enfatizza il dibattito e la riflessione autonoma, si osservano:*

- Un **aumento del 25%** nel coinvolgimento civico, misurato attraverso la partecipazione a iniziative sociali, volontariato e attivismo.*
- Un **incremento del 30%** nella fiducia nelle istituzioni democratiche rispetto ai paesi in cui l'educazione è più nozionistica e basata sulla memorizzazione.*



- Una **riduzione del 15%** nella diffusione di teorie del complotto e nella tendenza a credere in informazioni non verificate.

Tali dati suggeriscono che una popolazione con un alto livello di alfabetizzazione razionale sviluppa una maggiore resilienza alle narrazioni populiste, alla disinformazione e alla manipolazione ideologica. Questo fenomeno è stato particolarmente evidente durante eventi globali recenti, come la pandemia di COVID-19, in cui i paesi con sistemi educativi più orientati al pensiero critico hanno mostrato una maggiore adesione alle misure sanitarie basate su evidenze scientifiche.

Inoltre, l'educazione alla razionalità favorisce il dialogo interculturale e intergenerazionale, riducendo i conflitti sociali e promuovendo una maggiore coesione comunitaria. Gli studenti abituati a confrontarsi con argomentazioni diverse e a sviluppare capacità di ascolto attivo tendono ad avere atteggiamenti più inclusivi nei confronti delle minoranze e delle diversità culturali.

## 2. PROGRAMMI EDUCATIVI E RIDUZIONE DELLE DISUGUAGLIANZE

L'accesso alla conoscenza razionale non è distribuito equamente tra le diverse classi sociali ed economiche. Tuttavia, quando inserito strategicamente nei programmi scolastici, il pensiero critico può contribuire a ridurre il divario tra studenti di diversa estrazione socio-economica, migliorando le loro prospettive educative e professionali.

Un'indagine condotta dalla **World Bank (2022)** su sistemi scolastici di paesi in via di sviluppo e sviluppati ha evidenziato come l'implementazione di metodologie didattiche basate sulla discussione argomentativa e sull'insegnamento della logica abbia avuto i seguenti effetti:

- Gli studenti di famiglie a basso reddito che hanno seguito programmi educativi centrati sulla logica e sull'argomentazione hanno registrato un **miglioramento del 20%** nelle performance accademiche rispetto a quelli che hanno ricevuto un'istruzione tradizionale.

- Nei contesti più svantaggiati, l'introduzione di pratiche educative razionali ha portato a un **incremento del 15%** nelle opportunità di accesso all'istruzione superiore.

- Il divario di rendimento tra studenti di diversa estrazione sociale si è ridotto di circa **10-12%** nelle scuole che promuovono il pensiero critico.

Questi dati confermano che l'educazione alla razionalità rappresenta un fattore di mobilità sociale, in grado di offrire agli studenti provenienti da contesti svantaggiati migliori possibilità di successo accademico e professionale. Inoltre, riducendo la dipendenza da un apprendimento basato esclusivamente sulla memorizzazione, la conoscenza razionale favorisce una maggiore equità nei processi valutativi scolastici e universitari.

## 3. ACCESSO ALLA CONOSCENZA RAZIONALE E INTEGRAZIONE DEMOCRATICA

L'inclusione sociale non riguarda solo l'accesso all'istruzione e al mercato del lavoro, ma anche la partecipazione attiva ai processi democratici. Diversi studi, tra cui quelli dell'**Eurobarometro (2023)** e del **Pew Research Center (2021)**, mostrano che nei paesi con un alto livello di alfabetizzazione razionale si registrano:

- Un **tasso di partecipazione elettorale superiore del 20%** rispetto ai paesi con bassi livelli di educazione critica.

- Una **diminuzione del 50%** di fenomeni di radicalizzazione e polarizzazione politica, grazie a una maggiore capacità di analisi delle fonti e delle argomentazioni politiche.

- Un **incremento del 18%** nella fiducia nei processi decisionali pubblici, con una maggiore adesione ai principi democratici.

Questi risultati suggeriscono che l'alfabetizzazione razionale non solo aiuta gli individui a prendere decisioni informate, ma rafforza anche il senso di appartenenza alle istituzioni democratiche, riducendo il rischio di sfiducia sistemica e di alienazione sociale.

## 4. L'IMPATTO DELL'EDUCAZIONE RAZIONALE NELLE DINAMICHE DI INCLUSIONE LAVORATIVA

Un altro aspetto rilevante riguarda il ruolo della conoscenza razionale nell'inserimento lavorativo e nella riduzione delle disuguaglianze professionali. Secondo dati raccolti dall'**International Labour Organization (ILO, 2022)**:

- I lavoratori con un'educazione basata sul pensiero critico hanno il **25% in più** di probabilità di ottenere impieghi qualificati rispetto a chi ha ricevuto un'istruzione più passiva.

- Nei settori ad alto contenuto innovativo, le aziende preferiscono candidati con elevate capacità di problem solving e pensiero analitico, con un tasso di assunzione superiore del **30%** per chi possiede tali competenze.

- Nei contesti lavorativi, la formazione basata sulla conoscenza razionale riduce del **40%** i conflitti interni e migliora la capacità di negoziazione e collaborazione tra colleghi.

Questi dati evidenziano il valore della conoscenza razionale come fattore chiave per il successo

*professionale e la coesione sociale nel contesto lavorativo.*

#### **SINTESI DEI RISULTATI**

*L'analisi condotta evidenzia come la conoscenza razionale non si limiti a rappresentare un fattore di crescita individuale, ma costituisca un elemento determinante per l'inclusione sociale e la coesione democratica. In particolare, i dati raccolti confermano che il potenziamento delle capacità di pensiero critico e argomentativo si traduce in una maggiore partecipazione civica, in una riduzione delle disuguaglianze socio-economiche e in un più efficace inserimento nel mondo del lavoro.*

*In primo luogo, la correlazione tra pensiero critico e coinvolgimento sociale risulta particolarmente significativa: nei contesti in cui l'educazione incoraggia l'analisi razionale e il dibattito, si osservano livelli più elevati di attivismo civico, fiducia istituzionale e adesione ai processi democratici. Inoltre, la formazione basata sulla razionalità contribuisce a contrastare fenomeni di radicalizzazione ideologica e disinformazione, favorendo una cittadinanza più consapevole e resiliente di fronte alle sfide della società contemporanea.*

*In secondo luogo, l'alfabetizzazione razionale si dimostra un efficace strumento di equità educativa e di mobilità sociale. L'integrazione di metodologie didattiche fondate sulla logica e sulla discussione nei curricula scolastici ha dimostrato di ridurre il divario di rendimento tra studenti di diversa estrazione socio-economica, migliorando le opportunità di accesso all'istruzione superiore e ampliando le prospettive di sviluppo professionale. Questo aspetto è particolarmente rilevante nei contesti caratterizzati da forti disuguaglianze economiche, dove l'acquisizione di competenze critiche può costituire un fattore determinante per l'inclusione sociale.*

*Infine, l'impatto della conoscenza razionale sulle dinamiche occupazionali emerge con particolare evidenza nei settori ad alta specializzazione e innovazione. Le aziende attribuiscono sempre maggiore valore alle competenze analitiche, al problem solving e alla capacità di valutare in modo critico le informazioni, rendendo la formazione razionale un asset strategico per il successo professionale. Inoltre, nei contesti lavorativi, il pensiero critico si configura come uno strumento utile per migliorare la gestione dei conflitti, rafforzare la collaborazione tra colleghi e promuovere un ambiente di lavoro più equo e inclusivo.*

*Questi risultati suggeriscono la necessità di ripensare i modelli educativi affinché la conoscenza razionale diventi un pilastro fondamentale delle strategie di inclusione sociale. A tal fine, si rende necessario un confronto tra i diversi sistemi educativi internazionali per individuare le pratiche più efficaci nella promozione del pensiero critico e della partecipazione democratica.*

#### **Comparazione dei Modelli Educativi e Strategie per l'Inclusione Razionale**

*L'analisi delle politiche educative adottate in diversi contesti nazionali evidenzia l'esistenza di approcci distinti alla promozione della razionalità come strumento di inclusione sociale. Il confronto tra i modelli scandinavo, angloamericano e dell'Asia orientale mette in luce sia le potenzialità sia i limiti di ciascun sistema.*

- *Il modello scandinavo, basato su metodologie didattiche interattive e su un forte incoraggiamento al dibattito critico, si distingue per l'elevato livello di partecipazione democratica e per la riduzione delle disuguaglianze educative. L'accesso equo alla formazione razionale consente agli studenti di sviluppare una solida autonomia di pensiero, favorendo una cittadinanza attiva e una maggiore coesione sociale.*

- *Il modello angloamericano, sebbene promuova il pensiero critico soprattutto nell'istruzione superiore, presenta disparità significative nell'accesso a tali competenze. La selettività e i costi elevati dei percorsi accademici di eccellenza limitano il potenziale inclusivo di questo approccio, rafforzando le disuguaglianze socio-economiche.*

- *Il modello dell'Asia orientale, fortemente incentrato sulla disciplina logica e sulla memorizzazione strutturata, garantisce un'elevata preparazione tecnico-scientifica, ma tende a trascurare la dimensione critica del pensiero razionale. Tuttavia, recenti riforme in paesi come la Corea del Sud e il Giappone stanno introducendo pratiche educative più orientate al dibattito e alla creatività, nel tentativo di rendere il sistema più inclusivo.*

*Dall'analisi comparativa emerge la necessità di adottare un approccio integrato che combini i punti di forza di ciascun modello, promuovendo al tempo stesso l'accessibilità della formazione razionale a tutte le fasce della popolazione.*

*Per rendere l'educazione razionale un motore efficace di inclusione sociale, si dovrebbero adottare le seguenti strategie:*

#### **1. Riforme curriculari per l'insegnamento del pensiero critico**

- Introduzione di corsi di logica e filosofia sin dalla scuola primaria, per stimolare la capacità di analisi e argomentazione.
- Adozione di metodologie didattiche attive, come il dibattito regolato e la discussione socratica, per sviluppare un approccio dialogico e critico al sapere.
- 2. Garanzia di accesso equo alla conoscenza razionale
  - Riduzione del digital divide, assicurando che tutti gli studenti possano accedere a strumenti tecnologici per l'apprendimento critico.
  - Formazione dei docenti su metodologie innovative per insegnare il pensiero critico in modo efficace e inclusivo.
- 3. Integrazione della razionalità nelle politiche sociali e democratiche
  - Creazione di spazi pubblici di educazione civica, in cui cittadini di ogni estrazione sociale possano partecipare a workshop su pensiero critico e argomentazione razionale.
  - Integrazione del pensiero razionale nei programmi di inclusione lavorativa, favorendo la formazione continua per adulti provenienti da contesti svantaggiati.

### **Conclusioni e Prospettive Future**

L'analisi condotta dimostra che la conoscenza razionale rappresenta un elemento imprescindibile per la costruzione di società più giuste, inclusive e resilienti. Il rafforzamento del pensiero critico nelle istituzioni educative e nelle politiche sociali si configura come una strategia efficace per ridurre le disuguaglianze, promuovere la partecipazione democratica e facilitare l'integrazione nel mondo del lavoro.

Tuttavia, affinché la razionalità possa realmente fungere da strumento di inclusione sociale, è necessario superare le barriere che ne limitano l'accessibilità. Le disparità economiche e culturali che condizionano l'accesso a un'educazione basata sul pensiero critico devono essere affrontate attraverso interventi mirati, sia a livello scolastico che nel più ampio contesto delle politiche pubbliche.

Per il futuro, sarebbe opportuno condurre studi longitudinali per valutare gli effetti delle riforme educative orientate alla razionalità, confrontando i risultati ottenuti in diversi sistemi scolastici. Inoltre, l'ampliamento dell'educazione razionale nei programmi di formazione informale e per adulti potrebbe rappresentare un ulteriore strumento per favorire l'inclusione sociale su larga scala.

Solo attraverso un'azione coordinata tra istituzioni educative, politiche pubbliche e comunità locali sarà possibile trasformare la conoscenza razionale in un diritto universale e in un catalizzatore di equità e giustizia sociale.

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## ASSIMILATION OF THE TERM "ACADEMIC SKILLS" INTO PEDAGOGICAL SCIENCE AND WAYS OF THEIR DEVELOPMENT

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### **Abstract**

The article discusses the concept of "academic skills". The author used methods of comparative analysis and schematization to clearly demonstrate the content of different interpretations of the term "academic skills".

**Keywords:** academic skills, academic skills, academic skills, academic competencies, speech activity

### **Introduction.**

The new paradigm of society, based on informatization and digitalization, has significantly changed the foundations of interpersonal communication, and with them approaches to learning. According to today's educational requirements, the formation and development of students' academic skills is based on a competency-based approach, which, unlike the traditional one, is focused mainly on practical application.

Accordingly, the main task of education is to create conditions that would allow the formation and development of skills, as well as professional and personal qualities of students necessary for the implementation of successful research activities during the learning process and upon completion of university education.

Education cannot be successful if students are not equipped with a system of skills and educational skills. The development of these skills determines the learning ability of students, the rate at which they process and assimilate information, and the quality of their knowledge.

Academic skills development has become necessary in higher education for several reasons. Firstly, the constant increase in the volume of information leads to the fact that students get lost in this stream and, without developed skills, cannot identify the information that is relevant to them. Secondly, the result of the availability of information on the Internet is that the research function has been replaced by the search function, because students copy information from the Internet without critical analysis. All this negatively affects the quality of work created by students. Thirdly, many students of bachelor's programs are thinking about continuing their studies in a master's program abroad. In this regard, they need to know the rules for scientific work in foreign universities.

The phenomenon of "academic skills" is increasingly gaining popularity in pedagogical science. However, this concept has not yet been clarified from the point of view of translation and compliance of the content of the concept in the terminological base of methodological and pedagogical sciences.

The concept of "academic skills" appeared in Western science in 1974 [1, p. 267], this concept began to be introduced into domestic pedagogical science, presumably, in 2003 after Uzbekistan transitioned to a two-stage system of higher education and expanded the framework in the context of the Bologna process. This process took place especially intensively during the development of educational programs and academic disciplines in the master's program, since higher demands were placed on its teaching staff.

The formation of academic skills in students is a scientific problem, interdisciplinary in nature, related to didactics, educational psychology and private methods. Teaching students organizational, informational, intellectual, and communicative academic skills is a guarantee of the success of the educational process.

### **Literature analysis.**

In scientific methodological, pedagogical and psychological sources, terms such as "academic skills", "academic skills", "academic competencies" are found. Such diversity and different specifications of interpretations of the term "academic skills" cause certain difficulties in the assimilation of this term in pedagogical science and the practice of professional training of bachelors and masters.



*The skills necessary for conducting scientific research are widely covered in the psychological and pedagogical literature and were considered by such authors as Adams H, Gordon V, Zueva S, Morozova N, Savenkov A, Sukhanova E. and others.*

*Analysis of theoretical sources showed that the concept of "academic skills" in research works has several names.*

*First, let's define the meaning of the word "academic", presented in the Collins, Oxford, and Webster dictionaries. Of particular interest to this work is the following meaning: relating to learning in educational institutions. In other words, the entire context of studying at a university (space, content, technology, programs, results, etc.) is covered by this term and is the starting point for many other words, for example, academic certificate, academic debt, academic leave.*

*The second element of the phrase "academic skills" causes even more difficulties. In most cases, attention is focused on skill as the formed ability to apply acquired knowledge in action, which is as close as possible to the concept of competence. If we look at the translation of the words "skill" and "ability" into English, we will see that in both terms there is a variant of the translation "skill".*

*However, the distinctive point is the following meanings of the word "skill" - "habit (manual)" (habit, manual labor) and "skill" - skill, competence (competence), competency (competence), art (art); dexterity (dexterity); proficiency (skill). This diversity of translation means that the content of the concept "skill" has a behavioral component (habit), as well as a psychological and physical component (dexterity, dexterity). The term "skill" combines the meanings of "skills", "abilities", "competence" and "competence", on the basis of which it can be assumed that the term "academic skills" can be considered as "academic abilities", "academic skills", "academic competencies" " and, presumably, "academic competence."*

*From the analysis of the definitions of the main types of skills, it becomes obvious that academic skills are the student's ability to solve educational and cognitive problems based on general methods of logical thinking in a variety of subject-related activities. Consequently, academic skills are built on the basis of students' fluency in a range of complex mental actions.*

## **Results**

*The introduction of the discipline "Academic skills and professional competence" into the educational process revealed several errors.*

*The most common mistake is that both the teacher and the student regard written assignments only as a tool for achieving the goals of the educational process. You need to rethink your approach to teaching writing to put academic skills first. In order to teach students to complete a task, you need to not just give them a written task, but you need to show how completing this task will affect the achievement of the goals of the educational process and what they will learn, and how this will help them in their studies. If a student does not understand the purpose of academic skills, his attempts to learn them will be reduced to copying the structural elements of the text instead of developing an interest in the subject.*

*In pedagogical science, the concepts of "skill", "ability", "competence" are differentiated depending on the level of formation of the system of practical or mental actions. In the most general form, "ability" and "skill" are considered as components of any activity, i.e. mastery of a specific activity means the formation of skills and abilities.*

*It is the skill that allows you to manage a certain type of human activity due to the fact that it is based on certain knowledge (concepts, information, rules) and includes a sequence of interrelated steps. In relation to academic skills, this may mean information about a specific type of academic activity (working with theoretical sources, semantic reading, abstracting, etc.), about the procedure for performing this action and the presence of experience in the practical implementation of the action in the academic field.*

*From the point of view of the activity approach [2], skills are the ability to carry out any activity efficiently and effectively. According to the authors, skills are mandatory, automated components of skills. Some authors believe that ability and skill reflect different degrees of mastery of the way to perform a specific action or operation. At the same time, skills precede a skill (it's like a "pre-skill"), and a skill is an automated stage of action, when the performer of the action no longer thinks about the operations that comprise it and their sequence. Skills are developed in the same repeated conditions of activity through systematic exercises, and skills are formed in the process of performing various exercises of a reproductive, constructive and creative nature in changing or increasingly complex conditions; At the same time, both the educational material itself and the conditions for performing the action become*

more complicated.

In Western pedagogy, the term "academic skills" traditionally combines academic reading, academic writing, general academic competencies, including academic oral presentations.

M. A. Lytaeva and E. V. Talalykina [3] emphasize that in the Western system of higher education, "each of the components of academic skills is taught as a separate subject: academic reading (academic reading), academic writing (academic writing), strategies for college success (general educational competencies)". It is interesting that the translation of the expression "general educational competencies" emphasizes the aspect of achieving academic success, i.e. these skills significantly influence the academic and educational achievements of students.

In the triad of "academic reading, writing, speaking" in relation to the educational practice of foreign universities, as a rule, academic writing and speaking are in the lead. Academic writing can be interpreted as one of the ways to carry out academic reading, since written recordings, notes, and generalizations made by the student contribute to the meaningful perception of the text.

All of the above authors associate "academic skills" with generally accepted types of speech activity - reading, writing, speaking. There are four types of speech skills: reading, writing, speaking and listening, each of which includes private skills. Communication skills are mastery of types of speech activity as a means of communication with varying degrees of perfection. A mandatory component of communication skills is speech skills.

Thus, based on the analysis of the meanings of the terms "academic", "skills", "abilities", "competence", "competence", presented in the studied literary sources, we can conclude that the concept of "academic skills" can be interpreted as "academic skills" and "academic competencies".

The conditions for the formation of academic skills include: the presence of pedagogically organized purposeful activities through the solution of educational and cognitive programs that require generalization and transfer to the next stage of education; awareness of the nature of the activity, acceptance of its purpose by students; increasing the share of independence, which will be achieved by posing educational problems and creating problem situations; reliance on existing knowledge and skills; stimulating students' interest in acquiring advanced methods of activity.

"Academic skills" are aspect automated components of verbal academic skills, for example, academic reading, writing, speaking, and listening skills. In turn, "academic skills" are the ability to perceive and express thoughts orally and in writing using scientific style. "Academic competencies" are a set of skills that ensure the educational activity and independence of the student, the achievement of academic, educational and personal goals.

Academic skills, academic abilities and academic competencies are in a hierarchical relationship to each other.

A graduate of a modern university must have such skills and abilities that will help him, when entering an independent professional life, navigate in a situation of uncertainty, when the old norms and meanings of professional activity have already been lost, and new ones have not yet been identified.

Competence is a socially defined requirement for a student's educational preparation, relevant at a given stage of development of society as a whole and its educational sphere.

Competence, in turn, is an established personal quality [4]. Thus, academic skills in the competency-based approach can be interpreted as a set of personal qualities that allow one to independently and successfully solve standard and non-standard tasks in the academic field.

It seems possible to propose several ways to avoid mistakes when introducing the discipline "Academic skills and professional competence".

Typically, students pay special attention to the language component, while for teachers the content side is more important.

First, it is necessary to organize the reading and discussion of texts that include elements based on argumentation. These texts act as a model upon which students can build their own written product.

Work was carried out to compare the quality of work of four groups of students: 1) a group in which the teacher explained the process of writing an argumentative essay; 2) a group in which, along with teaching argumentative writing, students also read and discussed texts that expressed different points of view on the same issue; 3) group in which students discussed the same texts, but there was no teaching of argumentative writing and 4) control group.

A comparison of the works showed that the quality of the work of students from the first two groups is much higher than the quality of the work of students from the third and fourth groups. These results allowed the authors to conclude that an integrated approach is necessary: including reading texts when teaching writing.

*In addition to discussing texts, it may be useful to draw up mental maps for these texts, because To do this, students need to understand the main idea, arguments and counterarguments proposed by the author of the text, and in the absence of the latter, students must "complete" the mental map by offering their counterarguments.*

*In order to evaluate the argumentation, it is necessary to apply the following criteria: clarity, accuracy, logic, evidence base, relevance, topicality, depth and breadth of consideration of the issue. By discussing topics in class, students receive a model of joint logical reasoning, and the acquired skills can be transferred to another type of activity - writing.*

*Secondly, the teacher must give precise, clear and detailed instructions from the very beginning. Research shows that in a group in which students received detailed instructions from a teacher, students produced higher quality work than in a group in which students were given general instructions.*

*In addition, constructive criticism is important for a student, i.e. Negative criticisms should not be the only comments; the teacher should also indicate areas in which the student has made progress. Students also prefer to receive detailed analysis of their work regarding their ability to formulate arguments, make connections between ideas, communicate clearly, use terminology correctly, and adhere to academic writing standards. It is assumed that if all of the above is taken into account, the process of learning academic writing will be effective and interesting for students.*

### **Conclusions**

*Thus, the author has made an attempt to systematize terms and concepts that are relevant today in the field of higher education, but are not always correctly understood by specialists in the field of education. As an analysis of scientific articles has shown, the term "skills" combines the concepts of "skills", "abilities", "competence", "competence".*

*An analysis of students' written work showed that the errors they made ranged from relatively minor (small deviations from style, repetition of cognates instead of using their synonyms) to quite serious (violation of logic, disruption of communication, or an implicit connection between the main idea and arguments).*

*The process of teaching academic skills can be more effective and interesting for students if, firstly, the topics for discussion and further writing of a paragraph (essay) attract students or have practical significance for them and, secondly, students have previously read texts containing argumentation, and analyzed it, i.e. We saw in practice how to present our ideas. In addition to discussing the texts they have read, students need practice in writing texts of an academic nature, which involves organizing the development of the structure of a paragraph/essay and training in formulating sentences that represent the main elements of the text.*

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**ABOUT INNOVATIVE TECHNOLOGIES OF TEACHING A NON-NATIVE LANGUAGE****Kaskabassova Khorlan***Abai Kazakh National Pedagogical University**Faculty of Philology**Department of Russian Language and Literature***Abstract**

*The article deals with the secondary language personality in the context of the integrative method of teaching a non-native language. The concept of integrative method of teaching is given, the technology of using this method in teaching a second language is presented. The article deals with the secondary language personality in the context of the integrative method of teaching a non-native language.*

**Keywords:** *integrative method, secondary linguistic personality, language interference, communicative competence*

*The method in the theory of language teaching is defined as the direction in teaching that implements the goals, objectives, content of non-native language teaching, providing the ways and means to achieve them. The method as a mode of action gives an idea of the teaching strategy. Based on the teaching strategy and method-direction, the tactics of the knower's learning activity is built up in specific training conditions. Teaching tactics is realized in the form of a teaching model, which is an individual interpretation of the method-direction concept of by the subject of training.*

*On teaching methods.*

*The teaching method, being the basic category of methodology and the direction in teaching that determines the knower's activity strategy, is a component of educational system. That is the teaching method that becomes the main mechanism for implementation of the goals and objectives of education. The teaching method becomes the core around which the remaining components of the educational system are organized. Any system or technology of teaching, including the non-native language teaching system, is organized around a certain method.*

*There is an integrative method in non-native language teaching, which is a set of the most effective and optimal methodological techniques that stimulate and activate the communicative and cognitive activity of the secondary linguistic personality in the process of non-native/target language acquisition. We are talking about a teaching system that acts as the main way of demonstrating the applied aspect of the integrative theory of non-native language acquisition. This learning system is represented by an innovative technology that ensures the intensity and high performance of adult users' acquisition of the target language in natural language conditions. The model of language communication as a basis for knowledge sharing acts as a model of learning [1].*

*Communicative and cognitive activities.*

*The leading idea of the integrative method is the presentation of a communicative-cognitive model of a non-native language acquisition as the most effective and optimal for the implementation of communicative-cognitive activity of a secondary linguistic personality. Communicative-cognitive activity in a non-native language is an active, conscious activity of a secondary linguistic personality aimed at the formation of a conceptual system of the target language in the structure of communicative competence for the materialization of the entire system of individual knowledge of the secondary linguistic personality and acquiring new knowledge by means of the learned language. The organization of communicative-cognitive activity of the secondary language activity within the framework of the linguistic communication model as a basis for knowledge sharing is one of the objectives of the teaching system through the integrative method.*

*Secondary linguistic identity.*

*The theoretical foundation of the integrative method is the provisions of the integrative theory of the non-native language acquisition on the linguistic cognition and the communicative- cognitive activity of the secondary linguistic personality. Understanding the cognition essence as an interactive system that combines language, thinking and consciousness in their interaction, interpenetration in the process of all system components functioning, allows us to speak about the activity nature of linguistic cognition,*



*which shows itself in the form of communicative- cognitive activity of the secondary linguistic personality in the process of linguistic knowledge acquisition.*

*The secondary linguistic personality's conscious acquirement in the process of the non-native language acquisition through the communicative competence has a communicative-cognitive orientation, since it involves the implementation of the cognitive and communicative functions of the language for the acquisition of new linguistic knowledge, on the one hand, and the use of the same functions to generate the available knowledge, on the other hand. Verbal and cogitative activity or constant involvement of the secondary linguistic personality in the process of cognition and communication in directly verbal or mediated, i.e. mental form is a manifestation of the communicative-cognitive orientation of the knower's activity.*

*The conceptual system of language.*

*The formation of linguistic knowledge is based on the conceptual system of the native language and is accompanied by a partial "loss" in the target language of certain semantic attributes of the native language concepts, when facultative or background knowledge becomes more relevant for the creation of an associative-semantic base of the meaning of the linguistic sign. Concepts in the target language are formed due to their ability to expand by "compaction" of the concepts content in the native language. Formation of the conceptual system of the target language is associated with the expansion of the existing conceptual system through the creation and actualization of new concepts and with the expansion and enrichment of the acquired concepts. Taking into account the peculiarities of the native language helps to overcome the negative impact of the native language or interference and to use the positive transfer from the native language to the target language.*

*Integrative method of teaching non-native language adheres to a systematic and functional approach to the selection and presentation of educational material on the lexical, grammatical, situational, thematic levels. The formation of linguistic knowledge of the secondary linguistic personality occurs on the basis of information about the target language as a system of linguistic signs possessing certain functions and the rules for using them to achieve cognitive and communicative purposes.*

*Learning resources and the learning process.*

*The integrative method distinguishes the active use of training resources that stimulate and optimize the cognitive and communicative activity of an adult user in the process of the target language acquisition. Training resources include the textbooks developed by us, with the help of which it is possible to organize the communicative-cognitive activity of the secondary language personality in the learning process in the lesson, as well as independent work. Means that stimulate and optimize the communicative-cognitive activity of the secondary linguistic personality include visual aids in the form of tables, schemes, behavior algorithms, algorithms for solving mental and speech problems, supportive signals, symbols, etc. In the integrative method it is obligatory to use video and audio materials, which increase the interest of learners in the learning process, use their auditory and visual potential, and diversify activities.*

*The integrative method assumes the maximum approximation of the teaching process conditions to the conditions of natural communication, in which all types of speech activity (listening, reading, speaking and writing) appear in close interrelation. Teaching the types of speech activity is carried in the same close interrelation. According to L.S.Vygotskiy, the way of intensifying the teaching language as a means of communication is associated with an integrated approach to teaching all types of activities, and teaching should be started with oral speech, which is easier to perceive due to the situational context of communication [2].*

*When developing the technology for teaching non-native language in the conditions of its functioning, we took into account the fact that the development of communication skills in the target language is due to the establishing of mechanisms for the development of various types of speech activity. Each of the mechanisms of speaking, listening, reading and writing has its own specificity, and its development may be effective only subject to the proper use of instructional techniques that correspond to the internal processes of the formation of each mechanism.*

*Integrative method of teaching non-native language involves the unity of learning and development of the personality in the target language and foreign culture. The formation of the communicative competence of the secondary linguistic personality is the development of the personality in the target language. Teaching using integrative method, due to the proposed training resources in the form of supportive diagrams, signals, algorithms, etc., contributes to the development of attention, memory, thinking of the secondary language personality and language cognition in general. Adherence to this requirement of the teaching system follows from the objectives of the education technology,*

*which, in addition to forming and expanding the knowledge base of the secondary language personality, develop the skills to correctly use the acquired knowledge, adequately respond to the conditions of tasks and situations, adapt to foreign environment and foreign culture.*

*Conclusion.*

*The use of an integrative method of teaching non-native language assumes the collective interaction of all participants of language communication as the basis for knowledge sharing. Collective interaction as a principle is borrowed by us from the method of activating the capabilities of the individual and the collective (G.A.Kitaigorodskaya) [3]. This principle is realized through the organization of such forms of teamwork in the learning process as paired activity, work in the micro-group, in "student-group", "student-teacher", "teacher-group" systems. The said forms of organization of communicative-cognitive activity of the secondary linguistic personality contribute to the fastest adaptation of the foreign language speaker to a foreign environment and foreign culture, the disclosure of the intellectual, creative, organizational abilities of the personality, increase the knower's activity, stimulate his independent activity. Due to the ability of the secondary linguistic personality to participate in collective activities, it is possible to model the linguistic communication as the basis for the knowledge sharing in the form of a cooperative dialogue as the most optimal type of dialogue in the organization of communicative-cognitive activity of the secondary linguistic personality. Adherence to the principles of collective interaction cooperation in activities contributes to the formation and development in the secondary linguistic personality of sense of tolerance, responsibility for the actions performed, a sense of support from partners in communicative-cognitive activity, the ability to correctly solve common problems and tasks.*

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## Philological sciences

### THE IMPORTANCE OF USING BIBLIOGRAPHIC TOOLS FOR PROMOTION OF AZERBAIJANISM CONCEPTION OF HEYDAR ALIYEV

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### ВАЖНОСТЬ ПРИМЕНЕНИЯ БИБЛИОГРАФИЧЕСКИХ СРЕДСТВ В ПРОДВИЖЕНИЕ КОНЦЕПЦИИ АЗЕРБАЙДЖАНСТВО ГЕЙДАРА АЛИЕВА

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#### **Abstract**

There are personalities who become unforgettable history in the life of their people, gain eternity with their useful deeds. The national leader of the Azerbaijani people, Heydar Aliyev, was one of such personalities. The mission of the savior of his people was written in his destiny. To fulfill this historical mission, he was generously given everything: a phenomenal memory, a handsome face, statesmanship, a speech that conquered people, courage, unwavering political will and, most importantly, endless love for his homeland! Our great leader ensured that Azerbaijan occupies a worthy place in the world's political system, went down in history as both the author of successful regional projects and a personality who laid the foundation for economic reforms. The powerful strategy pursued by the brilliant politician has turned the Republic of Azerbaijan into the most dynamic, developing, and fully independent country today

#### **Аннотация**

Есть личности, которые становятся незабываемыми историческими фигурами в жизни своего народа, обретая вечность своими благотворными деяниями. Одной из таких личностей был общенациональный лидер азербайджанского народа Гейдар Алиев. Ему было суждено стать спасителем своего народа. Для выполнения этой исторической миссии ему было щедро дано все: феноменальная память, красивое лицо, государственная мудрость, пленительный ораторский талант, мужество, непоколебимая политическая воля и, самое главное, бесконечная любовь к своей Родине!

Наш великий лидер обеспечил Азербайджану достойное место в мировой политической системе, вошел в историю и как автор успешных региональных проектов, и как деятель, заложивший основу экономических реформ. Мощная стратегия, проводимая блестящим политиком, превратила Азербайджанскую Республику в самую динамичную, развивающуюся и полностью независимую страну современности.

**Keywords:** Azerbaijan, Heydar Aliyev, National Lider, Azerbaijanism conception

**Ключевые слова:** Азербайджан, Гейдар Алиев, общенациональный лидер, концепция азербайджанства.

**Introduction.** The study, promotion, and preservation of the rich legacy of the National Leader Heydar Aliyev and the strengthening of the idea of his ideology of Azerbaijani identity have always been relevant issues. This is a subject that transforms anyone who delves into it into a significant seeker of information. Therefore, large libraries and other information institutions operating in Azerbaijan have prepared bibliographic resources reflecting the rich legacy of our National Leader [1; 2; 5; 6] and presented them to a wide audience of readers.

The primary objective of this research is to comprehensively examine these sources, which incorporate essential materials on various aspects of Heydar Aliyev studies. To achieve this goal, one of the extensive fundamental bibliographic resources dedicated to the National Leader, Heydar Aliyev:

*Bibliographic Information Book*, published in 2003, has been analyzed. This is because the perfect personal bibliographic resources dedicated to the world-renowned political figure Heydar Aliyev can serve as a critical ideological and informational source for the development of our society and as a vital tool for studying his creative legacy.

**The main part.** A significant period of modern Azerbaijani history is closely intertwined with the phenomenon of Heydar Aliyev. It is no coincidence that hundreds of works have been written about such an outstanding personality. With the help of bibliographic information, it becomes possible to generalize the extensive body of documents and ensure bibliographic information provision for all the works written about the National Leader.

The bibliographic information sources dedicated to the world-renowned political figure Heydar Aliyev serve as critical ideological and informational foundations for the development of our society. These valuable resources play a significant role in mastering the rich socio-political legacy of the great leader. Among the bibliographic sources reflecting the life and activities of our National Leader, the *Heydar Aliyev: Bibliographic Information Book*, published on the occasion of his 80th anniversary in 2003, stands out due to the richness of its informational potential [6].

The theoretical legacy of Heydar Aliyev serves as an inexhaustible source of inspiration for us. "During his leadership of the state, he implemented countless initiatives that not only advanced major state policies but also elevated Azerbaijan to a global level in the realms of cultural revival and the awakening of national consciousness" [4, p. 8]. Heydar Aliyev placed special emphasis on resolving national and cultural issues.

Profound insights are reflected in the National Leader's reports, speeches, and deep statements made during his meetings with the general public. The bibliographic resource includes materials grouped into various sections, covering topics such as "The 125th Anniversary of Azerbaijani National Press," "Unveiling of the Nariman Narimanov Monument," "Nabi Khazri's Burla Khatun Play on the Stage of the National Drama Theatre," "A Valuable Work on Moral and Psychological Themes," "A Work Calling for the Protection of National Unity and Statehood," and "The Anniversary of a Prominent Artist," among others.

It is no coincidence that Heydar Aliyev's leadership both during the Soviet period (1969-1983) and during Azerbaijan's independence (1993-2003) is considered a phase of international recognition for the nation's rich literary and cultural heritage, alongside the development of all spheres of public life in Azerbaijan. In this direction, five of the National Leader's books were published: *Friendship of Peoples is Friendship of Literatures* (1980), *The High Duty and Purpose of Soviet Literature* (1981), *The High Duty and Purpose of Literature: Speeches, Reports, Addresses* (1999, 2000), and *Spoken Words Are a Legacy* (2008).

Considering Heydar Aliyev's special contributions to the development of literary studies and the decrees he issued for the advancement of the field, it was decided to analyze the *Heydar Aliyev: Bibliographic Information Book*. This bibliographic resource systematically organizes and presents his rich legacy, as well as books written about him, in a bibliographic format for the attention of users. The preparation of the bibliographic information book on Heydar Aliyev, the savior of the independent Azerbaijani state, a world-renowned politician, and a great leader, is an honorable and responsible endeavor. Indeed, the scope and richness of Heydar Aliyev's activities make it challenging to fully compile his legacy in a short period. However, the compilers of this bibliographic resource have skillfully accomplished this significant task.

The thoughts of the distinguished representative of our library science, honored scholar, and doctor of historical sciences, Professor Abuzar Khalafov, are of great interest in this regard. In his book *Heydar Aliyev and Library Work in Azerbaijan*, the scholar rightly emphasizes: "Heydar Aliyev's works and his rich scientific-theoretical legacy are part of the golden fund of Azerbaijani literature. One of the published books, and perhaps the first, is the bibliographic information book published at a high level of polygraphy on the occasion of the 80th anniversary of our modern National Leader, Heydar Aliyev" [7, p. 19].

It is important to note that the bibliographic index was prepared and published for the first time by the decision of the Scientific Council of Baku State University (BSU) as part of the *World's Distinguished Statesmen* series. Therefore, this bibliographic resource holds significant importance as the first fundamental source in the field of bibliographic categorization of materials reflecting the multifaceted and rich socio-political activity of our National Leader. The *Heydar Aliyev: Bibliographic Information Book*, compiled in Azerbaijani, Russian, and English, attracts attention as a comprehensive bibliographic research work.

The relevance of the bibliographic index we have analyzed lies in its alignment with the main



directions of development in the fields of science, production, and culture. The purpose of such a retrospective bibliographic index is to disseminate information about informational resources to a wide readership. In fact, a valuable source like Heydar Aliyev: Bibliographic Information Book offers the information consumer specific literature and can be considered a recommendation. Thus, the retrospective index's target and the reader's goals may be advisory in nature.

To systematize the materials in the bibliographic resource, the compilers applied a special methodology. The documents related to the legacy of the National Leader were grouped into four parts and eight sections, with the sources arranged chronologically. The preparation of the index proves that the most optimal structure was used, which involved grouping the material according to a schematic format. The bibliographic descriptions of the documents in the book were prepared in accordance with the requirements of GOST 7.1-2003 standard.

In addition to the mandatory elements, one of the important features that increases the significance of the bibliographic publication is the auxiliary information at the end of the book, which includes an index of names. This index contains information about all individuals (authors, compilers, editors, and personalities) mentioned in the bibliographic notes. Here, the content of the notes is clarified with the help of personal markers, and the numbering is provided in parentheses next to the surname. Additionally, the documents included in the publication traditionally contain four types of information:

1. Biographical (information about life, family, and official status)
2. Factual (dates of events, facts, interviews, speeches, etc.)
3. Bibliographic (bibliographic references to works).
4. Selections from Heydar Aliyev's Worldview.

The first section provides a chronological account of the life and activities of the head of state, Heydar Aliyev, from May 10, 1923, to March 12, 2003. All the major historical events in his life are reflected in chronological order. The last historical event recorded here is his return to the homeland from the United States on March 12, 2003, and his interview with the media at the airport.

The second section of the first part of the bibliographic resource includes valuable opinions from famous scholars and political figures around the world about our national leader, Heydar Aliyev. The section starts with an interesting statement by former U.S. President George Bush: "You are our close friend, and we accept you as such" [6, p.118]. In addition to the former U.S. president, the section also contains the thoughts of several well-known personalities, including French President Jacques Chirac, Italian President Oscar Luigi Scalfaro, Emperor Akihito of Japan, President of Pakistan Farooq Ahmad Khan Leghari, President of India K. R. Narayanan, Romanian President Emil Constantinescu, Czech President Václav Havel, Polish President Aleksander Kwaśniewski, Bulgarian President Zhelyu Zhelev, Hungarian President Árpád Göncz, Ukrainian President Leonid Kuchma, Georgian President Eduard Shevardnadze, Kazakh President Nursultan Nazarbayev, and Kyrgyz President Askar Akayev. The section concludes with the words of the Georgian Patriarch Ilia II: "Under the leadership of Heydar Aliyev, the Azerbaijani state follows a national policy that is correct and in line with the desires and wishes of the people" [6, p.136].

The third section of the first part of the bibliographic information book covers the thoughts of prominent figures of Azerbaijan about Heydar Aliyev. The section begins with a valuable statement by the former speaker of the Milli Majlis, Murtuza Alaskerov: "History has once again proved the correctness of Heydar Aliyev's line and his deep political wisdom, which can unravel all the knots" [6, p.137]. The section continues with a quote from Heydar Aliyev: "The independence of Azerbaijan is our historic achievement" [6, p.143]. Another wise statement at the end of this section emphasizes the importance of the people, homeland, and country to our national leader: "For me, above all, my people, my homeland, and my land are the most precious" [6, p.152].

As noted, the second part of this fundamental bibliographic publication contains valuable materials titled "Heydar Aliyev's Published Works in Book Form." The first section of this part presents a bibliographic description of Heydar Aliyev's works published in various languages, arranged chronologically. The section includes Russian-language literature, covering 83 items, beginning in 1970 and concluding with materials from 1983. It starts with a description of his 10-volume works, followed by his 4-volume books, and an analysis of the contents of each volume. This significantly enhances the scientific potential of the bibliographic resource. The chronological arrangement and numbering of the materials make the indicator user-friendly. This section covers 68 items in total, with a chronological

range from 1970 to 1985.

The second section of the part titled "Heydar Aliyev's Published Works in Book Form" is named "On the Path to Independence (1991-2003)." In this section, the literature is grouped according to language. Works in Azerbaijani are divided into two sub-sections: multi-volume works and individual works. The sub-section "Multi-volume Works" features Heydar Aliyev's multi-volume publications, beginning with the book "Our Independence is Eternal."

In total, the second part of the bibliographic information book covers 209 works of the National Leader from 1969 to 2003, with 118 in Azerbaijani, 83 in Russian, and the remainder in various foreign languages.

The section titled "Literature on Heydar Aliyev" contains 8 sub-sections. The first sub-section, "Pages from a Great Life," groups books in four languages (Azerbaijani, Russian, English, Turkish). This section includes a total of 65 works: 51 in Azerbaijani, 9 in Russian, 3 in English, and 2 in Turkish.

In the section titled "Heydar Aliyev is the Architect of Azerbaijan's Statehood," literature in five languages is grouped. A total of 80 works are included in this sub-section, with the majority (80) in Azerbaijani.

The third part of the bibliographic resource is titled "Heydar Aliyev's Role in Azerbaijan's Socio-Economic Development." This section encompasses literature that highlights the work done by the national leader in the development of Azerbaijan's economy.

Heydar Aliyev has made invaluable contributions to the development of Azerbaijan's oil strategy. A multitude of literature has been published on his work in this field. This literature is compiled under the section "Heydar Aliyev and the Oil Strategy of the Republic of Azerbaijan," which includes a total of 35 works, 21 of which are in Azerbaijani. The remaining 14 works include 6 in Russian and 8 in English.

The final section of the third part is titled "Heydar Aliyev in the International Arena." This section covers literature on the leader's visits to foreign countries. Of the 65 works recorded in this section, 45 are in Azerbaijani, 11 in Russian, 6 in English, 1 in French, 1 in Turkish, and 1 in Georgian.

The fourth part of the bibliographic resource consists of auxiliary indexes. These are the "Alphabetical Index of Heydar Aliyev's Works" and the "Alphabetical Index of Authors." In total, the fundamental bibliographic book includes bibliographic descriptions of 544 sources.

The creation of this substantial bibliographic information resource further proves that the bibliographic process is one of the main directions of scientific and bibliographic work in libraries. It is well known that this type of work requires considerable effort. With the introduction of computer technology, library programs have enabled the transition from traditional catalogs and filing cabinets to electronic systems, significantly simplifying and speeding up the process of compiling bibliographic indexes. The opportunities for compiling bibliographic indexes and lists in an automated mode have increased.

"To meet the cultural, scientific, and spiritual information needs of citizens in the process of forming the national literary language during the period of independence, it is crucial to create and publish works related to various scientific fields, including the humanities" [3, p. 6]. Through these works, it is possible to learn about the richness, history, and culture of the Azerbaijani language.

It is not by chance that the national independence of our country has had a significant impact on the creation of various printed materials in a wide range of scientific fields, including the humanities. One of the key factors influencing this is the special attention paid by President Ilham Aliyev, the worthy political successor of the National Leader Heydar Aliyev, to the development of all scientific fields, including the humanities, in Azerbaijan. The environment created in our country for the formation of the moral and spiritual development of individuals, the establishment of Azerbaijani ideology, is still felt today. In a word, the advancement of our rich book culture holds a special place in the governance of the country.

Providing information support for the teaching and scientific research processes of Aliyevism, creating opportunities for library users to access various types of information is the main mission of every institution.

**Conclusion.** Thus, the result of our research leads to the conclusion that "Heydar Aliyev: A Bibliographic Information Resource" is one of the most important biobibliographic indexes with a recommendation character. All biobibliographic indexes dedicated to our national leader are distinguished by various forms, including personal, biographical, and biobibliographic dictionaries. Recently, both bibliographers in large libraries and faculty members in universities have paid particular attention to the compilation of personal biobibliographic indexes in this direction.

*All personal indexes reflecting the legacy of the great leader combine bibliographic information, documents, and biographical details about publications related to him. These personal biobibliographic indexes are still effectively used today to promote Heydar Aliyev's long and rich socio-political career. In this regard, it is crucial that, through personal indexes dedicated to the great political leader, not only his life and work but also library collections related to Heydar Aliyev's legacy be opened and documented in special collections within libraries.*

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## THE ROLE OF JOURNALISM IN THE PR ACTIVITIES OF LIBRARIES

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### **Abstract**

The main aim of the article to study the role of journalism in PR activities of libraries. Thus, today's information-driven world, journalistic materials on various fields of activity have a wide and profound social impact. They play a significant role in disseminating knowledge, educating society, fostering critical thinking, and promoting intercultural dialogue. Digital technologies and social media further enhance this impact, increasing the influence of the journalistic genre on society. This represents a humanitarian approach to the issue. On the other hand, there is also a technological aspect to the problem, where the humanitarian approach often clashes with various interests.

Application importance: the material can be used in lectures and seminars in higher education institutions. Study can be useful for whom is interested in libraries as well.

**Keywords:** digital technologies, PR services in libraries, publicist method

**Introduction.** The use of modern social communications is a highly effective tool for increasing the influence of the journalistic genre. Social media and other digital platforms allow content to reach a wide audience, enhance interactivity, and facilitate the rapid dissemination of information. These methods ensure that journalism has a broader and deeper impact on society. Findings from the modern practices of library and information activities indicate that journalistic materials, particularly multimedia content, often have circulation rates that surpass classical works by a thousandfold or even ten thousandfold. Additionally, the composition of the readership is extensive and diverse.

There are varying opinions regarding the potential use of journalistic presentations to manipulate facts and events, which has raised concerns among some experts. However, it must be acknowledged that attempts to interpret and manipulate facts and events exist in all cases, especially in advertising campaigns, where unified standards are often absent. The credibility of primary sources and the number of scholarly references do not always prevent such attempts, and the reliability of primary sources themselves frequently raises questions (Kazimi & Guliyeva, 2023).

Such an approach relies on the trust libraries hold within society and their reputation as reliable sources, which is widely appreciated by the general public (Aghamirzayev & Seyidli, 2023)

### **The main part.**

In the modern information age, the use of journalistic genres in the dissemination and promotion of information has a significant impact on society and a wide audience. This impact manifests itself in several key areas:

#### **1. Facilitating the Delivery of Information to a Wide Audience**

The internet and social media provide the opportunity to disseminate knowledge to a vast audience. Articles on various topics are rapidly spread and reach large audiences through blogs, websites, social media platforms, and online publications.

#### **2. Ensuring the Rapid and Effective Dissemination of Information**

Digital technologies and social media enable the quick and effective spread of information. Articles and writings that capture readers' interest are swiftly shared, discussed, and widely distributed. Additionally, they create opportunities for statistical and content analysis related to the circulation of information.

#### **3. Providing Interactivity and Feedback Opportunities**

Modern journalistic approaches enhance interactivity. Readers comment on articles, engage in discussions on social media, and establish direct communication with authors. This interactivity increases the influence of articles and helps shed light on current topics.

#### **4. Utilizing Visual and Multimedia Materials to Enhance the Impact of Information**

Photos, videos, documentaries, and other multimedia materials amplify the impact of journalism.



*These materials capture readers' attention and help improve the understanding of the information presented.*

#### **5. Leveraging Popular Culture and Entertainment Tools**

*Journalistic approaches often utilize elements of popular culture. Through films, TV series, novels, and games, historical events and figures are introduced to a wider audience. This approach increases interest in specific knowledge, particularly among younger generations.*

#### **6. Bridging Academic and Popular (Mass) Knowledge**

*Some modern journalistic examples act as a bridge between academic and popular knowledge. The results of academic research are presented to a broad audience in a simple and comprehensible manner, contributing to the dissemination of knowledge and reliable information in society.*

#### **7. Fostering Public Discussions on Current Topics**

*Journalistic approaches address current issues and spark public discussions. This provides a new perspective on past events and helps society better understand present-day problems.*

#### **8. Supporting Libraries in Their Educational and Enlightenment Roles**

*Journalistic approaches have a broad influence in the fields of education and enlightenment. Schools and universities use historical journalism as teaching material, aiding in the dissemination of historical knowledge and educating younger generations.*

#### **9. Promoting the Development of Critical Thinking**

*Journalism encourages readers to think critically and approach events from various and differing perspectives. This plays an important role in forming a deeper and more comprehensive historical consciousness within society.*

#### **10. Serving Intercultural Dialogue**

*Journalism systematically and comprehensively promotes dialogue between different cultures and nations. It facilitates the sharing of various historical experiences and perspectives, thereby strengthening mutual understanding.*

#### **Theoretical analysis of the topic**

*The use of journalistic methods in library and information activities yields highly effective results in enhancing the dissemination of knowledge by leveraging modern social communication tools. Social media platforms and other digital communication tools are powerful means for reaching a wide audience, increasing interactivity, and ensuring the rapid dissemination of information. The effective use of these platforms can significantly enhance the impact of journalistic materials in various dimensions (Kazimi & Guliyeva, 2023).*

### **Conclusion**

*There are numerous commonalities between journalistic promotion of information and Public Relations (PR) services. Both fields are focused on presenting information, influencing the public, and delivering targeted messages. These shared approaches ensure the accurate and effective delivery of information and contribute to the development of public relations.*

*The PR services of libraries utilize various forms and methods of journalism to present information to a wide audience, develop public relations, and foster interest in culture. Presentations, publications, exhibitions, social media campaigns, educational programs, advocacy, interactive experiences, and diverse perspectives serve as key tools for libraries to effectively deliver knowledge and information.*

*The journalistic method acts as an effective tool in PR services, as the presentation of information and events strengthens organizations' and brands' relations with the public and enhances their image. Through historical journalism, organizations' historical and cultural values are introduced to a wide audience, making PR activities more impactful and meaningful.*

*Journalism plays a significant role as a tool in the non-commercial activities of libraries. The presentation of knowledge and information reinforces libraries' cultural and educational missions, improves public relations, and enhances their social impact. By employing journalistic methods, libraries disseminate knowledge and stimulate public interest, making their non-commercial activities more effective and meaningful. These methods are considered highly suitable and impactful in the functional operations of libraries. Additionally, they support libraries' roles in education, preserving cultural heritage, public relations, innovation, collaboration, and public awareness. Through journalism, libraries can more effectively fulfill their missions and establish deeper and broader connections with society.*

*The role of artificial intelligence (AI) in academic libraries has been widely discussed by experts. Alongside its risk factors, AI technologies that can enhance various services and the overall professional experience of specialists have been identified for application in libraries. Research indicates that AI can*

assist with library collection development and management, virtual reference services, digital information services, new library products, research papers and publications, research performance analysis, and bibliometric services. Expanding the use of AI in library and information activities is significant for addressing a number of the challenges highlighted in the article. The exploration and application of AI in libraries' asymmetric activities are essential for advancing these directions (Kazimi & Guliyeva, 2023).

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## MODERN METHODS AND RESULTS OF FOREIGN LANGUAGE TEACHING

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## MODERNE METHODEN UND ERGEBNISSE DES FREMDSPRACHENUNTERRICHTS

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<https://orcid.org/0009-0003-1889-2545>**Abstract**

When teaching a foreign language, it is important to know methods of teaching foreign languages in order to optimally choose a method of teaching according to the level and needs of the relevant group. The article presents an overview of foreign language teaching in terms of historical development and lists the main features of some methods of foreign language teaching.

**Abstrakt**

Beim Unterrichten einer Fremdsprache ist es wichtig, Methoden des Fremdsprachenunterrichts zu kennen, um eine Methode des Unterrichts nach dem Niveau und Bedürfnissen der entsprechenden Gruppe optimal zu wählen. Im Artikel wird der Überblick des Fremdsprachenunterrichts im Hinblick auf historische Entwicklung dargeboten sowie die Hauptmerkmale einiger Methoden des Fremdsprachenunterrichts aufgezählt.

**Keywords:** foreign language teaching method, grammar-translation method, direct/natural method, source language, target language, audio-visual/audio-lingual method, speaking exercises, spoken language.

**Schlüsselwörter:** Methode des Fremdsprachenunterrichts, Grammatik-Übersetzungsmethode, direkt/natürliche Methode, Ausgangssprache, Zielsprache, audio-visuelle/audio-linguale Methode, Sprechübungen, gesprochene Sprache.

Es gibt eine große Zahl altbewährter und neuer Unterrichtsmethoden, die einen sinnvollen und effektiven Unterricht ermöglichen. Die folgenden Übersichten sollen die Orientierung erleichtern.

In Abgrenzung zu Unterrichtstechniken bieten Methoden ein Ganzes von Theorie und davon abgeleiteten Unterrichtsverfahren.

Unterrichts- und Arbeitstechniken sind Hilfsmittel im Unterricht. Einzelne dieser Techniken lassen sich im Kontext unterschiedlicher größerer methodischer Konzepte gleichermaßen einsetzen.

1. Grammatik-Übersetzungsmethode (GÜM)
2. Direkte Methode (DM)
3. Audio-lingual Method (ALM)
4. Audiovisual structural global Method (AVSG)
5. Kommunikative Methode (kommunikativer Ansatz)
6. Interkulturelle Ansatz (nicht unbedingt als eigenständige Methode gesehen.)

Alternative Methoden: Community Language Learning, Silent Way, Suggestopä die, Tandem-Lernen, Total Physical Response.

**1) Grammatik-Übersetzungsmethode:** Die Grammatik-Übersetzungsmethode ist eine Methode zum Unterrichten von Fremdsprachen, die von der klassischen (manchmal auch als traditionell bezeichneten) Methode des Unterrichts von Altgriechisch und Latein abgeleitet ist. In Grammatik-Übersetzungskursen lernen die Schüler grammatikalische Regeln und wenden diese Regeln dann an, indem sie Sätze zwischen der Zielsprache und der Muttersprache übersetzen. Für Fortgeschrittene kann

es erforderlich sein, ganze Texte Wort für Wort zu übersetzen. Die Methode verfolgt zwei Hauptziele: den Studierenden das Lesen und Übersetzen von in der Ausgangssprache verfasster Literatur zu ermöglichen und die allgemeine intellektuelle Entwicklung der Studierenden zu fördern. Es entstand aus der Praxis des Lateinunterrichts. Die grammatikalische Analyse von Sätzen ist das Ziel des Grammatikunterrichts an der Schule. Seine Praxis ermöglicht es, einen Text als zusammenhängendes Ganzes zu erkennen und ist Voraussetzung für das Erlernen einer Fremdsprache. Die grammatikalische Terminologie dient diesem Ziel. Die Grammatik ermöglicht es jedem Schüler, die Funktionsweise seiner Muttersprache zu verstehen, um ihm die Fähigkeit zu geben, seine Gedanken mitzuteilen.

Sprachpädagogik ist eine Disziplin, die sich auf die Theorien und Techniken des Sprachunterrichts bezieht. Die Lehrmethoden sind in drei Teile unterteilt: strukturell, funktional und interaktiv. Jede davon umfasst eine Reihe von Methoden, die zum Lehren und Lernen von Sprachen eingesetzt werden können.

Die strukturelle Sichtweise behandelt Sprache als ein System strukturell verwandter Elemente zur Codebedeutung (z. B. Grammatik).

Die funktionale Sichtweise betrachtet Sprache als Mittel, um bestimmte Funktionen auszudrücken oder auszuführen (z. B. eine Anfrage stellen, Informationen geben oder um Informationen bitten). Die interaktive Sichtweise betrachtet Sprache als Mittel zur Schaffung und Aufrechterhaltung sozialer Beziehungen und konzentriert sich dabei auf Muster von Bewegungen, Handlungen, Verhandlungen und Interaktionen, die im Gesprächsaustausch zu finden sind.

**2) Direkte Methode:** Die direkte Methode, manchmal auch natürliche Methode genannt, ist eine Methode, die auf die Verwendung der Muttersprache des Lernenden verzichtet und lediglich die Zielsprache verwendet. Die direkte Methode basiert auf der Idee, dass das Erlernen der zweiten Sprache eine Nachahmung des Erlernens der ersten Sprache sein muss, da dies die natürliche Art und Weise ist, wie Menschen jede Sprache lernen: Ein Kind verlässt sich nie auf eine andere Sprache, um seine erste Sprache und damit die Muttersprache zu lernen ist nicht notwendig, um eine Fremdsprache zu lernen. Bei dieser Methode wird von Anfang an großer Wert auf die korrekte Aussprache und die Zielsprache gelegt. Sie befürwortet die Vermittlung mündlicher Fähigkeiten auf Kosten jedes traditionellen Ziels des Sprachunterrichts. Solche Methoden basieren auf der direkten Darstellung einer Erfahrung in einem sprachlichen Konstrukt und nicht auf Abstraktionen wie Mimikry, Übersetzung und dem Auswendiglernen von Grammatikregeln und Vokabeln.

Nach dieser Methode müssen gedruckte Sprache und Texte so lange wie möglich von Zweitsprachenlernern ferngehalten werden, so wie ein Erstsprachenlerner gedruckte Wörter erst verwendet, wenn er die Sprache gut beherrscht. Das Erlernen von Schreiben und Rechtschreibung sollte aufgeschoben werden, bis das gedruckte Wort eingeführt wurde, und Grammatik und Übersetzungen sollten ebenfalls vermieden werden, da dies die Anwendung der Muttersprache des Lernenden erfordern würde. Alle oben genannten Punkte müssen vermieden werden, da sie den Erwerb einer guten mündlichen Beherrschung behindern.

Die Methode basiert auf einem schrittweisen Vorgehen auf der Grundlage von Frage-und-Antwort-Sitzungen, die mit der Benennung gängiger Objekte wie Türen, Bleistifte, Böden usw. beginnen. Es bietet einen motivierenden Einstieg, da der Lernende fast sofort mit der Anwendung einer Fremdsprache beginnt. Der Unterricht geht weiter zu Verbformen und anderen grammatikalischen Strukturen mit dem Ziel, etwa dreißig neue Wörter pro Lektion zu lernen.

**3) Audiolinguale Methode:** wurde in den Vereinigten Staaten um den Zweiten Weltkrieg herum entwickelt. Das U.S. Army Specialized Training Program erstellte Intensivprogramme, die auf den Techniken basierten, die Leonard Bloomfield und andere Linguisten für Sprachen der amerikanischen Ureinwohner entwickelt hatten. Dabei interagierten die Schüler in geführten Gesprächen intensiv mit Muttersprachlern und einem Linguisten, um die grundlegende Grammatik zu entschlüsseln und den Wortschatz zu lernen. Diese „Informanten Methode“ hatte mit ihren kleinen Klassengrößen und motivierten Lernenden großen Erfolg. Diese erste Version der Methode wurde ursprünglich als orale Methode, Aurel-orale Methode oder struktureller Ansatz bezeichnet.

Kurse und Techniken wurden neu gestaltet, um Erkenntnisse aus der Verhaltenspsychologie zu den bereits verwendeten strukturellen Linguistik und konstruktiven Analysen hinzuzufügen. Bei dieser Methode hören oder sehen sich die Schüler Aufzeichnungen von Sprachmodellen an, die in Situationen agieren. Die Schüler üben mit einer Vielzahl von Übungen, und der Lehrer legt stets Wert auf die Verwendung der Zielsprache.

**4) Audiovisual structural global Method (AVSG):** Die Structuro-Global Audio-Visual (SGAV)-Methodik wurde in den 1960er Jahren (erste Generation) und 1970er Jahren (zweite Generation) in Frankreich entwickelt.



Basierend auf einem eklektischen ganzheitlichen Ansatz zum Erwerb einer zweiten Sprache legte die SGAV-Methodik der zweiten Generation den Schwerpunkt auf die Präsentation sprachlichen Materials in einer Situation und die physische und affektive Beteiligung von Sprachlernern an der kommunikativen Interaktion ohne die direkte Vermittlung sprachlicher Regeln.

Mitte der 1970er Jahre wurde eine SGAV-Methode namens „All's Well“ veröffentlicht, die in den 1970er Jahren in Frankreich vor allem in Weiterbildungsprogrammen weit verbreitet war, in den 1980er Jahren jedoch kommunikativen Sprachunterrichtsmethoden Platz machte.

**5) Kommunikativer Methode:** In den letzten Jahren hat das aufgabenbasierte Sprachenlernen (TBLL), auch bekannt als aufgabenbasierter Sprachunterricht (TBLT) oder aufgabenbasierter Unterricht (TBI), stetig an Popularität gewonnen. TBLL ist eine Weiterentwicklung des CLT-Ansatzes und betont die erfolgreiche Erledigung von Aufgaben sowohl als Organisationsmerkmal als auch als Grundlage für die Bewertung des Sprachunterrichts. Der Dogma-Sprachunterricht teilt eine Philosophie mit TBL, unterscheidet sich jedoch im Ansatz. Dogme ist ein kommunikativer Ansatz und fördert den Unterricht ohne veröffentlichte Lehrbücher und konzentriert sich stattdessen auf die Konversationskommunikation zwischen den Lernenden und dem Lehrer.

**6) Interkulturelle Ansatz Methode:** Der Interkulturelle Ansatz ist inhaltsorientiert, denn die Themen und Texte orientieren sich an Landeskunde und an dem Kulturvergleich. Der Kulturbegriff wird hier weitgefasst und beinhaltet nicht nur die „hohe“ Kultur, sondern auch das Alltagsleben. Literatur kommt in diesem Konzept wieder in die Lehrwerke. Darüber hinaus wird die bekannte eigene Welt mit der Welt der Zielsprachenländer verglichen. Dabei wird L1 nicht ausgeschlossen, sondern als Hilfe herangezogen. Das Prinzip der „aufgeklärten Einsprachigkeit“ wird befolgt.

Die interkulturelle Kommunikationswissenschaft als Bezugswissenschaft definiert die interkulturelle Kommunikation als eine Interaktion zwischen Kommunikationspartnern, die aus unterschiedlichen Kulturen kommen. Die interkulturelle Kommunikationswissenschaft erarbeitet Strukturmerkmale, die von Kultur zu Kultur variieren können. Die folgenden Merkmale werden im Rahmen des Interkulturellen Ansatzes thematisiert:

- ✓ Kultursensitive Wörter und Ausdrücke
- ✓ Denken (induktiv, deduktiv, analog)
- ✓ Wahrnehmung
- ✓ Zeiterleben, Raumerleben
- ✓ nichtverbale Kommunikation
- ✓ Wertorientierung
- ✓ Verhaltensmuster: Sitten, Normen, Rollen
- ✓ soziale Gruppierungen und Beziehungen
- ✓ Direktheit oder Indirektheit in der Kommunikation etc.

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## Sociological sciences

### DEVELOPMENT OF EFFECTIVE PREVENTIVE APPROACHES IN STRENGTHENING THE MENTAL HEALTH OF STUDENTS IN KAZAKHSTAN

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#### **Abstract**

The article delineates the principal theoretical frameworks pertinent to the examination of mental health and the findings of a sociological study conducted in 2024, focusing on the mental health of student youth in Kazakhstan. The investigation into the mental health of the population represents a relatively nascent research endeavor, as the necessity for such inquiry has emerged only recently. Nonetheless, the fields of medical sociology and psychology have accumulated significant insights regarding this subject. The article synthesizes the primary methodologies for studying mental health, which encompass medical examinations of patients, psychological assessments of individuals, and sociological surveys aimed at evaluating public awareness of the concept of "mental health," alongside the self-assessment of socio-psychological well-being and evaluations of the socio-psychological states of peers.

This article provides an overview of the sociological study executed within the framework of an interdisciplinary scientific project by a consortium of researchers from the Karaganda University named after E.A. Buketov and the Medical University of Astana (Kazakhstan). Within this study, students from leading universities across Kazakhstan were interviewed to assess their mental health. The initial processing and analysis of the gathered data were undertaken, leading to the systematization of results for subsequent examination based on four principal blocks of research questions.

The first block addressed the determination of the "level of awareness" concerning the research themes. The second block focused on the prevalence of mental (psychoemotional) issues among the student population. The third set of questions concerned the "self-assessment and identification of the characteristics of the mental health status among students." The fourth block explored the "level of awareness and evaluation of the effectiveness of psychological services" that are available and established within university contexts.

Overall, the conclusions drawn from the study underscore the significance of investigating mental health in Kazakhstan and the necessity for the development of appropriate new methods for the prevention and mitigation of socio-psychological challenges faced by students.

**Keywords:** mental health; awareness; stress tolerance; preventive approaches; health improvement; student youth

#### *Introduction*

The maintenance of student health in the Republic of Kazakhstan constitutes a paramount obligation for both society and the state. Enhancing the quality of life for young individuals represents a critical component in the effective fortification of the nation's intellectual capacity. Currently, over 600,000 students are enrolled in the country. Recent years have witnessed an increased focus on the issue of student health among scholars, medical practitioners, and educators, attributable to the elevated incidence of illness among this demographic and a myriad of factors necessitating adaptation for students. These factors encompass persistent psycho-emotional stress, information overload, and frequent disruptions in work, rest, and nutrition patterns. The deteriorating mental health of students in higher education institutions is emerging as an increasingly urgent concern within the domains of public health and social policy. Familiar stressors impacting the well-being and life satisfaction of students include depression, anxiety, and stress. [1], [2]

Research conducted on diverse samples of undergraduate students across the globe has revealed a moderate to high prevalence of stress, anxiety, and depression within this demographic group. The COVID-19 pandemic has resulted in an increase in anxiety and stress affecting approximately 40% of the global population. These emotional responses may establish the conditions conducive to potential

*psychological and emotional trauma, which could exert a long-term impact on individuals' mental health throughout their lifetimes.*

*An article examining the medical and social assessment of student health underscores the expectation that students should represent the healthiest segment of society; however, this is not the case due to inadequate societal attention to student health, a decline in the frequency of preventive examinations, the lack of a comprehensive medical monitoring system, an increase in functional disorders and chronic diseases, and a deterioration in indicators of physical development.*

*Students in higher education institutions are particularly vulnerable to depression as a consequence of stress associated with independent living and academic demands. Furthermore, according to Zuo et al., traumatic life experiences significantly and positively influence the onset of depression. Depression is commonly correlated with diminished quality of life, elevated morbidity, and mortality rates. Additionally, depression adversely affects both mental and physical health, being associated with acute infectious diseases, suicidal ideation, and suicide.*

*During the annual survey 'Healthy Mind,' conducted among American students at 133 college campuses in 2021-2022, 44% of respondents reported experiencing depressive symptoms, and 15% stated that they had thought about suicide in the past year. [11]*

*As part of the National College Health Assessment conducted by the American College Health Association (ACHA) in spring 2022, over 54,000 undergraduate students were surveyed. The results showed that approximately 77% of them experienced psychological distress ranging from moderate to severe.*

*According to a study conducted in Russia in 2020, the prevalence of anxiety disorders among Russian medical university students highlights the importance of conducting both primary and secondary prevention. First-year students, in particular, struggle to adapt to new living conditions and the demands of higher education. The results showed that anxiety disorders were identified in 65.8% of first-year students and in more than half of fourth-year students, with women suffering from anxiety disorders 1.5 times more frequently. Depressive states were found in every fifth student, regardless of their academic level. More than 50% of junior students and one in three senior students suffered from obsessive-compulsive disorders of varying severity. The severity of these disorders in first-year students was found to be two times more common than in fourth-year students. [12]*

*Depression and anxiety disorders are among the most severe diseases and have a significant socioeconomic impact (GBD 2019 Diseases and Injuries Collaborators, 2020; GBD 2019 Mental Disorders Collaborators, 2022).*

*According to a study among students at Semey Medical University, the incidence of depression was 33.2%, and the incidence of suicidal ideation was 10.5%. [13] Considering that half of all suicide attempts, regardless of whether they are fatal or not, are accounted for by a significant percentage of people expressing suicidal ideation, this figure can still be considered high. In addition, under the influence of the COVID-19 pandemic, medical students' behavior during the learning process has changed and their stress levels have increased. Thus, at the Semey Medical University, the proportion of medical students experiencing anxiety and depression was 17% and 40.6% [14], in the Pavlodar branch of the Semey Medical University - 26.1% and 30% [15], and in the S.D. Asfendiyarov KazNMU - 39% and 40.6%. [16]*

*An analysis of the current problems of youth health in the context of the modern economy highlights the relevance of this topic due to the age-related characteristics of the period during which intensive physical and psychological growth, personality formation, morphological and psychological processes, and the development of vital body systems are observed. This period makes the body more vulnerable to the impact of both favorable and negative environmental factors and disasters. The effectiveness of health improvement and rehabilitation programs for students largely depends on the methods used by organizations and the level of training of specialists involved in medical and preventive work among young people.*

*Thus, the understanding that mental health aspects have not been sufficiently studied in Kazakhstan, especially among students of higher education institutions, emphasizes the importance of conducting scientific research on mental health awareness and developing preventive approaches to health improvement.*

*Methods and results of the study*

*As part of the project implementation and in accordance with the calendar plan, after the development of the sociological research program and questionnaire, a sociological survey was conducted in 4 regions of Kazakhstan: Astana, Semey, Atyrau, and Karaganda. More than 1000 students*

were surveyed.

Five focused interviews were conducted with university students to determine the level of awareness and discuss students' mental health.

The survey results showed that in general, about 43.9% of surveyed students have a good understanding of the concept of 'mental health.' However, the percentage varies somewhat depending on the region of the respondents' residence.

**Table 1**

**Answers to the question "Do you know what mental health is?"**

| Region    | Yes, good | I heard something | No   | I would like to know more details | I'm having trouble |
|-----------|-----------|-------------------|------|-----------------------------------|--------------------|
| Astana    | 45,6      | 29                | 20,7 | 4,0                               | 0,7                |
| Almaty    | 43,2      | 29,1              | 18,7 | 6,0                               | 3,0                |
| Atyrau    | 46,6      | 29,2              | 22,9 | 1,0                               | 0,3                |
| Semey     | 39,1      | 20,9              | 25   | 6,7                               | 8,3                |
| Karaganda | 45,1      | 29,1              | 20,8 | 3,0                               | 2,0                |
| Average   | 43,9      | 27,5              | 21,6 | 4,1                               | 2,9                |

In response to the question of what students mean and how they understand the term "mental health," the following answers were obtained. The majority of respondents believe that this concept rather means "Psychological and emotional health"; however, there are also those who provided specific answers that elucidate the concept of mental health - emotional balance, mental well-being, the ability to manage emotions, physical health, the ability to cope with stress and depression, which are also correct and reflect the key significance of this important term in their judgments.

**Table 2**

**Answers to the question "In your understanding, mental health is:"**

| Region    | Psychological and emotional health | Emotional balance | Mental health | Ability to manage emotions | Physical health | Ability to resist stress and depression |
|-----------|------------------------------------|-------------------|---------------|----------------------------|-----------------|-----------------------------------------|
| Astana    | 20,9                               | 14,4              | 16,4          | 16,1                       | 12,2            | 20,0                                    |
| Almaty    | 19,2                               | 15,2              | 15,9          | 19,7                       | 9,1             | 20,9                                    |
| Atyrau    | 22,7                               | 22,2              | 19,1          | 16,1                       | 6,0             | 13,9                                    |
| Semiy     | 22,1                               | 25,9              | 23,9          | 17,3                       | 7,9             | 2,9                                     |
| Karaganda | 26,9                               | 24,9              | 20,0          | 10,7                       | 8,6             | 8,9                                     |
| Medium    | 22,4                               | 20,5              | 19,1          | 16,0                       | 8,8             | 13,3                                    |

Channels through which respondents receive information about the importance and significance of mental health in a person's life are numerous, as the survey results showed, but electronic digital mass media sources predominate.

It is important to note that the structure of the consciousness of the surveyed respondents reflects a modern attitude towards independent self-preservation behavior regarding their mental health. The paternalistic attitudes towards state or other institutions' care for the life and health of modern Kazakhstanis are fading into the past.

By using self-assessments of their own health and evaluations of the behavior and health status of others, results were obtained for the second block of research questions - 'The relevance of mental (psychoemotional) problems among students.' As the survey results showed, the majority of respondents assess their psychoemotional state as 'calm.' However, part of the respondents confirmed experiencing certain symptoms of psychoemotional discomfort.

Among the list of relevant potential stressors affecting the psychoemotional health of respondents, financial difficulties, employment, and the political situation are in the lead. Mental health is among the top four important issues concerning youth."

As expected, an important influence on the psycho-emotional state of young people is the moment of admission and the period of study at university. About 1/5 of the respondents stated that their condition had 'somewhat worsened' or 'significantly worsened' during this period.

To gain a deeper understanding of the relationship between the psycho-emotional and physical states of students, they were asked a series of questions both in a quantitative survey and in in-depth interviews regarding the comparison of their mental and physical health. In general, it can be concluded from this block of questions that students are more concerned about the state of their physical health because it has a more pronounced pain symptomatology compared to mental health.

However, as the survey results showed, students are also worried and can objectively assess the state of their mental health.



Table 3

*Answers to the question "How did your health change before entering the university and during your studies? (answer for each line)"*

| Answer options            | It got better | It got worse | It hasn't changed | I find it difficult to estimate |
|---------------------------|---------------|--------------|-------------------|---------------------------------|
| Physical                  | 35,9          | 29           | 28,5              | 6,6                             |
| Mental (psycho-emotional) | 36,9          | 31,3         | 19,3              | 12,5                            |

Table 4

*Answers to the question "How do you rate your current state of health? (answer for each line)"*

| Answer options            | I find it difficult to estimate | Satisfactory | Bad  | I find it difficult to estimate |
|---------------------------|---------------------------------|--------------|------|---------------------------------|
| Physical                  | 28,8                            | 29,4         | 29,9 | 11,9                            |
| Mental (psycho-emotional) | 33,9                            | 31,7         | 30,8 | 3,6                             |

Thus, the survey revealed differences in the respondents' understanding of physical and mental health. This difference was especially evident in the respondents' understanding of the importance of certain conditions on a person's health - in terms of maintaining physical health, respondents believe that medical care is of great importance, while in terms of mental health, the efforts of the person himself are important.

#### Conclusions

The survey conducted among students showed that most respondents are well informed about the concept of mental health, show interest and concern about their mental health and the health of others. Thus, students distinguish between the concepts of "mental" and "physical" health, and realize the importance of taking care of their own health and a healthy environment. Also, self-assessments of their mental health revealed symptoms of its deterioration in most students during their studies. Further directions of the study will be aimed at developing effective preventive approaches to strengthening the mental health of students in Kazakhstan.

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## Technical sciences

### DESIGNING A CLOTHES MODEL

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### GEYİM MODELİNİN LAYİHƏLƏNDİRİLMƏSİ

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### ПРОЕКТИРОВАНИЕ МОДЕЛИ ОДЕЖДЫ

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#### Abstract

Clothing modeling is a constructive and artistic processing of the basic drawing to obtain the desired lines and shapes of the intended product. Transformations of drawings can be very different, some are performed according to certain rules, and others are drawn manually according to the model.

#### Xülasə

Geyim modelləşdirməsi nəzərdə tutulan məhsulun istənilən xətlərini və formalarını əldə etmək üçün əsas rəsmi konstruktiv və bədii manipulyasiyasıdır. Rəsm çevrilmələri çox fərqli ola bilər, bəziləri müəyyən qaydalara əsasən edilir, bəziləri isə modelə uyğun olaraq əl ilə çəkilir.

#### Аннотация

Моделирование одежды – это конструктивная и художественная обработка основного рисунка для получения желаемых линий и форм задуманного изделия. Преобразования чертежей могут быть самыми разными, одни выполняются по определенным правилам, а другие рисуются вручную по модели.

**Keywords:** Design, sketch, design, model.

**Açar sözlər:** Layihələndirmə, eskiz, dizayn, model.

**Ключевые слова:** Дизайн, эскиз, дизайн, модель.

**Geyimlərin təsnifatı.** Bildiyimiz kimi, qədim insan öz geyimini doğrulub yaşadığı təbiətdə tapmışdır. Xüsusilə heyvan dəriləri insanlar üçün ilk geyim olmuşdur. Zaman keçdikcə, insan şuru inkişaf etdikcə təbiətdə insan yeni geyimlər yaratmışdır.

Hələ 3-min il bundan əvvəl yaşamış assuriyalıların, misirlilərin və babillərin əlvan rəngli, nazik parçalardan tikilmiş gözəl paltarları olmuşdur. Qədim yunanların geydikləri qəşəng biçimli tunika və xitonlar öz qırçınları ilə insan fiqurunun gözəlliyini nümayiş etdirmişdir. Geyimlər getdikcə təkmilləşdirilmiş, dövrün tələblərinə uyğunlaşdırılaraq müasir formaya salınmış və onlardan tə'yinatına görə istifadə olunmağa başlanılmışdır.

Geyimlər öz istismar şəraitinə görə rahat olmalı, insanın hərəkətlərini məhdudlaşdırmamalı, sanitariya- gigiyena və estetik tələblərə cavab verməlidir. Geyimlərin növləri və çeşidləri həddindən artıq müxtəlifdir.

Tikiş mə'mulatinın əsasını məişət geyimləri təşkil edir. Məişət geyimləri altı yarımşinifə- üst geyimlərə, yüngül geyimlərə, alt geyimlərə, yataq mə'mulatinə, korset mə'mulatinə, və baş geyimlərinə

bölünür. *Buyarinsiniflər də özlüyündə qruplara ayrılır.*

**Üst geyimlər-** palto, yarım palto, plaş, jaket, jilet, pencək, gödəkcə, kostyum, kombinezon, örtük, don-palto və.s.

**Yüngül geyimlər-** don, don-kostyum, sarafan, yarım kombinezon, don-xələt, bluzka, üst köynək, şalvar, tuman, tuman-şalvar, qısa şalvar, kofta, önlük, döşlü, önlük və.s

**Alt geyimlər-** pijama, alt köynək, gecə köynəyi, qısa alt tumanı, kişi tumanı, üzgüçü tumanı, çimərlik kostyumu, çimərlik dəsti, darbalaq, alt tuman, körpələr üçün balağı bağlı yarım kombinezon, düyməsiz körpə köynəyi, körpə əskisi və s.

**Yataq mə'mulati-** yorğan, üzü, döşəkağı, başlıqlı mələfə, bələk əskisi, yastıq, üzü, sıyrılmış örtük, yorğan, körpə uşaq üçün konvert və s.

**Korset mə'mulati-** büsthalter- kombinasiya, kombinasiya- korset, yarım korset, qrasıya, qrasıya-yuman, corab üçün kəmə, kəmə- darbalaq, büsthalter və s.

**Baş geyimləri-** şlyapa, qulaqlı papaq, furajka, beret, kepka, günlüksüz şapka, şlem, jokey papağı, pilotka, kapor, çənə altından lentlə bağlanan yumuşaq qadın papağı, çepçik, tubeteyka, panama, ləçək, kapitan papağı, matros papağı və s,

*Qruplar da özlüyündə yarımqruplara bölünür:*

a) cinsə görə (kişi və qadın):

b) yaşa görə (böyük, yeniyetmə, məktəb əyaşlı, kiçik məktəb yaşlı, məktəbəqədər yaşlı, bağça yaşlı, yeni doğulmuş körpələr).

*Tə'inatına görə- ev geyimləri, gündəlik geyimlər, bayırlıq paltar, təntənəli günlərdə geyilən paltarlar, axşam və məişət geyimləri, eləcə də idman geyimləri.*

*Mövsümə görə- qış geyimləri, mövsümi geyimlər, yay geyimləri, mövsümdən kənar geyimlər.*

#### **Geyimlərin istehsal mərhələləri**

*Geyüləim hazırlanması prosesi üç əsas mərhələdən ibarətdir.*

1) model, konstruksiya və ülgülərin yaradılması,

2) parçanın biçilmək üçün hazırlanması və biçmə (başqa sözlə, hazırlıq- biçmə sahəsində görülən işlər),

3) mə'mulatin tikilməsi və bəzədilməsi,

*Geyimin kütləvi istehsalı üçün modellərin işlənilib hazırlanması və konstruksiya edilməsi ilə modalar evləri, təcrübi- texniki laboratoriyalar və modalar evinin rəhbərliyi ilə yüksək ixtisaslı kadrları, rəssam dodelçiləri konstruktorları olan, eksperimental sexlərə malik ayrı-ayrı müəssisələrdə, məşğul olurlar. Geyimin sənaye kolleksiyasının işləyib hazırlamaq üçün modalar evi həmin müəssisəyə tərkibində rəssam- modelçi, konstruktor və texnoloq olan mütəxəssislər qrupu təhkim edir.*

*Elmi-texniki şuranın modalar və geyim mədəniyyəti məsələləri üzrə estetik komissiyanın tövsiyələri əsasında modalar evi lazımi tə'yinatlı modalar kolleksiyası işləyib- hazırlayır. Bu kolleksiyaları müəssisə və ticarət təşkilatlarında nümayiş etdirirlər. Kolleksiylara baxış keçirildikdən sonra müəssisə modellərin miqdarını, tövsiyə olunan ölçü şkalasını, boyu və parçanın artikulunu göstərməklə kolleksiya işləyib- hazırlamaq üçün tələbname (texniki tapşırıq) verir. Müəssisələrin texniki tapşırıqları əsasında Modalar evinin rəssamları modellərin eskizlərini hazırlayırlar. Bu eskizlər Modalar evinin bədii-texniki şurasında təsdiq edilir.*

*Modalar evi təsdiq olunmuş eskizlər əsasında mövcud olan parça çeşidlərindən və tikiş müəssisələrinin alacağı planlaşdırılmış yeni parçalardan modalar işləyib-hazırlayır. İşlənilib- hazırlanmış konstruksiya və onların texniki sənədləri müəssisəyə təfیل verilir.*

*Mə'mulatin konstruksiya edilməsi — konstruksiyanın işlənilib-hazırlanması prosesidir. Konstruksiya mə'mulatin natural ölçüdə çertiyoluq olub, orada mə'mulatin hissələrinin kəsikləri üzrə qovuşma yerləri və hazırlama üsulları göstərilir.*

*Texniki sənədlərdə hər bir modelin tövsiyə olunan ölçüləri, boyu və doluluğu, parçanın artikulı, biçilməsi üçün texniki şərtlər, ülgü sahəsi və parçanın sərf norması, işlənilmə metodları, ülgünü və hazır mə'mulati ölçmə cədvəli, markalanma qaydaları, mə'mulatin qablaşdırılması göstərilir.*

*Kompozisiya (latin sözü compositio – quraşdırma, əlaqələndirmə) – bədii əsərin məzmununa, elementləri mənasındadır.*

*Kompozisiya – formanın, elementlərin elə qanunauyğuxarakterinə və təyinatına həmçinin onun dərkedilməsinə əsaslanmaqla qurulmasıdır. Bu duyğu üzləri ilə qəbul edilən rəsm əsəri, musiqi, heykəl, arxitektura əsəri, əşya mühitində əşya və ya əşyalar, kosryum, maşın və avdanlıq və il. ola bilər.*

*Kompozisiya – bədii formanın əsas təşkili elementi olub, bədii əsərə vahidlik və bütövlülük, komponentlərinin biri-birinə tabeliliyini və bütövlüyünü aşılayır. Komponent (latin sözü componens –*



*təşkil edənlər) – nəyinse tərkib hissələri,*

*n bölüşdürülməsidir ki, o, məmulatın harmoniyasını və obrazlığını təstiqləsin.*

*Kompozisiya - bədii əsərin formasının bütün elementlərinin ehtiva etməsidir ki, o bütövlükdə və tam halda həmin əsərin ideya-bədii obrazını ifadə etsin.*

*Kompozisiya özündə aşağıdakı anlayışları birləşdirir:*

*kompozision formamələgətirmə (forma, həndəsi görünüş, konstruksiya, kütlə, siluyet) ;*

*kompozisiya qanunauyğunluqları ( ölçülülük, biri-birinə tabelilik, kompozisiya mərkəzi), başqa sözlə quruluşun bütövlüyü;*

*kompozisiyanın harmonikləşdirilməsi üsulları ( contrast, nüans, ifadəlilik, miqyas, miqyaslılıq, simmetriya, assimetriya, statika və dinamika).*

*Tətbiqi incəsənətdə iki növ kompozisiya ayırd edilir:*

*Səthi (müstəvi) kompozisiya – iki ölçülü;*

*Həcmli kompozisiya – üç ölçülü.*

*Səthi (müstəvi) kompozisiyalara parça, xalça, divar kağızları, yaylıq, və s. kimi məmulatların bədii tərtibatı aiddir.*

*Həcmli kompozisiyalarda isə kostyumun bədii həlli: geyim, ayaqqabı, baş qeyimləri və s. aiddir.*

*Geyimin kompozisiyası onun formasının bütün elementlərinin, onun məzmunu ifadə etməsi üçün vahid qurulması vasitələri ilə tərtib edilməsidir.*

*Bədii layihələndirmə prosesi yeni ifadə vasitələrinin köməyi ilə yeni məmulatların yaradılmasını tələb edir.*

*Kostyumun layihələndirməsi iki istiqamətə ayrılır: funksional və estetik.*

*Birinci halda funksiyadan söhbət gedir. İkinci halda isə konkret insan obrazına və materiala əsaslanır.*

*Kompozisiya modeli bədii tərəfdən təqdim edir. Bədii kompozisiyanın yaradılması qanunu formanın elementlərinin, rəngin, fakturanın, bəzəyin harmonik uyğunlaşmasında və bölüşdürülməsində ifadə olunur. Kompozisiyanın vasitələri xəttlər, rəng, işıq, faktura kütlədir. Bunların köməyi ilə formanın, strukturanın vasitələrinin təsirini gücləndirmək və zəiflətmək olar. Elementlərin eyniliyi kompozisiyaya qeyri-müəyyənlik qədir və formanın bütövlüyünü pozur.*

*Məlumdur ki, dizayn XIX əsrin ikinci yarısından vüsət almış sənaye sferasında kütləvi məmulat istehsalının başlaması ilə meydana çıxmışdır.*

*/5/ Dizayn – yaradıcılıq layihə fəaliyyətidir ki, nəticəsi insanın maddi və mənəvi tələbatını ödəyəcək harmonik əşya mühitini yaratmaqdan ibarətdir. Dizayner – dizayn sferasında fəaliyyət göstərən mütəxəssisdır. Onun fəaliyyəti şübhəsiz ki, innovativ fəaliyyətdir, lakin elmi kəşfdən fərqli olaraq, bu fəaliyyətin müəyyən edilmiş dəqiq məqsədi layihə tapşırığı şəkilində formalaşır və layihə mədəniyyəti adlandırılan yeni tip mədəniyyəti, yəni özündə elmi-texniki həmçinin humanitar mədəniyyətləri birləşdirən bir mədəniyyəti ehtiva edir. Dizayn strukturuna, əsasən aşağıdakı elementləri daxil etmək olar: a) dizayn fəaliyyətinin subyekti – dizayner və istehlakçı; b) dizayn fəaliyyətinin obyektı – dizayn layihə və dizayn məhsul; c) mühit – müxtəlif fəaliyyət sistemləri.*

*Müasir Azərbaycanda toxuculuq və yüngül sənaye sahələri xalqımızın qədimdən bəri yaşatdığı və inkişaf etdirdiyi ən geniş yayılmış sahələrindəndir. Bu sənaye sahələrində istehsal edilən məmulatların kompozisiyasının qurulma qanunauyğunluqlarını öyrənmək dizaynerlər üçün çox vacib və lazımlıdır.*

**Layihələndirmə** – realıqda mövcud olmayan nəzərdə tutulmuş xassələrə malik obyektin təsvirinin, şəklinin (eskizinin, maketinin) yaxud konsepsiyasının yaradılmasından ibarətdir [2]. Dizayner layihəsində bilik və fantaziya, dəqiqlik və intuisiya, elm və incəsənət, istedad və ustalıq qarşılıqlı əlaqədə təzahür edir. Hər hansı bir əşyanın (məhsulun) mükəmməl dizayner layihəsini işləmək üçün mütəxəssisdən bu əşya (məhsul) barəsində akademik bilik (xassələri, quruluşu, modeləşdirilməsi, konstruksiyası, istehsal texnologiyası və s. barədə), elmi-sistemli yanaşma, bacarıq və qabiliyyət, fantaziya və bədii intuisiya, istedad və ustalıq olmalıdır.

*Yüngül sənaye məmulatlarının layihələndirilməsində ilkin mərhələ məmulat növü üçün layihəqabağı analiz və sintez üsullarından istifadə etməklə müəyyənləşdirilmiş ilkin məlumatlara əsasən onun ilkin eskizinin (qrafik təsvirinin) hazırlanmasıdır. İlkin, eskizin mütəxəssislərlə (marketoloqlarla, konstruktorlarla, texnoloqlarla və digərləri ilə) müzakirəsini və vacib düzəlişlərini apardıqdan sonra məmulat növünü həcmi modelə, onun xarici təsviri ilə həmçinin praktiki istifadə mümkünliyi ilə (layinə-qrafik modeləşmədə ikinci eskizlə) tamamlamaq olar. Dizayner modeləşdirilməsi layihəyə konkret görünüş verir.*

*Geyim modelinin təhlili o zaman asan olur ki, onun forması sadələşdirilmiş olsun. Bunun üçün*

formaya xas olan əlamətləri və xarakterik cizgiləri ixtisar etməyə çalışmaq lazımdır. Sadə xüsusiləşmədə simmetrik forma fiziki tarazlığı, təbiətdə davamlığı simvolizə edir.

Geyimlərdə üslub – istənilən geyimin obrazını vahid şəkildə göstərən vasitədir. Onun sabit həmçinin dinamik olması və uzun müddət qala bilməsi geyimlərin xarakterik əlamətidir.

İstənilən zaman dəb dəyişir, yenilənir, lakin bu dəyişiklik üslubların itməsinə səbəb olmur. Cəmiyyətin qəbul etdiyi geyim forması, hər bir fərdin daxili istəkləri ilə üst-üstə düşsə bu arzu olunan obraz olub, geyim modası kimi xüsusi dəyəərə malik olur. Bu şərtlə ki, təyinatı üzrə geyim əvvəl olanlardan formasına, emal üsuluna, materiallarına görə nəzərə cəpəcə dəfərlənmiş olsun. Modanın əsas dəyəri onun müasir zövqə uyğun gəlməsidir. Moda öz müasirliyini əvvəlki dövrlərdə mövcud geyim modalarına qayıdılanda belə saxlayır. Bu onun mahiyyətinin əsasında. Geyim modasının əsas mahiyyətini “Müasirlik və keçərlik” təşkil edir. [4]

Modeləşdirmə – bütöv obyektin (obyektlər sisteminin) əks etdirilməsi, təqdim və ya təsvir edilməsi prosesidir. Bədii-fiqurativ modeləşdirmə, riyazi modeləşdirmə (riyazi modelin hesabı), layihə-qrafik modeləşdirmə (eskizlərin qurulması), həcmi modeləşdirmə (maket və modelin yaradılması), sözlü modeləşdirmə (yeni obyektin sözlü konsepsiyasının yaradılması, onun fəaliyyət prinsipinin təsviri və s.) ayırd edilir ki, bunlardan da yüngül sənaye məmulatları üçün əsasən layihə-qrafik modeləşdirilmədən və həcmi modeləşdirmədən daha geniş istifadə olunur. [4]

Ən geniş yayılmış modeləşdirmə üsulu – retrospektiv modeləşdirmədir. Bu üsul baxılan obyektin əks tiplərinin və analoglarının analizinin aparılmasına, nəticədə layihə tapşırığının icrasında istifadə edilməsinə əsaslanır. Lakin bu üsul yeni əşyaların yaradılmasına və ya yeni formatda mövcud olan əşyaların təkmilləşdirilməsi kimi əsas dizayn tapşırığının yerinə yetirilməsinə imkan vermir.

Modeləşdirmənin digər bir üsulu konstruktiv modeləşdirmədir ki, bu da əşyaların funksiyalarının və morfologiyalarının (əşyanın marfalogiyası – onun funksiyalarına uyğun təşkilində material formasını xarakterizə edir) növdəyişmələrindən ibarətdir. Konstruktiv modeləşdirmənin aşağıdakı təzahürləri ayırd edilir: a) korrekativ - əşyaların funksiya və formalarının təkmilləşdirilməsi; b) keçid – obyektin funksiya və marfalogiyasının tam dərk edilməsi ilə ona yeni keyfiyyət verilməsi (buna misal olaraq kostyumun dizaynında onun konstruksiyasının dəyişdirilməsi – dizaynda konstruksiyasızlaşdırma); c) layihəli – əşyaların funksiya və formaları yenidən yaradılır. [4]

Model anlayışı bildiyimiz kimi yeni görkəmdə, formada, material və bəzəkdə görünməsi üzrə geyimə xas olan bir varlıqdır. Layihələndirmə isə bir planın, bir obyektin ya da bir nümunənin (memarlıq təsvirlər, mühəndislik şəkilləri, iş prosesi və s.) müəyyən müddəti ərzində meydana gətirilməsinə deyilir. Modelin layihələndirilməsi dedikdə, rəssam - dizaynerlərin yaradıcılıq prosesində müxtəlif geyim modalarının yaradılması nəzərdə tutulur. Rəssam - dizaynerlər geyim modelinin layihələndirilməsinə başlamazdan əvvəl görülməli işlərin istiqamətlərini müəyyənləşdirməlidir. Rəssam - dizaynerlər öz eskiz və sxemlərində modelin obrazını əks etdirərək, üzərində işləyəcək olduqları obrazları müəyyən axtarışlar üzrə aparır. Axtarışlar əsasən iki istiqamətdə aparılır: [1]

Birinci istiqamətdə, funksiya təhlili və forma nöqteyi - nəzərindən götürülür. Funksiyanın təhlili məmulatın funksiyasının müəyyən edilməsinə imkan verir. Burada məmulatın həcmi quruluşu, mütənəsnibliyi və miqyası təhlil edilir. [2]

İkinci istiqamətdə isə məmulatın xassələri hərtərəfli müəyyən olunmalı, bunun nəticəsində isə ölkədə və xarici dövlətlərdə texniki və iqtisadi cəhətdən fərqli olan konstruksiyaların informasiyalarından istifadə olunmalıdır. Əldə edilən informasiyalar həm texniki, həm də yaradıcılıq cəhətdən formalaşan bir əsas kimi qeydə alınmalıdır. İnformasiya öyrəniləndikdən sonra isə bədii layihələndirmə prosesinin mahiyyətindən irəli gələn, məmulatın funksional - texniki xassələrinin müəyyən edilməsi üçün analitik təhlillər aparılır. [3]

Modelin layihəsi prosesində qarşıya qoyulan məqsədin həyata keçirilməsi üçün layihələndirilmənin müxtəlif mərhələlərində rəssam - layihəçi, mühəndis -konstruktor, ergonomist, texnoloq və iqtisadçı bir - biri ilə sıx əlaqədə olmalıdır. Çünki layihələndirilən modelin estetik xassəsi onun təyinatı ilə bağlıdır. [1]

Modelin layihəsinin mərhələlərinə nəzər yetirdikdə isə layihələndirmənin aşağıdakı mərhələləri əsas götürülür:

1. Texniki tapşırıq və onun tərtibi;
2. İnformasiyanın axtarışı və yığılması ilə iqtisadi bazarın konstruksiyasının öyrənilməsi;
3. Yaradıcılıq mənbələrini müəyyənləşdirmək üçün analoji məmulatların tədqiq edilməsi;
4. Texniki layihənin tərtib edilməsi;
5. Konstruktor fikrinin əsaslandırılması;

6. *Sxem tərtibi, fəza obrazı, formanın, rəngin seçilməsi və ünvanlanmış insan obrazının öyrənilməsi;*
7. *Modelin eskizi, rəng və fakturasının tərtibi, texnoloq - konstruktorların razılığının alınması;*
8. *İstehakçının məhsula yanaşma və reaksiyası;*
9. *Sınaq nümunəsinə əsasən məsələlərin müsbət və mənfi həllinə dair rəylərin verilməsi;*
10. *Məsələlərin düzgünlüyünə nəzarət.*[2]

Bütün mərhələlərin həllində layihələndirilmənin əsasını rəssam dizaynerlər tərəfindən aparılan qrafik işlər təşkil edir. Belə ki, birinci olaraq çertyojların hazırlanması, eskiz layihəsinin rəsmlərin hazırlanması mərhələsi həyata keçirilir. Layihələndirmənin ikinci mərhələsində modelin hazırlanması durur. Burada məhsulun ümumi görünüşü, konstruktiv xətt və kəsikləri, əsas və köməkçi hissələrin çertyoju, yəni - istehsal olunacaq məhsulun bütün layihə materialı əsas götürülür.[1]

Layihələndirmənin axırındakı yəni, tamamlama mərhələsində məmulatın təcrübə nümunəsinə uyğun olub - olmadığına xüsusi nəzarət yetirilməlidir. Bunun üçün də layihənin mərhələləri əsas götürülür. Bu mərhələlərin düzgün tətbiq edilməsi modelin layihəsi qarşısında qoyulan məsələlərin həll edilməsinə kömək edir. Layihənin mərhələlərinin düzgün tətbiq edilməsinin əsas göstəricisi isə qarşıya qoyulmuş məqsədin uğurla həyata keçirilməsidir.[1]

İstənilən hər bir sahədə məmulat istehsal edilməmişdən qabaq, mütləq onun modeli işlənilib hazırlanır. Hər hansı bir model nümunəsi qaralama (bir şəkil, eskiz və s.) şəklində bir plan və ya layihə nəticəsində (istehsal edilən bir obyekt, məhsul və s.) istifadə edilir. İstehsaldan qabaq modeli işlənilib hazırlanan məmulatlardan biri də geyimdir. Geyim ən əhəmiyyətli əşya növüdür. Geyim, bədənə bir qismini və ya hamısını əhatə edən bir istehsalat məhsuludur. Geyimin ən əhəmiyyətli və yaxın ki, ən köhnə funksiyası, bədənə təbiət şərtlərindən qorumasıdır. Təbiət şərtlərindən qorunmanın yanında, idman etmək və yemək bişirmək kimi təhlükəli fəaliyyətlər əsnasında dəri ilə ətraf arasında qoruyucu vəzifəsini yerinə yetirərək təhlükəsizliyi artırır. Ayrıca bədənə gigiyenik bir məhsul təmin edərək bədənə bəzi mikrobların daxilini məhdudlaşdırır. [3]

#### **İSTİFADƏ EDİLMİŞ ƏDƏBİYYAT SİYAHISI** **БИБЛИОГРАФИЯ**

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**DESIGN OF SHOULDER GARMENTS BASED ON A SHIRT DRAWING**

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**КОНСТРУИРОВАНИЕ ПЛЕЧЕВЫХ ИЗДЕЛИЙ НА ОСНОВЕ ЧЕРТЕЖА СОРОЧКИ**

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**Abstract**

*The technology lesson on this topic is developed using a presentation and instructional and technological maps, developed in detail and step by step, taking into account that each child will be able to independently build a drawing. This teaches students independence, self-control and develops brain activity. The use of competent methodological developments and the correct organization of educational activities creates ideal conditions for the formation of intellectual competence and creativity of students. It is only necessary to create an atmosphere of cooperation, goodwill and mutual assistance in the classroom.*

**Аннотация**

*Урок технологии по данной теме разработан с применением презентации и инструкционнотехнологических карт, разработанных подробно и поэтапно, с тем учётом, что каждый ребёнок сможет самостоятельно построить чертёж. Это приучает учащихся к самостоятельности, самоконтролю и развивает мозговую деятельность. Использование грамотных методических разработок и правильной организации учебной деятельности создаёт идеальные условия для формирования интеллектуальной компетентности и креативности учащихся. Необходимо только создать в классе атмосферу сотрудничества, доброжелательности и взаимопомощи.*

**Keywords:** Design, Technology, Drawing, Dresses

**Ключевые слова:** Конструкция, Технологии, Чертеж, Платья

*Действующей программой трудового обучения предусмотрено изготовление в VII классе халата или штормовки. Рассмотрим, насколько это практически выполнимо как в школах, работающих по 3-му варианту программы (девочки), где на раздел «Технология обработки ткани. Элементы техники и конструирования. Изготовление изделий» отводится 38 ч, так и в тех городских и сельских школах, где на него выделяется всего 24 ч.*

*Для большей убедительности сделаем небольшой экскурс в недавнее прошлое. Если раньше учащиеся занимались обработкой ткани в среднем звене на протяжении 5 лет (VI по VIII класс включительно), то теперь аналогичными знаниями и умениями они должны овладеть за 3 года (с V по VII класс). Так, на последнем году обучения в среднем звене прежний VIII класс шил платье (с рукавами и воротником) или халат по желанию. Требования к нынешнему VII классу еще более повысились: предлагается шить рабочие халаты или штормовки, т. е. изделия с рукавами, застежкой и воротником. Причем одновременно необходимо овладеть работой на швейной машине с электрическим приводом, с которым учащиеся встречаются в этом классе впервые, и выполнять на ней все операции по обработке плечевых изделий. Вспомним, что раньше они знакомились со швейными машинами такого типа уже в VI классе и достаточно упражнялись в работе на них, чтобы к VIII классу суметь обтачать горловину, отстрочить воротник, втачать рукава.*



Рассмотрим теперь, из каких этапов состоит процесс изготовления рабочего халата. Прежде всего нужно снять мерки. Их для построения основы требуется 13 плюс 3 - для чертежа рукава. И это после четырех мерок, снимаемых при изготовлении юбки! Ведь прежде был VII класс, в котором изготавливали блузки, халаты без рукавов и воротника, т. е. принципы расчета и построения чертежа основы платья к VIII классу ученикам были известны. Новыми были только чертежи рукава и воротника. А ведь построение чертежа основы спинки и полочки платья состоит более чем из 50 этапов! Поскольку материал этот для учащихся новый, то за 4 ч снять мерки и построить чертеж основы платья, рукава, воротника при всем желании они не успевают.

Само снятие мерок вызывает у школьников большие трудности. Измерений много, а навыка такого за 2 года им приобрести не удастся (ведь они шили до этого всего 2 изделия - фартук и юбку). Поэтому учитель контролирует все измерения, т. е. заново снимает у каждой ученицы по 16 мерок. Раньше эти платья шили в VIII классе, когда дети уже имели навык такой работы и контролировали друг друга сами, а учитель мог производить проверку не всех, а только основных мерок. Да и возможности у 14-летних подростков значительно больше, чем у 12-летних.

Не останавливаясь на моделировании и раскрое (а там много новой работы), перейдем к рассмотрению операций по обработке ткани. С обработкой горловины швейных изделий школьники встречались в V классе при шитье ночной сорочки, а также в VII — при изготовлении платья или блузки. Теперь ни одного плечевого изделия до халата в программе нет. Следовательно, обработка горловины халата является для учащихся новой операцией.

Прежде при пошиве блузок обработка застежек выполнялась в VII классе. По действующей программе эта работа впервые выполняется также при пошиве халата. Обработка застежки состоит не просто в притачивании подборт, но и в изготовлении петель. Далее - самая сложная операция (единственная, которая была новой для прежнего VIII класса и далеко не единственная для нынешнего VII) - втачивание рукава. А ведь эту работу доверяют не каждой начинающей швее-профессионалу!

Учитывая сказанное, предлагаем изготавливать в VII классе халат, платье или платье-халат по чертежу ночной сорочки или сорочки без рукавов с круглым вырезом. Этим достигается сокращение объема нового материала, существенно упрощаются конструирование и технология обработки изделия. Если работу организовать таким образом, то и времени на выполнение всех тем по данному разделу программы будет достаточно, и перегрузка учащихся значительно снизится.

Изготовление платья, халата или другого плечевого изделия по чертежу сорочки вполне правомерно. В современной одежде широко используют традиции народного костюма, которые проявляются в простых, экономичных и оригинальных покроях. Молодежная одежда сегодня очень близка к народной своим прямым и безвытачным кроем, приспущенной линией плеча и др. Изделия, сшитые по чертежам сорочек, особенно хороши для фигур с малоразвитыми грудными железами. Кроме того, они маскируют диспропорции подростковой фигуры и открывают свободу движению.

В зависимости от количества часов, отводимых программой на обработку ткани (24 или 38), и уровня подготовленности учащихся рекомендуется шить изделия разной степени сложности. В первом случае (24 ч) надо выбирать более простые модели с небольшим количеством отделочных деталей, применять простые и по возможности уже знакомые учащимся способы обработки. В школах, где на данный раздел выделено 38 ч, конструкция изделий может быть несколько усложнена: кокетки в верхней части изделия, оборка по линии низа или горловины, рукава измененной формы. Способы обработки и отделки здесь также могут быть более разнообразны. Такой подход дает возможность выделить время для творческого, самостоятельного выбора модели, способов обработки и отделки изделия и качественного его выполнения.

На рис. 1 даны модели плечевых изделий, выполненных на основе чертежа ночной сорочки. Для изготовления этих изделий требуется снять те же мерки, что и для построения чертежа сорочки, и одну дополнительную - Дст спины до талии. Напомним эти мерки. Длину

Сш- полуобхват шеи, измеряют по основанию шеи над шейной точкой (седьмым шейным позвонком) и яремной вырезкой (яремной впадиной). Нужна эта мерка для определения размера горловины.

Си- полуобхват груди второй. Нужна для определения ширины изделия. Измеряют,

накладывая ленту на лопатки горизонтально, касаясь задних углов подмышечных впадин и далее спереди на уровне высоких точек груди (сосковых).

Од- обхват плеча измеряют перпендикулярно к оси плеча (часть руки от плечевой точки до локтевой) на уровне подмышечной впадины. С помощью этой мерки определяется ширина рукава.

Д<sub>ст</sub> - длина спины до талии. Нужна для определения линии талии. Измеряют от линии талии до шейной точки.

Д<sub>и</sub> - длина изделия. Нужна для определения длины изделия. Измеряют от точки основания шеи до желаемой длины.

При построении чертежа сорочки для расчета величин отрезков кроме мерок необходимо знать величину прибавок на свободное облегание к полу обхвату груди - П. и к обхвату плеча – Поп



Рис. 1. Прибавка на свободное облегание-это величина, которую прибавляют к снятой мерке, чтобы сшитое изделие было достаточно свободным и удобным в носке. Величина прибавки зависит от назначения изделия и его конструкции, а также от подвижности той части тела, с которой снимается мерка.

Инструкционная карта «Построение чертежа ночной сорочки на типовую фигуру размера 152-80»

Построение сетки чертежа

| Последовательность построения, название отрезка | Обозначение на чертеже | Расчетная формула | Расчет                                   |
|-------------------------------------------------|------------------------|-------------------|------------------------------------------|
|                                                 |                        |                   | на типовую фигуру, в см<br>на себя, в см |

1. Построить прямой угол в точке В

2. Ширина изделия ВВ  $C_1:2+0,5П,$  41,7:2+ +0,58-24,8 88

3. Длина изделия ВН  $Д_и$

4. Построить прямоугольник ВВ<sub>1</sub>Н<sub>1</sub>Н

Построение горловины

5. Ширина горло- ВВ<sub>2</sub>  $C_{ш}:3+1$  17:3+1=6,8

## вины

|                                  |        |            |             |
|----------------------------------|--------|------------|-------------|
| 6. Глубина горловины спинки      | $BB3$  | $BB2:3$    | $6,8:3=2,3$ |
| 7. Линия выреза Горловины спинки | $B2B3$ |            |             |
| 8. Глубина горловины переда      | $BB4$  | $BB2+1$    | $6,8+1=7,8$ |
| 9. Линия выреза горловины переда | $B2B4$ | построение |             |

## Построение рукава

|                    |             |                   |                 |
|--------------------|-------------|-------------------|-----------------|
| 10. Глубина проймы | $B1Г$       | $O_n: 2 + П_{он}$ | $24,8:2+7=19,4$ |
| 11. Длина рукава   | $B1B5=ГГ_1$ | $n/v-5...6$       | 6               |
| 12. Ширина рукава  | $B5Г_1$     | В построение      |                 |

## Построение линий бока, низа и талии

|                                                             |                |                   |      |
|-------------------------------------------------------------|----------------|-------------------|------|
| 13.                                                         | $Г_2$          | $ГГ_2 = ГГ_1$     | 6    |
| 14.                                                         | $Г_3$          | $Г_1Г_2:2$        |      |
| 15.                                                         | $Г_3Г_4Г_1Г_2$ | $Г_3Г_4=n./v=1,5$ | 1,5  |
| 16. Соединить точки $Г_1Г_4Г_2$                             | $Г_1Г_4Г_2$    |                   |      |
| 17. Расширение Низа                                         | $H_1H_2$       | $n/v 10...12$     | 10   |
| 18. Линия бока                                              | $Г_2H_2$       |                   |      |
| 19.                                                         | $H_2H_3$       | $n./v = 1,5...2$  | 1,5  |
| 20.                                                         | $H_4$          | $HH_1:2$          |      |
| 21. Линия низа                                              | $HH_4H_3$      | построение        |      |
| 22. Длина до линии                                          | $B3T$          | $Д_{ст}$          | 36,8 |
| 23. Провести горизонтальную линию $ТТ_1 Т_2$                |                |                   |      |
| 24.                                                         | $T_2 T_3$      | $n/v = 1,5...2$   | 1,5  |
| 25.                                                         | $T_4$          | $ТТ_1:2$          | 1,5  |
| 26. Линия талии                                             | $ТТ_4Т_3$      |                   |      |
| 27. Обвести контур чертежа изделия сплошной основной линией |                |                   |      |

Инструменты и принадлежности: масштабная линейка, угольник, лекало, карандаши ТМ и 2М, ластик, альбом.

## Мерки":

- |                |                 |
|----------------|-----------------|
| 1. С 17,0 см.  | 4. Дет-36,8 см. |
| 2. С. 41,7 см. | 5. Д-88 см      |
| 3. О=24,8 см.  |                 |

## Прибавки:

1. Прибавка полу обхвату груди –  $Пг=6...8$  см.
2. Прибавка к обхвату плеча  $П_{он}=5...7$  см.

Как видно из инструкционной карты, в чертеж ночной сорочки, на основе которого предлагается изготавливать различные плечевые изделия, при конструировании внесено одно-



единственное дополнение построение линии талии. Она строится по снятой мерке Дет и откладывается не от точки В, а от точки В<sub>з</sub>. Дело в том, что мерки Д<sub>ст</sub> и Д<sub>и</sub> снимаются от разных точек: Дет - от шейной точки (седьмого шейного позвонка), а Д<sub>и</sub> от точки основания шеи (названия «шейная точка» и «точка основания шеи» определены ГОСТом 17916-72 «Типовые фигуры девочек. Размерные признаки для проектирования одежды»). Если бы обе мерки снимались от точки основания шеи, то горловина была бы выше верхней линии сетки чертежа.

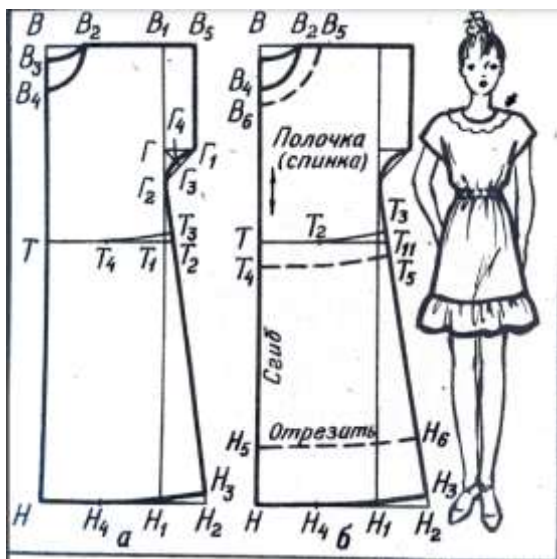
В VII классе нужно познакомить учащихся с маркировкой одежды, поступающей в магазины. На товарных ярлыках, прикрепленных к детской одежде (до 18 лет), указывается не менее двух чисел, например: 152-80. Первое число показывает величину роста, второе величину обхвата груди третьего (О). Величины по росту установлены с интервалом 6 см, например: 146, 152, 164 и т. д., а величины О - с интервалом 4 см (84, 88, 92 и т. д.). Таким образом, если на ярлыке плечевого изделия указаны числа 152-80, то это значит, что оно может подойти девочкам, имеющим рост от 149 до 155 см с обхватом груди третьим от 78 до 82 см включительно.

Изображенные на рис. 1 модели внешне не очень похожи друг на друга. Они имеют неодинаковую форму отдельных деталей, разные виды отделки. Вместе с тем все эти изделия выполнены по одной конструктивной основочертежу ночной сорочки. Все они прямого силуэта, свободной формы, неотрезные по линии талии, с короткими цельнокроеными рукавами. Разнообразие их достигнуто путем моделирования горловины и рукавов, уменьшения или увеличения объема и длины изделия, применения различных отделок.

Отделки являются важным элементом композиции одежды. И хотя на первый взгляд они кажутся незначительными, в них часто бывает заключена та «изюминка», которая выгодно отличает одно изделие от другого. Отделка дополняет, украшает изделие, и часто именно она придает вещи законченный вид. Отделка может быть постоянной и съемной. Для каждого этапа моды характерны свои, присущие только ему виды отделок и способы их применения. В настоящее время в качестве отделок широко используются банты, шарфы, разнообразные пуговицы, кнопки, блочки, пистоны, пряжки, шнуры, всевозможные декоративные отделки строчки, отделочные ткани, вышивка, кружево и др.

В настоящее время в качестве отделок широко используются банты, шарфы, разнообразные пуговицы, кнопки, блочки, пистоны, пряжки, шнуры, всевозможные декоративные отделки строчки, отделочные ткани, вышивка, кружево и др.

На рис. 2 представлена модель летнего платья, выполненная из легкой ткани. Она может



быть светлой, яркой или пестрой. Вырез горловины овальный, отделанный воланом, оборкой или широким кружевом. Линия низа слегка расширена оборкой. По линии талии пришта кулиска, в которую в 3-4 ряда продернута резинка.

Приступая к моделированию, нужно внимательно изучить эскиз выбранной модели и определить, какие изменения следует внести в выкройку основы ночной сорочки. Прежде всего надо изменить форму горловины: расширить ее на 3-4 см по линии плеча и углубить на 2-3 см по линии горловины переда и спинки. Отделывается горловина воланом, оборкой или широким кружевом. Если по линии низа пришивается оборка, то нужно изменить длину выкройки. Ширина оборки примерно равна 1/4 длины изделия (от линии талии до линии низа), а длина ее в 1,5-2 раза больше линии низа плюс 15-20 см. Поскольку на линии талии пришивается кулиска, ее нужно начертить отдельно - это полоска шириной 3-4 см, длиной, равной длине линии талии на выкройке. По линии плеча шов



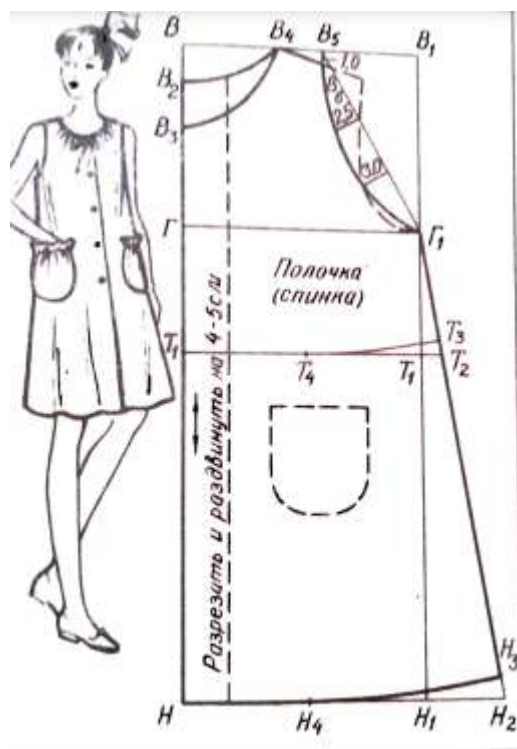
можно не делать. В моделировании изделия на основе чертежа сорочки все так же, как при моделировании изделий, выполняемых на основе чертежа платья прямого силуэта. Исключение составляют отсутствие вытачки и цельнокроеное плечо.

Платье-халат (рис. 3) также выполнено на основе выкройки ночной сорочки. Шить его можно из двух деталей (полочка и спинка) с плечевым швом. Это модель прямого силуэта с застежкой доверху посередине переда на прорезные петли. Карманы накладные с клапанами. Рукав короткий. Воротник отложной с цельнокроеной стойкой. Платье-халат дополняется поясом-завязкой. Рукава, воротник, карманы и пояс отделаны декоративной строчкой. Изделие может быть выполнено из льняного полотна, льна с лавсаном или из хлопчатобумажной ткани. Его можно отделать аппликацией или вышивкой.

При моделировании на выкройку наносятся изменения в линии плеча (скос в 1 см), линия борта (2 см) и под борта, места пришивания карманов. Отдельно вычерчиваются выкройки карманов (верхнего и нижнего) и воротника.

На рис. 4 - пляжный халатик, выполненный на основе выкройки без рукавов с круглым вырезом. Изделие из хлопчатобумажной ткани прямого силуэта или чуть расклешенное, свободной формы, с накладными карманами. Моделируя этот халат, можно удлинить линию плеча до 8-9 см. Перед и спинку расширить на 4 см для образования сборок, наметить положение и форму карманов. Застежка по линии переда выполнена в виде планки, с петлями в шве притачивания планки («ленивые» петли). Горловина и пройма отделаны руликом. Внимание на форму кермеков - они расширены по линии верха и собраны на резинку.

Практически все модели, изображенные на рис. 1, можно изготовить по выкройке сорочки



без рукавов, внося в нее небольшие изменения. В журнале «Школа и производство» (1968, № 3) опубликована статья учителя школы № 271 Москвы В. М. Геллер, в которой она делилась опытом работы по изготовлению халата на основе чертежа ночной сорочки. Эти изделия демонстрировались на школьной и районной выставках и получили высокую оценку, а учащиеся, как утверждала автор статьи, работали над ними с увлечением.

Свидетельством актуальности предлагаемого может служить и появившаяся в № 2 журнала за этот год статья учителя школы № 7 г. Одинцова Московской области С. А. Вопсева «Построение чертежа халата на основе ночной сорочки». Она также стремится упростить работу семиклассников. Правда, С. А. Вопсева предлагает работать только по упрощенному чертежу, а обработочные операции остаются по-прежнему многочисленными и трудоемкими. Нельзя согласиться и с ее предложением изготавливать изделия с вшивными рукавами. Эту работу школьницы могут качественно выполнить в более старших классах. Пусть пятиклассницы научатся изготавливать более простое, но не менее

нужное изделие без вшивных рукавов.

В издательстве «Просвещение» в 1987 г. вышла книга для учащихся среднего школьного возраста «Учись шить» Р. И. Егоровой и В. П. Монастырной (в этом году она переиздана). Советуем учителям ознакомиться с нею и познакомить своих учеников. В ней содержится немало полезных советов; в частности, авторы рекомендуют подросткам шить плечевые изделия на основе чертежей сорочек.

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## IDENTIFYING AND RECOMMENDING THE MOST EFFECTIVE COMBINATION OF TECHNIQUES FOR MONITORING DEFORMATIONS IN THE PARTICULAR CONTEXT OF SALT MINES IN ROMANIA

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### **Abstract**

Salt mines in Romania are crucial for both ecological and economic sustainability, contributing significantly to mineral production and supporting diverse landscapes. However, they face challenges from ground deformations linked to mining activities and geological factors, necessitating effective monitoring to ensure safety and environmental preservation. This article evaluates various techniques for monitoring deformations in Romanian salt mines, emphasizing the importance of integrating traditional and advanced methods. Total stations provide precise tracking of surface elevation changes, while Global Navigation Satellite Systems (GNSS) enhance structural stability monitoring.

The study also discusses spirit leveling and geoid modeling to achieve accurate elevation data amidst varying vertical datums. Additionally, advanced technologies like InSAR offer innovative solutions for detecting terrain subsidence, despite their limitations. By combining these methodologies, stakeholders can develop a comprehensive approach to monitor ground stability, thereby enhancing the safety and sustainability of mining operations and surrounding ecosystems. Ongoing research and technological adaptation will be essential to address the evolving challenges of ground deformation in these unique environments.

**Keywords:** Salt mine, monitoring, deformations, GPS, GNSS, UAV, InSAR, topography, surveying.

### **Introduction**

Salt mines, particularly in Romania, hold significant ecological and economic value. They contribute not only to the country's mineral production but also to its unique landscapes and biodiversity. However, these mines face challenges related to ground deformations caused by mining activities and geological factors. Effective monitoring of these deformations is essential for ensuring safety, sustainability, and the preservation of surrounding ecosystems. This article explores the most effective techniques for monitoring deformations in the context of Romanian salt mines, offering recommendations for a comprehensive approach.

### **Materials and Methods**

Total stations can track changes in surface elevation and subsidence caused by mining activities. Regular measurements help identify areas at risk of collapse or significant deformation. By measuring specific points in the area of interest, total stations can detect shifts that may compromise the integrity of the area. This high level of accuracy provided by total stations is important for detecting even minor deformations that may indicate potential instability or subsidence, which could jeopardize the overall safety. Furthermore, total stations facilitate detailed 3D modeling of the terrain, allowing for a comprehensive analysis of deformation patterns.

Regular monitoring helps to implement timely interventions, ensuring safe operations while minimizing environmental impact in the surrounding areas. Comparing data over time allows for the identification of trends and the early detection of potential issues, facilitating timely interventions.

Global Navigation Satellite Systems (GNSS) are satellite-based systems that provide geolocation and time information to receivers on Earth. The most well-known GNSS is the Global Positioning System (GPS), but there are also other systems like GLONASS, Galileo, and BeiDou. GNSS works by triangulating signals from multiple satellites, allowing for precise positioning anywhere on the planet.

For example, at Salina Turda, a site popular for tourism and medical treatments, GNSS measurements have contributed to security and structural stability, providing precise data for tourism management. For Ocnele Mari, GNSS studies have been used to observe structural deformations and to

protect surface structures surrounding the mine. In the case of Salina Slănic, known for applied geodesy research and studies on tectonic movements, GNSS has been used to monitor the stability of the salt mine structure. These types of measurements in Romanian salt mines provide an effective solution for risk prevention, natural resource protection, and the maintenance of safety in tourist and treatment areas.

There are also difficulties within this domain. "Extracting salt in Victoria mine was expected to develop on 25 floors, through small rooms and square pillars method. Following the occurrence of instability phenomena in the access ramp and in the excavations/small chambers of Victoria mine and their rapid development, on 10/29/1992 the activity of extraction was ceased. At the time, the exploitation was taking place at floor XI". [1]

Elevations with a high degree of accuracy can be obtained using spirit leveling, or by combining Global Navigation Satellite Systems (GNSS) positioning methods with a model of the geoid (the equipotential surface of the Earth's gravity field approximating the idealized mean sea surface). So although, the requirements for high accuracy can be met, in general, the need for a common reference surface often cannot be met. This is because there are currently over 100 different vertical datums around the globe. Their unification is therefore a scientific challenge of high practical significance. Height system unification is the process of determining the offsets between existing vertical datums, each of which is defined with a fundamental zero-elevation point and the equipotential (level) surface of the Earth's gravity field that passes through that point.

These offsets can be estimated if the geodetic (from GNSS), physical (from spirit leveling), and geoid (from gravity information) heights are known for the fundamental and/or other points in each datum. GNSS-surveyed leveling benchmarks on land, GNSS-surveyed tide gauge stations at the coasts, and a mean dynamic model of topography at sea can be used as data, together with a geoid model. The need to approximate geoid undulations implies the solution of a geodetic boundary value problem (GBVP); see, e.g., Colombo (1980), Rummel and Teunissen (1988), Rapp and Balasubramania (1992), Sansò and Venuti (2002), and Moritz (2013).

High-performance GNSS devices capable of capturing signals even at great distances from the surface are used in conjunction with RTK (Real-Time Kinematic) technologies to ensure maximum precision.

The GPS-RTK (Global Positioning System - Real Time Kinematic) system is considered to be the most useful system for topographic surveys among satellite survey technologies.

Utilizing this system for surveys of multi-functional networks and also the detailed 3rd order networks, is becoming more requested. The presence of obstacles in the terrain complicates surveys using the RTK measuring set in certain areas. These obstacles can hinder the simultaneous communication between the base receiver and the mobile receiver, as well as disrupt the essential communication among the five satellites needed for reliable GPS functionality. While GPS-RTK surveys are both efficient and rapid, they also produce highly accurate topographic maps for design purposes, particularly in open areas without obstacles, where a model can be used to generate contours.

The integration of global positioning system (GPS), leveling, and geoid height data has become essential in numerous geodetic applications. Despite the significant differences among these three types of height information-such as their physical meanings, definitions of reference surfaces, observational techniques, and accuracy-they are expected to adhere to the straightforward geometric relationship outlined by Heiskanen and Moritz.

In numerous construction and property monitoring projects, observations are conducted using Total Stations. Furthermore, it is stated that Total Stations is a more suitable method to conduct topographic surveying. Not only does this instrument provide good accuracy, but also provides automatic computation for the data. The standard deviation achieved with Total Station is only 1 mm.

InSAR (Interferometric Synthetic Aperture Radar) is a method for mapping ground deformation by utilizing radar images of the Earth's surface captured by orbiting satellites. Unlike visible or infrared light, radar waves can penetrate through most weather conditions and work effectively in the dark. This capability allows InSAR to monitor ground deformation even during adverse weather and nighttime, which are significant advantages during a volcanic crisis.

The InSAR technique is commonly applied to terrain deformation measurements (e.g., Pawłuszek-Filipiak and Borkowski, 2020; Zhu et al., 2020). InSAR allows for determination of vertical, relatively small deformations, with high accuracy, high time resolution, and even with no data acquisition costs. However, its application is limited to non-vegetated areas and the results have low spatial resolution in comparison to other remote sensing techniques. In contrast, airborne LiDAR data has higher spatial



resolution and is suitable even for areas covered with forests, but its vertical accuracy is much worse. Moreover, the execution of flights can turn out to be expensive, which results in a very limited time resolution of the performed measurements. The monitoring costs can be reduced through the use of Unmanned Aerial Systems (UASs).

Most of the mapping UASs are equipped with RGB cameras, and some of them were already used in determining terrain deformations for small and non-vegetated areas. Unmanned Aerial Vehicle (UAV) photogrammetry is commonly used in many applications related to terrain deformation analyses, such as monitoring of landslides (e.g., Balek and Blahůt, 2017; Lucieer et al., 2014), glaciers (e.g., Dall'Asta et al., 2017; Kraaijenbrink et al., 2016), or open-pit mines (e.g., Esposito et al., 2017). UAV photogrammetry is less frequently used to monitor the impact of underground mining on its adjacent areas. However, this problem was investigated by e.g., Puniach et al. (2021). Recently, also light-weight LiDAR sensors utilization for deformation monitoring using UASs have been investigated (Zieher et al., 2019). However, none of the above publications analysed the application of UAV-borne Laser Scanning (ULS) data to deformation monitoring in the underground mining area. [2]

Since deformations caused by underground mining occur on larger areas and result usually in terrain subsidence, the goal of this study is to assess the potential of both types of UAS data: images and LiDAR in the monitoring of terrain vertical deformations caused by underground mining.

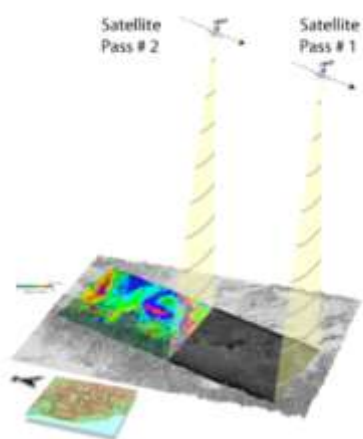


Figure 1 – Satellites passing over an area, to create the InSAR images.

InSAR—Satellite-based technique captures overall deformation "picture" | U.S. Geological Survey

### Results and Discussion

The evaluation of various monitoring techniques for ground deformations in Romanian salt mines reveals significant insights into the effectiveness and applicability of each method. Our findings underscore the importance of a multi-faceted approach that combines traditional surveying techniques with advanced remote sensing technologies to ensure comprehensive monitoring and risk management.

**Total Stations and GNSS Performance** Total stations have proven invaluable in tracking surface elevation changes, providing high accuracy with a standard deviation of just 1 mm. Regular measurements allow for the early detection of minor deformations that could indicate potential instability. The capability of total stations to create detailed terrain models offers a robust tool for visualizing deformation patterns over time, aiding in trend analysis and timely interventions.

GNSS, particularly through the integration of systems like GPS-RTK, has further enhanced structural stability monitoring at key sites, including Salina Turda and Ocnele Mari. The precision offered by GNSS measurements has been crucial for assessing the integrity of both underground structures and surface facilities. However, challenges remain due to environmental obstacles that can disrupt satellite signals. Continuous technological improvements are essential to maximize GNSS effectiveness in complex mining environments.

**Spirit Leveling and Geoid Modeling:** The integration of spirit leveling and geoid modeling has yielded accurate elevation data critical for addressing the discrepancies posed by varying vertical datums. The current existence of over 100 different vertical datums worldwide complicates efforts to establish a unified reference surface. Analysis indicates that accurate geoid undulation approximations are essential

for effective height system unification. The collaboration between geodetic, physical, and geoid heights enables more reliable assessments of ground stability, thereby supporting better decision-making in mine management.

*InSAR and UAV Technologies:* InSAR has emerged as a powerful tool for monitoring ground deformation due to its ability to operate under various weather conditions and at nighttime. This method allows for the detection of subtle deformations with high temporal resolution, offering a significant advantage in tracking rapid changes. However, the limitations regarding spatial resolution in vegetated areas highlight the need for complementary techniques. UAV photogrammetry and lightweight LiDAR sensors have shown promise in providing high-resolution data for deformation monitoring, particularly in non-vegetated areas. Despite being less frequently applied to underground mining contexts, recent studies indicate that UAV technologies can effectively capture terrain deformations associated with mining activities.

The integration of UAV data with traditional methods could significantly enhance monitoring efforts, particularly in regions where access is challenging. Comprehensive Monitoring Strategy The combined application of these methodologies supports a comprehensive monitoring strategy that not only addresses immediate safety concerns but also promotes long-term sustainability. By leveraging the strengths of each technique—total stations for precision, GNSS for structural integrity, InSAR for extensive coverage, and UAVs for high-resolution data—stakeholders can establish a more resilient framework for managing the ecological and economic impacts of salt mining.

### Conclusions

Monitoring deformations in Romanian salt mines is essential for ensuring safety, protecting the environment, and managing resources effectively. By adopting an integrated approach that combines traditional methods, advanced remote sensing technologies, and geotechnical monitoring, stakeholders can gain a comprehensive understanding of ground stability. This holistic strategy will not only enhance the management of salt mines but also contribute to the sustainable development of the surrounding regions. As technology continues to evolve, ongoing research and adaptation of monitoring techniques will be vital in addressing the challenges posed by ground deformations in these unique environments.

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