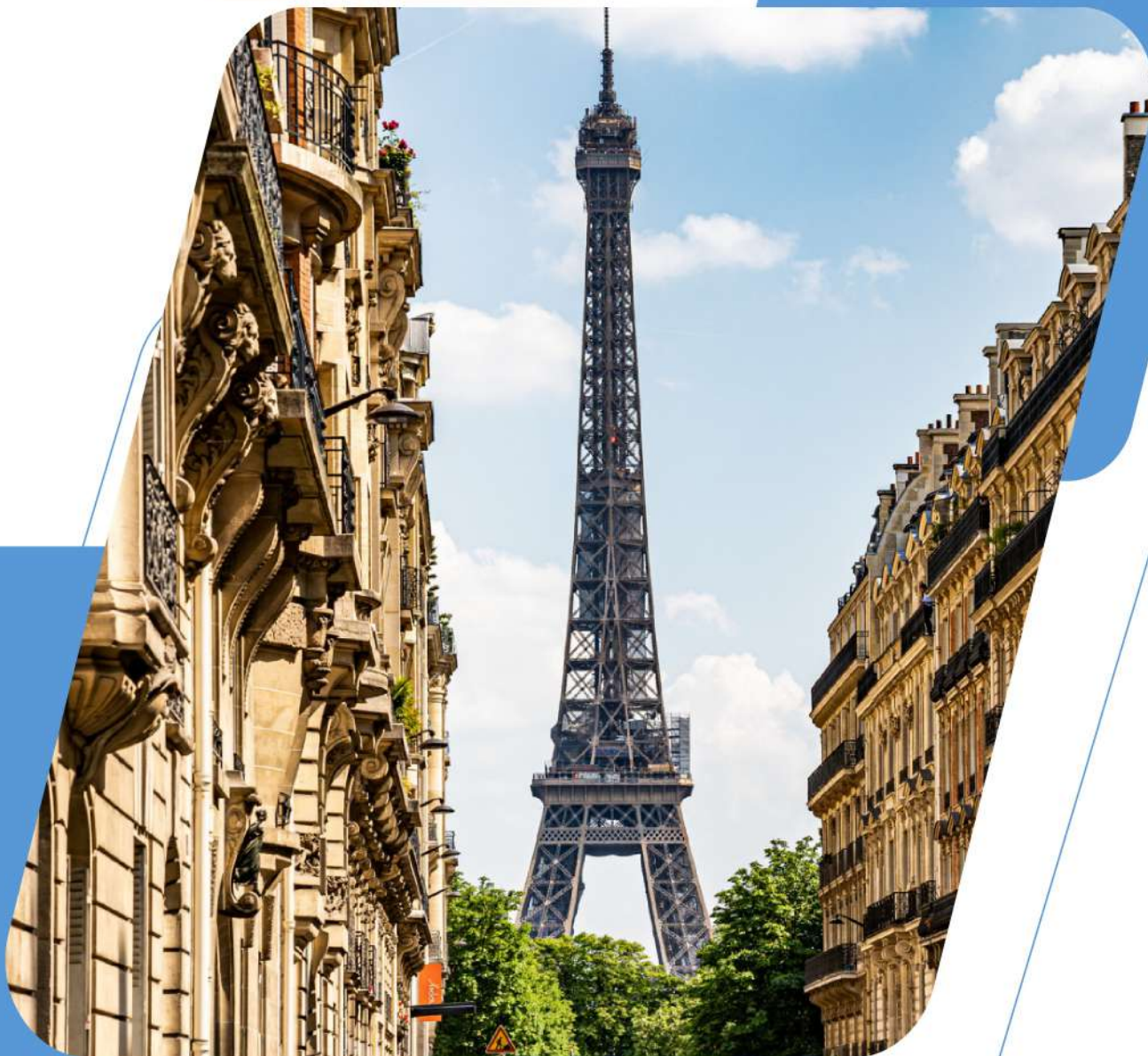




*XVI international scientific conference
Paris. France
10-11.12.2024*

NEW PROBLEMS OF SCIENCE AND WAYS OF THEIR SOLUTION

*Proceedings of the XVI International
Scientific and Practical Conference*

10-11 December 2024

PARIS. FRANCE

2024

UDC 001.1

BBC 1

XVI International Scientific and Practical Conference «New problems of science and ways of their solution», December 10-11, 2024, Paris. France. 259 p.

ISBN 978-91-65423-98-5

DOI <https://doi.org/10.5281/zenodo.14536783>

Publisher: «SC. Scientific conferences»

Main organization:

artmedia²⁴

Editor: Hans Muller

Layout: Ellen Schwimmer

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The sample of the citation for publication is: Llambi Prendi, Artur Hadroj, Klarida Prendi LABOR MARKET IN ALBANIA - OVERVIEW, COMPONENTS, AND ANALYSIS // XVI International Scientific and Practical Conference «New problems of science and ways of their solution», December 10-11, 2024, Paris. France. Pp.5-14, URL: <https://sconferences.com>

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Biological sciences

WAYS OF ENHANCING ENVIRONMENTAL KNOWLEDGE OF STUDENTS WITH THE HELP OF ANALYSIS OF RARE AND ENDANGERED BIRDS IN KAZAKHSTAN

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Abstract

Enhancing students' environmental knowledge through the analysis of rare and endangered birds in Kazakhstan is an excellent way to connect local biodiversity with broader environmental concepts. Kazakhstan, with its diverse ecosystems ranging from steppe and desert to mountains and wetlands, is home to a wide variety of bird species, including several rare and endangered ones like the Saker falcon (*Falco cherrug*), White-headed duck (*Oxyura leucocephala*), and Great bustard (*Otis tarda*). The study of these birds can foster environmental awareness, inspire conservation efforts, and deepen understanding of ecological relationships and biodiversity issues. Below are several ways to incorporate the analysis of rare and endangered birds into the educational process to enhance environmental knowledge.

Keywords: Endangered Birds, bird conservation, biodiversity, Kazakhstan avifauna, bird watching, field research, ecology, habitat protection, conservation strategies, migratory birds

Introduction

The use of digital resources plays a significant role in developing the information culture of future biology teachers. Information culture refers to the ability to effectively search, evaluate, use, and create information, as well as the attitudes and practices toward information handling in professional and educational contexts. For future biology teachers, developing a strong information culture is essential for staying updated with the latest research, educational tools, and teaching methodologies. Here's how digital resources contribute to this process:

1. ACCESS TO SCIENTIFIC LITERATURE AND RESEARCH

- **Digital Libraries and Databases:** Future biology teachers can access a wealth of scientific journals, e-books, and articles through digital libraries like PubMed, Google Scholar, or JSTOR. These resources enable them to stay up-to-date with the latest research and developments in biology, ensuring that their teaching reflects current scientific knowledge.

- **Research Databases:** Tools like Scopus or Web of Science help educators access peer-reviewed studies and experimental data, deepening their understanding of biological concepts and allowing them to incorporate the most recent findings into their teaching.

2. ENHANCING TEACHING AND LEARNING THROUGH DIGITAL TOOLS

- **Interactive Learning Platforms:** Platforms such as Khan Academy, Coursera, or Edpuzzle offer interactive lessons and tutorials that engage future biology teachers in active learning. These platforms often contain multimedia content such as videos, quizzes, and interactive simulations, which help teachers visualize complex biological concepts.

- **Simulations and Virtual Labs:** Digital resources like PhET Interactive Simulations or virtual dissection tools (e.g., BioMan Biology) allow teachers to conduct experiments virtually. This helps in overcoming limitations of physical lab resources and can support remote learning environments.

- **Learning Management Systems (LMS):** Systems like Moodle or Google Classroom help future teachers manage their classes digitally, allowing them to organize resources, distribute assignments, and track student progress.

3. BUILDING DIGITAL LITERACY SKILLS

- **Data Handling and Analysis Tools:** Knowledge of software like Microsoft Excel, R, or Python is increasingly important for analyzing biological data. Digital resources teach future biology educators how to handle large datasets, conduct statistical analysis, and represent biological data visually.

- **Digital Communication Tools:** Learning to use digital tools for collaboration (e.g., Google Docs, Zoom, Slack) enhances communication among peers, mentors, and students. Future teachers need to be proficient in both synchronous and asynchronous communication tools to facilitate modern classroom environments.

4. COLLABORATION AND NETWORKING

- **Professional Online Communities:** Websites like ResearchGate, Academia.edu, and various social media platforms (Twitter, LinkedIn) provide opportunities for future biology teachers to network with professionals in the field. They can join discussions, share resources, and collaborate on projects, which broadens their understanding of biology and education.

- **Open Educational Resources (OER):** Platforms like OpenStax or MERLOT provide access to open-source teaching materials and allow future teachers to share their own teaching materials. This fosters a culture of collaboration and resource sharing among educators worldwide.

5. PROMOTING CRITICAL THINKING AND EVALUATION SKILLS

- **Evaluating Information Quality:** With the abundance of online information, future biology teachers must be able to critically assess the credibility, accuracy, and relevance of sources. Digital resources help them develop these skills, ensuring that they rely on reliable scientific evidence in their teaching and avoid misinformation.

- **Multimedia Content:** The use of videos, podcasts, and infographics helps future educators think critically about how to present complex biological topics in engaging and understandable ways.

6. DEVELOPING PEDAGOGICAL STRATEGIES

- **Flipped Classroom and Blended Learning:** Digital tools enable teachers to design flipped classrooms or blended learning environments, where students engage with instructional content online and use face-to-face time for collaborative learning activities. This requires future biology teachers to learn and implement pedagogical strategies that enhance active learning.

- **Digital Assessment Tools:** Platforms like Kahoot!, Quizizz, or Socrative help teachers create assessments that are both interactive and informative. These tools allow future educators to receive immediate feedback on student learning, guiding their instructional adjustments.

7. PERSONALIZED AND ADAPTIVE LEARNING

- **Adaptive Learning Technologies:** Tools like DreamBox or Knewton allow for personalized learning experiences, adjusting the difficulty of tasks based on the learner's progress. Future biology teachers can use these tools to better understand the varying needs of students and adapt their teaching accordingly.

- **Assessment for Learning:** Using digital tools to assess student understanding in real-time allows teachers to provide immediate feedback, fostering a more personalized approach to education.

8. FOSTERING LIFELONG LEARNING

- **Continuing Education:** Digital resources such as MOOCs (Massive Open Online Courses), webinars, and online certifications allow future biology teachers to engage in continuous professional development. These platforms help teachers stay current with new teaching strategies, biological discoveries, and pedagogical trends.

- **Self-Directed Learning:** Digital resources encourage future teachers to take control of their professional learning by exploring topics of interest, participating in online courses, and engaging with communities of practice.

CONCLUSION

By incorporating digital resources into their educational practices, future biology teachers not only enhance their own information culture but also prepare themselves to teach in an increasingly digital world. The use of these resources helps them to stay informed, engage with students more effectively, and adopt innovative pedagogical strategies. Developing a strong information culture through digital literacy is therefore critical in equipping future biology educators with the skills they need to teach effectively and adapt to the ever-evolving field of education.

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ways of enhancing environmental knowledge of students with the help of analysis of rare and endangered birds in kazakhstan

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Enhancing students' environmental knowledge through the analysis of rare and endangered birds in Kazakhstan is an excellent way to connect local biodiversity with broader environmental concepts. Kazakhstan, with its diverse ecosystems ranging from steppe and desert to mountains and wetlands, is home to a wide variety of bird species, including several rare and endangered ones like the **Saker falcon**

(*Falco cherrug*), **White-headed duck** (*Oxyura leucocephala*), and **Great bustard** (*Otis tarda*). The study of these birds can foster environmental awareness, inspire conservation efforts, and deepen understanding of ecological relationships and biodiversity issues. Below are several ways to incorporate the analysis of rare and endangered birds into the educational process to enhance environmental knowledge:

1. FIELD RESEARCH AND BIRD WATCHING

- **Field Trips to Local Habitats:** Organize field trips to birdwatching sites in Kazakhstan, such as the Ili-Balkhash region, the Aksu-Zhabagly Nature Reserve, or the Korgalzhyn State Nature Reserve. These areas are known for their bird populations, including endangered species. Allowing students to observe birds in their natural habitats gives them firsthand experience with conservation issues.

- **Citizen Science Projects:** Encourage students to participate in citizen science projects, such as tracking bird sightings or bird banding initiatives. Websites like eBird or local monitoring programs can help students collect data on bird populations and migration patterns, contributing to global databases while learning about species conservation.

2. USE OF DIGITAL TOOLS AND RESOURCES

- **Interactive Databases and Maps:** Utilize online resources such as the **International Union for Conservation of Nature (IUCN) Red List**, **BirdLife International**, and local databases on Kazakhstan's avifauna. Interactive maps and data visualizations can help students understand the geographic distribution and conservation status of endangered species.

- **Bird Identification Apps:** Introduce students to bird identification applications like **Merlin Bird ID** or **iNaturalist**, which allow them to identify birds based on photos or descriptions. These tools can be particularly useful during field trips, and students can use them to learn more about the species they encounter.

- **Digital Archives and Virtual Exhibitions:** Create a digital archive of rare and endangered bird species in Kazakhstan, including photographs, sounds, and descriptions of behaviors. Virtual exhibits can include information on their natural habitats, ecological roles, and conservation challenges.

3. RESEARCH PROJECTS AND PRESENTATIONS

- **Species Profiles:** Assign research projects on specific endangered birds of Kazakhstan. Students can investigate the birds' physical characteristics, migration patterns, habitat requirements, and the threats they face. Presentations can be done in groups or as individual projects, incorporating digital media such as slideshows, infographics, or short videos.

- **Case Studies:** Study specific conservation success stories or challenges related to endangered birds. For instance, the recovery efforts of the **Saker falcon** population or the plight of the **White-headed duck** can be used as case studies for discussions about the effectiveness of conservation programs.

- **Conservation Action Plans:** Ask students to design their own conservation action plans for endangered bird species. These plans could focus on habitat restoration, anti-poaching efforts, or public awareness campaigns.

4. MULTIDISCIPLINARY APPROACH TO LEARNING

- **Ecology and Environmental Science:** Integrate the study of endangered birds into broader environmental science curricula. Discuss the ecological roles of birds, such as pollination, seed dispersal, and pest control, and explain the concept of trophic cascades (how the decline of a species can impact the whole ecosystem).

- **Climate Change and Habitat Loss:** Teach students about the impact of climate change, habitat destruction, and human activity (such as urbanization and agriculture) on bird populations. This can be tied to lessons on biodiversity and ecosystem services, showing students how the survival of rare bird species is linked to broader environmental health.

- **Cultural and Economic Connections:** Discuss the cultural significance of birds in Kazakhstan, especially in terms of traditional practices like falconry or bird watching. Highlight how these activities can serve as both a means of conservation and a sustainable economic resource, particularly for communities living near bird-rich habitats.

5. COLLABORATION WITH LOCAL CONSERVATION ORGANIZATIONS

- **Partnerships with NGOs:** Collaborate with local NGOs and environmental organizations focused on bird conservation, such as **Kazakhstan's BirdLife International partner** or the **Kazakhstan Ornithological Society**. Invite experts for guest lectures, workshops, or field excursions, allowing students to interact directly with professionals working on conservation projects.

- **Conservation Awareness Campaigns:** Have students design campaigns to raise awareness about the endangered birds of Kazakhstan. This could include creating posters, conducting social media campaigns, or organizing community outreach events. The campaigns can focus on the importance of

protecting endangered species, the role of biodiversity in ecosystem health, and the specific threats faced by these birds.

6. USE OF MULTIMEDIA AND CREATIVE ARTS

- **Documentaries and Films:** Show documentaries or short films about the rare and endangered birds of Kazakhstan. Films like *"The Last Eagle"* about the Saker falcon or *"The Silent Flight"* could be effective in sparking student interest and understanding of the challenges of protecting these species.

- **Creative Writing and Art:** Encourage students to express their understanding of bird conservation through creative outlets such as poetry, essays, or art. For example, they can create bird sketches or participate in art contests that reflect the beauty and fragility of endangered bird species.

- **Storytelling:** Use storytelling to engage students emotionally with the birds' plight. Narratives about the birds' migration or survival challenges can deepen students' connection to the material and encourage empathy for endangered species.

7. PROMOTING LOCAL AND GLOBAL CONSERVATION ETHICS

- **Sustainability Discussions:** Organize discussions on sustainable development and how human activities can be aligned with the protection of biodiversity. Discuss how practices like sustainable agriculture, eco-tourism, and wildlife-friendly policies can support the survival of endangered birds.

- **Global Impact:** Connect local conservation efforts with global initiatives. Teach students how the conservation of endangered birds in Kazakhstan is part of the broader global effort to protect species and mitigate environmental degradation.

8. SCIENTIFIC ANALYSIS OF BIRD POPULATIONS

- **Data Collection and Analysis:** Involve students in collecting and analyzing data about local bird populations, including rare and endangered species. They can use methods such as bird counts, observing nesting behaviors, or tracking migration patterns using GPS data.

- **Studying Threats:** Encourage students to study the specific threats faced by endangered bird species in Kazakhstan, such as habitat loss due to industrial development or hunting. Students can analyze how these factors contribute to declining bird numbers and propose strategies to mitigate them.

CONCLUSION

By incorporating the study of rare and endangered birds in Kazakhstan into environmental education, students gain a deeper understanding of biodiversity, the importance of conservation, and the complexities of ecological systems. Through hands-on activities, interdisciplinary learning, and collaboration with local organizations, students can become advocates for the protection of endangered species and develop a more profound respect for nature. Ultimately, this approach not only enhances students' environmental knowledge but also empowers them to take action toward preserving Kazakhstan's rich avifauna and global biodiversity.

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STUDY OF SOME MEDICINAL PLANTS IN THE KUNGURBUKA MOUNTAIN OF THE CHATKAL RIDGE (WITHIN UZBEKISTAN)

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Abstract

This article presents the results of the work on studying some medicinal plants in the Kungurbuka Mountain of the Chatkal Range within Uzbekistan. The issues of biology, ecology and phytocenology of some medicinal plants in the studied area were studied. In carrying out these works, modern research methods in these areas were used.

Keywords: Kungurbuka mountain, medicinal plants, biology, ecology, phytocenology, plant resources, plant communities, vegetation protection.

Kungurbuka mountain is located within the Chatkal Range (Uzbekistan). The vegetation of this mountain is a unique example of mountain ecosystems in Uzbekistan. Vegetation here mainly depends on the altitude, as well as on soil conditions and climate, which in the mountains can vary even in small areas. The flora described in the region includes both steppe and mountain species [1; 2].

The ecological and phytocenotic characteristics of the studied medicinal plants of Kungurbuka mountain included a description of biodiversity, the structure of phytocenoses, their dependence on environmental factors and the influence of anthropogenic activity. Mount Kungurbuka is distinguished by its unique climatic and landscape conditions, which create favorable conditions for the formation of diverse plant communities [3].

In the Kungurbuka mountain, the climate is characterized by hot and dry summers and cold winters. The amount of precipitation is insignificant. Such conditions affect the composition and structure of plant communities. Summer temperatures can reach high values, which creates conditions for strong evaporation. In winter, temperatures below zero are possible. Rainfall varies with altitude, but is generally sparse, creating an arid climate. Soils on mountain slopes are often rocky, high in carbonates and gravel, poor in organic matter, but well drained, allowing drought-resistant plants to thrive [3].

The vegetation of Kungurbuka mountain is represented by several main types of phytocenoses, which vary depending on the altitude, slope exposure and soil conditions. On the lower and middle slopes of the mountain, dry steppes are common, represented by grassy and shrub communities. They are dominated by drought-resistant species, such as: *Stipa capillata* - the main representative of the steppe zone, forming dense tussocks that strengthen the soil and protect it from erosion; *Artemisia vulgaris* - dominates in dry steppes and on rocky soils, due to its resistance to lack of moisture. These plants have a developed root system that allows them to extract water from deep layers of soil, and small, dense leaves that reduce transpiration.

On the slopes of medium height in the Kungurbuka mountain, shrub communities are formed, dominated by species such as: communities of *Malus sieversii* - the most widespread species, inhabiting fine-grained soils on the southern and southwestern slopes; *Crataegus turkestanica* - one of the characteristic representatives of shrub communities, found on rocky and carbonate soils. It plays an important role in stabilizing slopes and preventing erosion; *Amygdalus bucharica*, *Rosa canina* and *R. kokanica* are drought-resistant shrubs common on southern and southwestern slopes where drier and hotter conditions are present [4].

On the more humid northern and north-eastern (rarely south-western) slopes there are sparse forests formed by xerophytic trees and shrubs: *Juniperus seravschanica* is the dominant species found on higher, cooler slopes, especially in gorges where conditions are wetter; *Pistacia vera* is one of the rare tree species found on high, dry slopes and is a food source for many animals.

The plants of Kungurbuka mountain have a number of adaptations that allow them to survive in conditions of water deficiency: small leaves, a thick cuticle, a waxy coating and stomata that open only

at night reduce water loss; many plants, including juniper and hawthorn, have a root system that penetrates deep into the soil, allowing them to survive long periods of drought.

The phytocenoses of Kungurbuka mountain are resistant to extreme natural conditions due to the diversity of drought-resistant species and their ability to regenerate after natural stresses such as droughts and fires.

Many shrubs and trees, such as *Crataegus turkestanica* and *Juniperus seravschanica*, play an important role in protecting slopes from erosion by strengthening the soil with their roots and retaining moisture in the ecosystem.

For a number of years we have studied the phytocenotic characteristics of the main medicinal plants in the Kungurbuka mountain. We have investigated the association with plant communities, the age composition and spatial structure of coenopopulations, ontogenetic tactics and life strategies of such species as *Crataegus turkestanica*, *Arum korolkowii*, *Korolkovia severtzowii*, *Achillea millefolium* and others.

Crataegus turkestanica is a species of plant of the Rosaceae family, which is an important component of the vegetation of mountain ecosystems of Central Asia, including Kungurbuka mountain in Uzbekistan. This plant is found at different altitudes, preferring slopes and gorges, where it forms stable plant communities. Let us consider the phytocenotic characteristics of *Crataegus turkestanica* in the Kungurbuka mountain.

Crataegus turkestanica is found mainly on slopes with carbonate or gravelly soils that are relatively poor in organic matter but provide good drainage. The plant is well adapted to such soils due to its deep root system. The soils on the mountain slopes are often rocky and have low water holding capacity, which requires high adaptability to water deficit conditions. The area is subject to significant temperature fluctuations: it can be hot in summer, and temperatures drop significantly in winter. *Crataegus turkestanica* tolerates such climatic stresses due to its drought resistance and ability to survive cold winters [4].

Crataegus turkestanica plays an important role in the structure of plant communities of the Kungurbuka mountains, acting as a dominant or subordinate species in various communities. Depending on the altitude zones, *Crataegus turkestanica* can form communities in combination with other trees and shrubs, such as *Prunus divaricata*, *Juniperus seravschanica*, and steppe herbaceous plants. On mid-elevation slopes, where conditions are more temperate than in the upper parts of the mountains, *Crataegus turkestanica* is found in communities with species such as *Amygdalus bucharica* and, less commonly, with other shrub species. *Crataegus turkestanica* does not usually form dense stands, but is an important component of woodlands or shrub communities, which help to stabilize the soil on slopes and prevent erosion. In mixed communities, hawthorn can act as an understory, providing shelter and food for a variety of animals and insects.

Crataegus turkestanica is characterized by high drought resistance due to deep roots that can extract water from deep soil layers. The leaves are small and dense, which reduces water loss through transpiration. The leaves also have a dense cuticle that prevents excessive evaporation of moisture.

The root system of *Crataegus turkestanica* strengthens mountain slopes and prevents erosion processes, especially in areas with strong wind and water impact. The plant stabilizes soils on rocky slopes where other plant species cannot take root, thereby improving the condition of the ecosystem. *Crataegus turkestanica* berries are an important food source for birds such as thrushes and sparrows, as well as small mammals that help disperse the seeds. The leaves and young shoots can be eaten by ungulates such as mountain goats and sheep that inhabit the region. *Crataegus turkestanica* is an important source of nectar for pollinating insects such as bees, flies and butterflies. In turn, insects help pollinate flowers and increase the plant's reproductive capacity.

Thus, in the Kungurbuka mountain, anthropogenic factors such as grazing and deforestation may negatively affect the state of *Crataegus turkestanica* and other medicinal plant populations. Excessive grazing may lead to the degradation of shrub communities and a decrease in the number of *Crataegus turkestanica*. It is important to preserve natural communities with *Crataegus turkestanica* by limiting grazing and restoring degraded ecosystems. Excessive exploitation of soils and cutting down of shrubs worsens the growing conditions of medicinal plant species. It seems to us that only the creation of protected natural areas on the territory of Kungurbuka mountain will help preserve biodiversity and the sustainability of ecosystems.

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Chemical sciences

THERMODYNAMIC STUDY OF THE Fe-As SYSTEM BY MEANS OF THE EMF METHOD

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Arsenides are particularly significant in materials science and solid-state physics due to their diverse applications in semiconductors, thermoelectric devices, and superconductors. Among them, certain arsenides, such as iron arsenide (FeAs), exhibit intriguing magnetic and superconducting properties [1-3]. These materials belong to a novel class of high-temperature superconductors that have gained attention due to their unconventional superconductivity mechanisms. Iron arsenides can become superconducting when their magnetic order is suppressed, for example, through doping or the application of pressure [4]. This characteristic expands their potential applications in energy-efficient technologies and advanced quantum materials research. Ferrum arsenides have received heightened interest in recent years, especially for their role in developing high-temperature superconductors and their unique magnetic behaviors. Iron-based superconductors, such as LaFeAsO and BaFe₂As₂, represent significant breakthroughs in the study of superconductivity, providing insights into unconventional mechanisms that differ from those of traditional copper-oxide superconductors [5-7].

To improve methods for the directional synthesis of promising applied materials and the development of their single crystals, it is important to construct corresponding phase diagrams, as well as to study thermodynamic properties of the intermediate phases formed in them [8]. Thermodynamic properties of compounds and intermediate phases are very important in terms of gaining information about their thermal behavior and the microstructure evolution with temperature. There are only few works devoted to the thermodynamic study of ferrum arsenides [9]. These works are mainly dedicated to the determination of their enthalpies of the formation and heat content with different methods and are significantly different from each other.

The As-Fe binary system contains three intermediate compounds: FeAs₂, Fe₂As, and FeAs. The compound AsFe has a melting point of 1030°C, though its homogeneity range is unknown. As₂Fe has a melting point of 1020°C, and AsFe₂ has a congruent melting point of 930°C.

To investigate the thermodynamic properties of ferrum arsenides, alloys of varying compositions were selected from the T-x phase diagram of the Fe-As system [10]. For determining the standard integral thermodynamic functions of the FeAs₂ compound, samples with Fe compositions of 10, 20, and 30 at.% were chosen from the As-FeAs₂ phase region of the Fe-As binary phase diagram. Additionally, samples with 55 and 80 at.% Fe compositions were selected from the AsFe₂-Fe phase region. Alloys with 40 and 50 at.% compositions were selected from the FeAs₂-FeAs two-phase region of the T-x diagram to assess the thermodynamic properties of the FeAs compound.

Samples were prepared using 99.999% pure elemental components (Fe and As) from the Alpha Aesar company. Synthesis was carried out by co-melting the elemental components in vacuum-sealed quartz ampoules. After synthesis, the samples were subjected to heat treatment below the solidus temperature for approximately 100 hours. The phase composition of the prepared samples was confirmed using powder X-ray diffraction (PXRD). Data was collected at room temperature with a D2 Phaser diffractometer and CuK α radiation, scanning from approximately 5° to 80°. The recorded diffraction patterns were analyzed using Topas 4.2 profile modeling software.

Various modifications of the EMF method are commonly employed for the thermodynamic study of binary and more complex inorganic systems. Depending on factors such as the nature of the constituent compounds and the measurement temperature, different types of solid and liquid electrolytes can be used for EMF measurements [11].

This work focuses on the thermodynamic study of the FeAs, Fe₂As, and FeAs₂ binary compounds using the EMF method within a temperature range of 300–480 K. Measurements were conducted using equilibrium samples from the As + FeAs₂, FeAs₂ + FeAs, and FeAs + Fe₂As phase regions of the Fe-As system.

Electrochemical cells were meticulously designed with the following configuration for experimental analysis:

(-) Fe (solid) | Solution of KCl in glycerol | (Fe in alloy) (solid) (+)

Measurements were conducted using a Keithley 2100 6 ½ digital multimeter over a temperature range spanning from 298 K to 430 K. It was observed that the electromotive force (EMF) values remained stable within the heterogeneous field, and the temperature dependence of the EMF for all the samples exhibited a linear relationship. The experimental data were analyzed using the least squares method, resulting in the derivation of linear equations of the form $E = a + bT$. From these equations, the partial molar thermodynamic functions of ferrum in the specified phase regions at 298 K were accurately computed. Furthermore, the integral thermodynamic properties of FeAs, Fe₂As, and FeAs₂ compounds were determined through the application of virtual-cell reaction methods. The thermodynamic functions obtained in this study represent essential physico-chemical parameters of ferrum arsenides, contributing significantly to our understanding of these materials. These values can be incorporated into comprehensive electronic databases and serve as reliable data for various thermodynamic calculations and modeling in materials science and solid-state chemistry.

Electrochemical cell design and EMF measurements were conducted as outlined in the referenced works [12, 13].

According to the temperature dependence of the EMF equations, partial molar functions of copper in the As+ FeAs₂, FeAs₂ + Fe₂As and FeAs+Fe₂As phase fields of the Fe-As system were calculated. Standard thermodynamic functions and standard entropies of formation of low-temperature (LT) ferrum arsenides (namely, FeAs₂, Fe₂As, FeAs) were determined. It was observed that the EMF values in the heterogeneous phase regions are constant regardless of the total composition of the right electrodes and change sharply in the stoichiometric composition of compounds.

A comprehensive comparative analysis was conducted between the results obtained in this study and existing data from the literature, ensuring the reliability and validity of the findings.

Keywords: Fe-As system, thermodynamic properties, EMF measurements.

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SYNTHESIS AND CHEMICAL TRANSFORMATIONS OF METHYL ESTER OF ADAMANTAN-1-THIONACETIC ACID IN REACTION WITH PIPERIDINE

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Introduction.

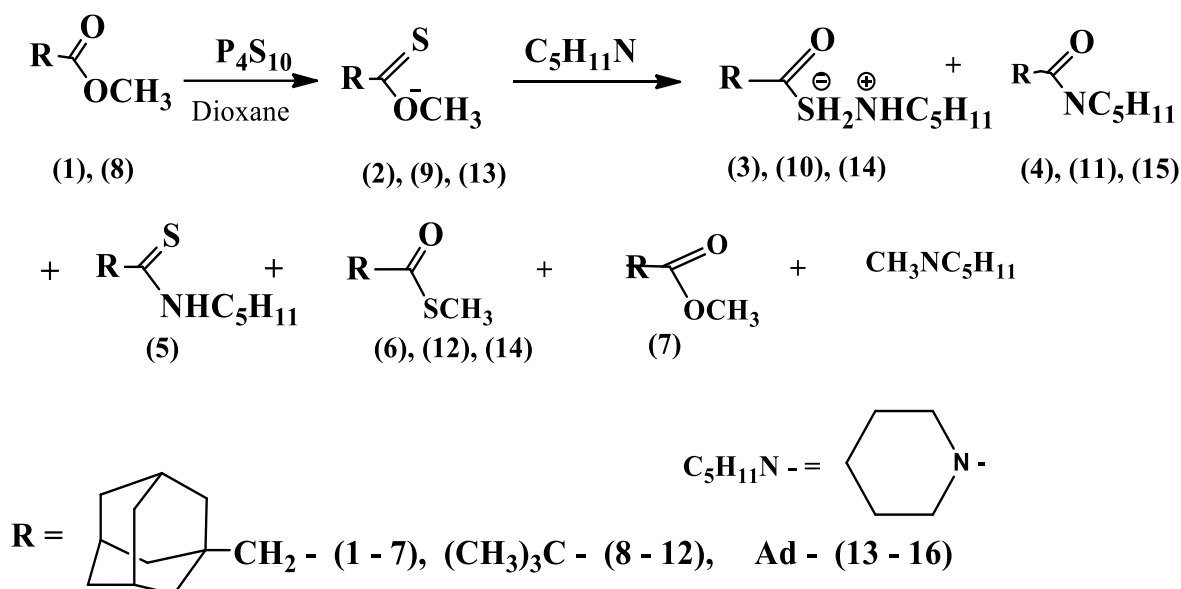
When adamantane-1-acetic acid methyl ester reacted with phosphorus pentasulfide in dioxane, adamantane-1-thioacetic acid methyl ester was synthesized for the first time. As a result of its reaction with piperidine, the corresponding thiolester, adamantane-1-acetic and thioacetic acid N-piperidylamides, and N-methylpiperidine are formed. Based on the comparison of the obtained results with those similar to the esters of adamantane-1-thionecarboxylic and thionpivalic acids, a variant of the mechanism of this reaction is proposed.

Aim. It is known that the presence of bulk adamantyl radical significantly affects the course of chemical reactions [2]. In [1] we described the synthesis of the methyl ester of adamantane-1-thionecarboxylic acid (13) and showed that when interacting with piperidine instead of thionamide formation it is isomerized to the ester of thiorcarboxylic acid (16) and converted into the piperidine salt of the same acid (14), accompanied by N-methylation of piperidine.

Results and discussion. In order to study the spatial effect of the carbon radical on the direction of the reaction of thionesters with piperidine, the behavior of adamantyl-1-thioacetic (2) and thionpivalic (9) methyl esters in this process was studied in the present work. In other words, those substrates in which steric factors play, respectively, a smaller or larger role.

Thionesters (2) and (9) were synthesized in dioxane by the method developed by us [1] and isolated by column chromatography on silica gel with yields of 72 and 69%, respectively. The reaction was monitored by GLC. The IR spectrum of compound (2) contains an absorption band at 1250 cm^{-1} , which corresponds to the valence oscillations of the C=S bond, and the PMR spectrum in the region of 3.9 ppm. there is a singlet of protons of the methyl group. The corresponding signal for the thionester (9) is observed at 3.95 ppm.

As a result of half an hour of heating the thionester (2) in anhydrous piperidine, taken in large excess, after distillation of the latter was isolated a mixture of compounds (Table 1).



The presence of adamantane-1-acetic (4) and thionoacetic (5) acids in this mixture of *N*-piperidylamides was determined by GC and PMR methods by comparison with samples obtained from adamantane-1-acetic acid chloride.

Thus, in the PMR spectrum of thioamide (5), the proton signals of the α -methylene groups of the piperidine ring are observed in the form of two broad singlets at 3.63 and 4.20 ppm, apparently due to the inhibition of rotation around the bond = C - N. shear of these protons in a weak field in comparison with amide (4) (δ 3.43 ppm), in which these protons are equivalent.

Thiolester (6) was isolated by column chromatography as a sample with a content of 57% in a mixture with the original thionester (2) and ester (7). In the IR spectrum of this mixture, the absorption band of carbonyl groups is observed at 1680 and 1730 cm^{-1} , which corresponds to their absorption in thionester (6) and ester (7). In the PMR spectrum there is a signal of protons of the SCH_3 group at 2.05 ppm, which is shifted to a strong field in comparison with esters (2) and (7) by 1.85 and 1.4 ppm, respectively.

Assuming that amide (4), as in the case of adamantane-1-carboxylic acid *N*-piperidylamide (15) [1], is formed from salt (3), we tried to detect it by lowering the reaction temperature. However, only amide (4) and thioamide (5) were detected in the synthesis at 20 °C in quantities of 9 and 91%, respectively. Obviously, the formation of salt (3) slows down as the reaction temperature decreases. This is confirmed by the data of the experiment conducted in an airtight container at 160 and 220 °C (Table 2).

Table 1

Properties of thionesters (2), (9) and products of their reaction with piperidine

Nº Comp.	Yield ^a , %	Melting point, °C ^b (retention time,s)	PMR spectrum, δ , ppm	IR spectrum, cm^{-1}
2	72	(900)	2.44 (2H), 3.88 (3H)	1250 (C = S)
4	48	46-48 (828)	1.88 (2H), 3.43 (4H)	1610 (C = O)
5	32	91-93 (1332)	2.73 (2H), 3.63, 4.20 (4H)	1250 (C = S)
6	10	(468)	1.13 (2H), 2.05 (3H)	1680 (C = O)
7	3	(306)	3.45 (3H)	1730 (C = O)
9	7	-	1.03 (9H), 3.95 (3H)	-
10	54	-	2.93 (4H), 8.30 (2H)	-
11	27	38-40 (144)	1.10 (9H), 1.45 (6H), 3.35(4H)	-
12	18	-	2.10 (3H)	-

Note. At ^a106 °C. ^b For compounds derived from acid chlorides.

Table 2
Yields^a of reaction products of thioester (2) with piperidine at different temperatures, %

N ^o Compound	20°C	106°C ^b	160°C	220°C
4	9	48	69	89
5	91	31	19	5
6	-	10	11	5

Note. ^a Submit GLC. ^b The boiling point of piperidine at atmospheric pressure.

As can be seen from table 2, an increase in temperature leads to an increase in the amount of amide (4) and a decrease in the amount of thioamide (5). Salt (3) was not found in any experiment. However, in the distillation of piperidine, as in the case of the reaction with a carboxylic acid thioester [1], N-methyl piperidine was detected in an amount corresponding to the amount of amide (4). This confirms the assumption of the formation of amide (4) from the piperidine salt (3).

The reaction between thionester (9) and piperidine was performed under similar conditions (30 minutes, boiling piperidine). A mixture of compounds was formed (Table 1), in the PMR spectrum of which signals at 3.35 and 2.93 ppm were observed, which apparently belong to the α -protons of the piperidine ring in amide (11) and salt (10), respectively. compare with [1]). In addition, the formation of salt (10) indicates the presence of a signal of protons of the group NH_2^+ at 8.3 ppm The shift of α -protons in the PMR spectrum of amide (11), obtained from pivalic acid chloride, completely coincides with the above. The signal of protons of the SCH_3 group in the thiolester (12) was observed at 2.1 ppm. (2.05 ppm for thiolester (6)).

Thus, as a result of the reaction of the thioester (9) with piperidine, as in the case of adamantyl-containing thionesters, the formation of the piperidinium salt and isomerization to the thiolester occur. The yield of N-methylpiperidine was not determined in this experiment.

It is known that the first stage of the reaction of the nitrogenous base with carbonyl or thiocarbonyl compounds is the addition of a carbonyl or thiocarbonyl group and the formation of adducts (17). Further transformations of these intermediates are possible in several ways. In the reaction under study, the usual decomposition of intermediate (17) with the formation of thioamide (5) occurs only in the case of ester (2). Unusual ways of decay of the adduct (17) will be realized for all thionesters, including thionester (14), the properties of which are described in [1]. Isomerization of thionesters to thiolesters occurs, in our opinion, by converting the adduct (17) into an intermediate (18) through the transition state (A). It is known from the literature [3] that thermal isomerization of thionesters to thiolesters proceeds strictly intramolecularly and obeys first-order kinetic laws. In some cases, it is explained by the participation of ion pairs [4]. Based on these data, we proposed structure (A) as a transition state. This transition state is an ionic vapor whose anion is stabilized by delocalization of the charge between oxygen and sulfur atoms.

As can be seen from table. 3, in the case of the most bulky tert-butyl radical, the yield of thiolester (12) is not the lowest. However, as the volume of the substituent decreases, ie with the transition to adamantyl (thiolester (16)) and adamantylmethyl (thiolester (6)) radicals, the yield of thiolester should increase. In the latter case, it becomes possible to realize the transition state (B), which leads to the formation of thioamide (5), because the transition states (A) and (B) are similar. Taking into account the total yield of compounds (5) and (6), the yield of thiolester (12) having a tert-butyl radical will be the lowest.

To understand the causes of this phenomenon, it is necessary to take into account that in the ion pair the anion is more solvated than the cation [5]. Therefore, the reduction of anion energy due to solvation will be crucial to stabilize the transition state (A). As the volume of the radical increases in the series of adamantylmethyl, adamantyl, tert-butyl, steric barriers to the solvation of the anion increase, which increases the energy of the transition state and, thus, leads to a decrease in the rate of thiolester formation.

Conclusions. The formation of piperidinium salts from intermediate (17), accompanied by N-alkylation of the piperidine molecule, involves the participation of another piperidine molecule in this process. Therefore, structure (B) was proposed as a transition state, in which the transition of a methyl group to a nitrogen atom occurs without charge separation. In this case, the influence of steric factors must be offset by the neutrality of the transition state. However, due to the importance of such an effect

on the competitive directions of the reaction (isomerization, thioamidation), the salt yield during the transition from *tert*-butyl to methyladamantyl substituent decreases (Table 3).

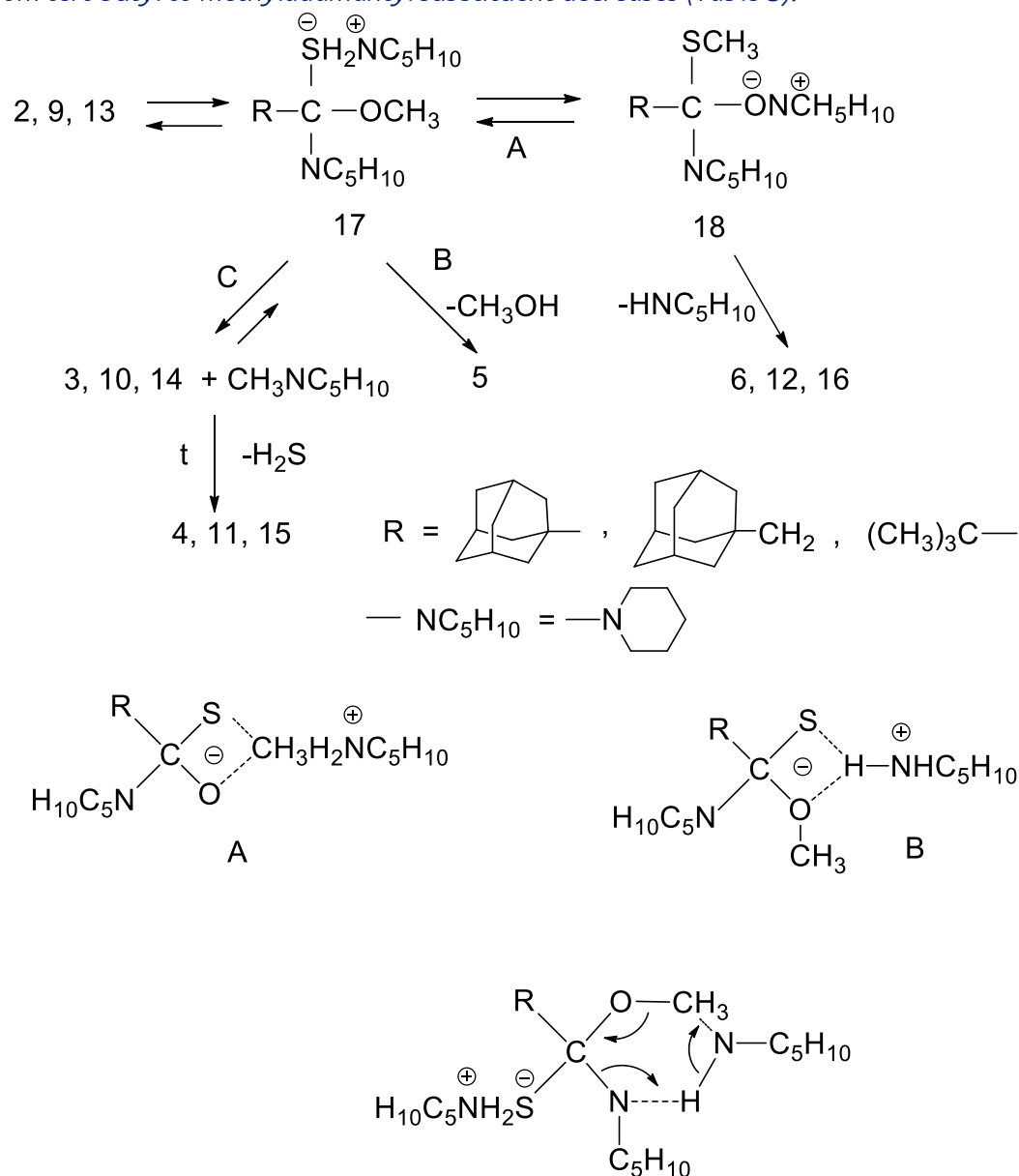


Table 3
Yields of reaction products of thioesters (2), (9) and (13) with piperidine, %

N ^o Compound	Solt tiolacide+ Amide	Thiolester	Thioamide
9	82 (10 – 11)	18 (12)	-
13 ^a	57 (14)	29 (16)	-
2	48 (4)	10 (6)	32 (5)

Note. ^a Data from [1].

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Cultural sciences

CHARACTERISTIC FEATURES IN COMPOSERS' WORKS IN THE ROMANTIC PERIOD

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ROMANTİK DÖNEM BESTECİLERİNİN ESERLERİNİN KARAKTERİSTİK ÖZELLİKLERİ

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Abstract

The article is devoted to the study of stylistic features characteristic of the works of the composers of the romantic period. Here, the composers active in the romantic period and the names of their works for the piano are listed, and the important role of these works in piano performance is revealed. The works for the piano of Schumann and Chopin, prominent composers of the Romantic era, are classified and the important role of piano music in their works is shown. The prominent representatives of romanticism in music are discussed, and the names of the composers of the romantic period in European and Russian music are mentioned. At the same time, the article reveals evidence about the characteristics of romantic music.

Özet

Makale, romantik dönem bestecilerinin eserlerinin karakteristik üslup özelliklerinin incelenmesine ayrılmıştır. Burada romantik dönemde faaliyet gösteren besteciler ve bunların piyanoya yönelik eserlerinin isimleri sıralanmakta ve bu eserlerin piyano icrasındaki önemli rolü ortaya konulmaktadır. Romantik dönemin önde gelen bestecileri Schumann ve Chopin'in piyano için eserleri sınıflandırılarak, piyano müziğinin eserlerindeki önemli rolü gösterilmektedir. Müzikte romantizmin öne çıkan temsilcileri ele alınmakta, Avrupa ve Rus müziğinde romantik dönemin bestecilerinin isimlerine değinilmektedir. Makale aynı zamanda romantik müziğin özelliklerine dair delilleri de ortaya koyuyor.

Keywords: composers of the romantic period, piano works, music, string and wind instruments, poet, creativity, Russian, European. Characteristic features of the works of romantic era composers

Anahtar kelimeler: romantik dönem bestecileri, piyano eserleri, müzik, yaylı ve üflemeli çalgılar, şair, yaratıcılık, Rus, Avrupa.

Tanıtım. Müzikte romantizmin yönü 1820'lerde ortaya çıktı ve 19. yüzyılın ikinci yarısında daha da şekillendi. Müzikte romantizmin temsilcileri: Avusturya'da Franz Schubert; Almanya'da-A. Hoffmann, Carl Weber, Richard Wagner, Felix Mendelssohn, Robert Schumann; İtalya'da - N. Paganini, V. Bellini, C. Verdi; Fransa'da-G.Berlioz, D.F.Aubert, J.Meyerbeer; Polonya'da F. Chopin; F. olmuşdur. Rus besteciler: A. A. Alyabyev, M. I. Glinka, Dargomyzhsky, Balakirev, N. A. Rimsky-Korsakov, Mussorgsky, Borodin, Kui, P. I. Çaykovski romantik dönemin önde gelen temsilcileridir. Romantizmin pek çok temsilcisi onun kapsamlı önemini anladı. Her ne kadar erken dönem romantizmi telli çalgıların hakimiyetinde olsa da, bunların hiçbiri günlük yaşamda ve konser sahnesinde piyano kadar sağlam bir şekilde yerleşmemişti. Piyano enstrümanı, Alman besteci Robert Schumann'ın müziğinin ana özünü oluşturdu. Schuman hayatının on yılını müzik eleştirisine adadı. Tutku, bilgi ve ikna gücüyle dolu bilimsel makaleleri halk tarafından büyük ilgiyle okundu. Chopin'in yeteneğini övdü ve daha sonra Brahms'ı yeni parlak besteci olarak kutladı. Schuman'ın romantik doğası, fantezi ve gerçekliğin sürekli birliğinde kendini gösterdi. Shuman tamamen duygularına, aile hayatına ve sanat dünyasına dalmıştı. Kısa sürede vokal sözlerinin gerçek şaheserlerini yarattı: Heine'nin şiirlerinden yola çıkan "Şairin Aşkı", Chamisson'un şiirlerinden yola çıkan "Kadının Aşkı ve Hayatı", vokal dizisi ve bir dizi şarkı. Piyano için Schumann: "Abeg", "Kelebekler" (Op. 2), "Davidsbündler'lerin Dansı" (Op. 6), "Allegro" (op. 8), "Karnaval" (op. 9), üç üzerine çeşitlemeler sonatlar-No. 1 Fa diyez minör (op. 11), No. 3 Fa minör (op. 14), No. 2 Sol minör (op. 22), "Fantastik oyunlar" (op.

12), "Senfonik etütler" (op. 13), "Çocuk albümü" (op. 15), "Kreisleriana" (op. 16), C'de "Fantasia" (op. 17), "Arabesque" (op. 18), "Humoresque" (op. 20), "Romanlar" (op. 21), "Viyana Karnavalı" (op. 26), "Gençlik Albümü" (op. 68), "Orman Manzaraları" (op. 68) gibi zengin eserlerin yazarıdır. .82). [Çeredniçenko T. B. "Allegro-press", 1994. 344 s.]

Piyano için "Karnaval" Schumann'ın fikirlerinin en canlı örneği, onun ana fikriydi. Bu çalışmada Schumann, virtüöz bir kemancının performansını taklit etti ve müzik tasarımı en zor sıçramalar üzerine kurdu. Parlaklık, zeka ve yaratıcılık açısından bu, Schumann'ın çalışmalarının en parlak sayfalarından biridir. Karnaval, Schumann'ın müziğini anlamak açısından büyük önem taşıyor. Bu, bestecinin müzikal düşüncesinin ve dilinin özellikleri hakkında bir fikir yaratır.

Müzikal romantizm, bestecinin düşüncesinin, orkestra tarzının, müzikal ifade sisteminin ve müzikal imge yelpazesinin gelişme sürecidir ve klasisizmin halefidir. Bu özellikler romantik dönemin ilk bestecisi Beethoven ve Schubert'in eserlerinde parlak bir şekilde kendini göstermiştir. Romantik müziğin en önemli özelliği insanın duygu dünyasının doğrudan ifadesi, geleneklerle sınırlı olmayan kendini ifade etme özgürlüğüdür. Bu özellik, müzik dilinin zenginliği ve klasik standartların üstünlüğü ile ilgilidir. Senfoni orkestrasının romantik uyumuna ve kompozisyonuna damgasını vuran değişiklikler özellikle dikkat çekicidir. Romantik dönemde türün kapsamı da değişti. L.A. Rapaskaya şöyle yazıyor: "Dönemin duygularını birleştirme eğiliminin artması, aralarında belirli ve kopmaz bağlantıların yaratılması, döngüsel formların büyük tek parçalı formlara dönüşmesine yol açtı" [Ранацкая Л. А. Dünya sanat kültürü. 2 parça halinde. M. : Vlado, 2008].

Genel hisse. Romantik dönemde (ancak tek perdelik sonat ve senfonik şiirden çok sonra), tek perdelik opera da ortaya çıktı. P. Çaykovski'nin "Iolanta" operası ve S. Rachmaninov'un tüm operaları en eski örnekler arasında gösterilebilir. Zamanın en ünlü operalarından biri Wagner'in "Tangeiser" operası olarak kabul ediliyordu. Minyatür türü oldukça gelişmiştir. Daha önce var olmayan ya da profesyonel müzikte önemli bir yer bulamayan türler ön plana çıktı. Bunlar arasında Chopin'in keşfettiği veya yeniden canlandırdığı polonez, mazurka, prelüd, etüt baladı ve diğerleri vardır. Minyatürler genellikle döngüler halinde birleştirildi (örneğin, Schumann'ın "Orman Sahneleri", Çaykovski'nin "Yılın Mevsimleri"). Döngüsel forma birlik verme arzusu tipik hale geldi. İnsani duyguların ifadesi ve bir kişinin (lirik kahramanın) kitlelere karşı muhalefeti veya yaşamın nesnel gerekliliği ile yakından ilgili olan vokal müziği özel bir önem kazanmıştır. Schubert ve Schumann'dan Webern'e, Schoenberg'den, Shostakovich'e, Stravinsky'ye kadar romantiklerin temel ilgi alanları arasında şarkılar ve aşk romanları yer almış, romantizmin etkisini aşır sınırlarının çok ötesine geçen bu türe büyük ilgi gösterilmiştir. Schubert'ten Brahms'a, Çaykovski'ye, Mahler'e kadar birçok bestecinin somutlaştırdığı bir şarkı senfonisi olgusu bile var. Müzik tarihi yazımında Batı Avrupa romantizmi geleneksel olarak üç döneme ayrılır: erken, olgun ve geç. Erken romantizm klasisizmle ilişkilidir. En önde gelen temsilcileri Schubert, Weber, Paganini, Rossini, Spor ve diğerleridir. Olgun romantizmin figürleri arasında Schumann, Chopin, Liszt, Berlioz, Wagner, Brahms, Bruckner, Mahler, Richard Strauss ve diğerleri yer alıyor. Rus romantik müziği tarihinde böyle bir bölünmeyi başarmak daha zordur: Her ne kadar erken dönem Glinka ve Dargomyzhsky'nin faaliyetleriyle ilişkilendirilse de, sonraki dönem Rimsky-Korsakov, Balakirev, Mussorgsky, Borodin, Kui vb. ile ilişkilendirilmiştir. bir örnek verilebilir. Rimsky-Korsakov'un son operaları "Kashchei" ve "Altın Horoz" tamamen modernizm çağına aittir. Rus besteciler okulunun ilk temsilcisi Mihail İvanoviç Glinka'nın "Çarın Gelini", "İvan Susanin", "Ruslan ve Lyudmila" operaları dünya müzik kültürünün en önemli olaylarından biri oldu. Rus tarihinin trajik ve kahramanca sayfaları, destansı ve fantastik başlangıçlar, diğer ülkelerin kültürlerine olan ilgi, Rus romantik bestecilerin yaratıcı arayışlarını belirledi. 19. yüzyılın sonu ve 20. yüzyılın başında Rus ekolü, bazı Batılı müzisyenlerle birlikte Avrupa'nın müzik düşüncesi üzerinde derin bir etkiye sahipti. L. Alekseyeva ve V. Grigoriev'e göre: "Moskova'daki Scriabin ve St. Petersburg'daki Stravinsky, Rusya'da romantik dönemi tamamlayan besteciler olarak tanınıyordu." [Алексаева Л. N., Grigoriev V. Yu. M.: Знание, 1983. C. 5.]

Romantik dönemde piyano müziği büyük önem kazandı. Piyano enstrümanı, solo ve topluluk performansı, konçerto ve sentetik türler için sınırsız olanaklar sunan bir enstrüman olarak hızla gelişmiştir. Piyano müziği, sanatın sınırlarını zorlayan Romantikler için mükemmel bir türdü. Buna önce Avrupa'da, sonra Rusya'da piyano okullarının oluşumu eşlik etti. Aynı zamanda piyano müziği oda ve vokal müziğine de ilgi uyandırdı: şarkılar, aşk romanları, baladlar ve diğer türler. Oda koroları (a cappella ve eşlik) ve vokal toplulukları büyük önem kazanmaya başladı. Weber, müzik tarihindeki ilk profesyonel şeflerden biri oldu ve romantik orkestrasyon tarzı gelişti. Kompozisyonun sürekli genişlemesi, spesifik enstrümanların ortaya çıkışı (pikolo flüt, bas klarnet vb.), nefesli ve üflemeli çalgıların yelpazesinin ve olanaklarının (ve dolayısıyla çalma tekniğinin) gelişmesi, vurmali çalgıların sayısı (gibi) yanı sıra piyano, org vb.) senfoni orkestrasının büyük gelişmesine yol açtı. Bu alandaki en büyük yenilikçiler arasında

Berlioz, Wagner, Liszt, Mahler, Glinka, Rimsky-Korsakov, Scriabin ve daha birçokları yer alıyor. Oda müziği toplulukları oluşturma geleneği, oda müziği (ev müziği dahil) yaratmaya olan ilginin devam etmesi nedeniyle ortaya çıktı. Schubert'ten Brahms'a, Glinka'dan Rachmaninoff'a kadar Romantiklerin topluluk müziği, Avrupa ve Rus kültürünün ayrılmaz bir parçası haline geldi. Romantik dönem müziğinin temel sorunu kimlik sorunu, dış dünyayla çatışmasıydı. Romantik bir kahraman her zaman yalnızdır. Yalnızlık teması belki de tüm romantik sanatlarda çok popülerdir ve genellikle yaratıcı kişilik fikriyle ilişkilendirilir: Bir kişi alışılmadık, yetenekli bir kişi olduğunda yalnızdır. Romantik müzikte besteci, en sevdiği kahramanın imajını yaratır: Schumann "Şairin Aşkı", Berlioz "Sanatçının Hayatından Bir Bölüm", Liszt "Fantastik Senfoni" vb. Fantezi teması, romantik dönemin bestecileri için gerçek bir keşif haline geldi. Melodi ilk kez tamamen müzikal araçlarla inanılmaz ve fantastik görüntüleri somutlaştırıyor.

17 ve 18 yüzyıl operalarında "olağanüstü" karakterler (örneğin, Mozart'ın "Sihirli Flüt" filmindeki Gecenin Kraliçesi) "genel kabul görmüş" müzik dilinde konuşuyordu ve gerçek arka planda öne çıkmıyordu. İnsanlar. Romantik besteciler, fantezi dünyasını tamamen özel bir araç olarak aktarmayı öğrendiler (alışılmadık orkestrasyon ve armonik renklerin yardımıyla). Bunun açık bir örneği Weber'in "The Magic Shooter"daki "Wolf Creek'teki Sahne"sidir. Halk yaratıcılığına ilgi, müzikal romantizmin çok karakteristik özelliğidir. Müzikologlar E. Huseynova ve G. İsmayilova bu konuda şunları belirtiyor: "Tıpkı folklor yoluyla edebi dili zenginleştiren ve güncelleyen romantik şairler gibi, müzisyenler de geniş çapta ulusal folklorla yöneldiler - halk şarkıları, baladlar, destanlar: F. Schubert, R. Schuman, F. Chopin, I. Brahms, B. Smetana, E. Grig" [Huseynova E., İsmayilova G. Ders Kitabı, Bakü, 2023] Ulusal folklorun tonlamalarına ve ritimlerine dayanan ulusal edebiyat, tarih, yerli doğa görüntülerini somutlaştırdılar ve eski diatonik akorları yeniden canlandırdılar. Folklorun etkisi altında Avrupa müziğinin içeriği çarpıcı biçimde değişti. Yeni temalar ve görüntüler, romantiklerin müzik dilinin oluşumu, melodinin bireyselleştirilmesi ve konuşma tonlamalarının tanıtılması, müziğin tınısının ve armonik paletinin genişletilmesi (majör ve minörlerin renkli karşılaştırması) için yeni araçlar ve ilkeler geliştirmesini gerektirdi. Romantikler artık bir bütün olarak insanlığa değil, benzersiz bir duyguya sahip belirli bireye odaklandığından, ifade araçlarındaki çeşitlilik yavaş yavaş yerini bireysel benzersizliğe bıraktı. Melodide genelleştirilmiş tonlamalar, armonide yaygın olarak kullanılan akor ilerlemeleri, dokudaki tipik tonlar azaltılır ve tüm bu araçlar bireyselleşir. Orkestrada topluluk grupları prensibi yerini neredeyse tüm orkestra seslerinin solo icrasına bıraktı. Müzikte sonat, varyasyon, fantezi, romantizm, rondo, şarkı, mazurka, polinezya, etüt (senfonik etüt, etüt-resimler), vals, doğaçlama, prelüd, scherzo, barcarolla, laylay, tarantella, bolero, marş, intermezzo, rapsodi romantik dönem, çatı katı vb. türler kendini gösterdi.

Böylece romantik dönem bestecilerinin yaratıcılığı kendine has özellikleriyle öne çıkar. Bu dönemde yaşayan ve yaratan bestecilerin her birinin eserlerine zamanın ruhu parlak bir şekilde yansıyor.

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**THE FORMATION AND DEVELOPMENT OF THE KAZAKH FOLK INSTRUMENTS ORCHESTRA
NAMED AFTER KURMANGAZY SAKHIRBAYULI**

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**KURMANGAZI SAKHİRBAYULI'NİN ADINI TAŞIYAN KAZAK HALK ÇALGILARI ORKESTRASININ
OLUŞUMU VE GELİŞİMİ**

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Abstract

The presented article is devoted to the investigation of the history of the Kazakh folk instruments orchestra named after S. Kurmangazy and its development process. In the article, the creative path of the orchestra is briefly explained, and information is provided about the orchestra's repertoire and concert-tours. It is noted that the Kazakh folk instruments orchestra named after Kurmangazy represented the Kazakh musical culture at a high level, held a series of concerts in the country and abroad, and the orchestra was awarded honorary titles. The orchestra's visit to Baku attracts attention with its importance. Thus, the orchestra played the works of Azerbaijani composers along with the works of Kazakh and foreign composers. This year, the Kurmangazi Kazakh National Orchestra of Folk Instruments turns 90 years old. Since its inception, the orchestra has played an important role in the cultural life of the country, promoting and representing it at a high level.

Özet

Sunulan makale, S. Kurmangazy adını taşıyan Kazak halk çalgıları orkestrasının tarihçesi ve gelişim sürecinin incelenmesine ayrılmıştır. Makalede orkestranın yaratım yolu kısaca anlatılmakta, orkestranın repertuarı ve konser-turneleri hakkında bilgi verilmektedir. Kurmangazy adını taşıyan Kazak halk çalgıları orkestrasının Kazak müzik kültürünü üst düzeyde temsil ettiği, yurt içi ve yurt dışında bir dizi konser düzenlediği ve orkestraya fahri unvanlar verildiği kaydedildi. Orkestranın Bakü ziyareti önemiyle dikkat çekiyor. Böylece orkestrada Kazak ve yabancı bestecilerin eserlerinin yanı sıra Azerbaycanlı bestecilerin eserleri de seslendirildi. Kurmangazi Kazak Ulusal Halk Çalgıları Orkestrası bu yıl 90 yaşına giriyor. Orkestra, kuruluşundan bu yana ülkenin kültürel yaşamında önemli bir rol oynamış, onu üst düzeyde tanıtmış ve temsil etmiştir.

Keywords: Kazakh music, Kazakh folk instruments orchestra, Jubanov, Kurmangazy Sakhibbayuli, orchestra, folk instruments, dombra

Anahtar kelimeler: Kazak müziği, Kazak halk çalgıları orkestrası, Jubanov, Kurmangazi Sakhibbayuli, orkestra, halk çalgıları, dombra, kobyz.

Tanıtım. Kültürel ilişkiler kurma yönündeki en büyük başarı, Türk halklarıyla geleneksel ilişkilerin kurulmasında olmuştur, Türk dili konuşan ülkeler arasındaki ilişkilerin geliştirilmesi, Türk kültürünün incelenmesi, araştırılması ve korunması büyük önem taşımaktadır.

Hasanzadeh Khatira bu konuda şöyle yazıyor: "Türk halkının ulusal müzik kültürünü araştırmak, çağımızın en acil sorunlarından biri olarak kabul ediliyor." [Hasanzade X. Baki, ADPU yayınevi, s.120]. Sunduğumuz yazıda Kazak halkının milli kültürünün bir parçası olan Kurmangazi halk çalgıları orkestrasının yaratım ve gelişim sürecine göz atarak bu orkestranın yaratıcı yolunu takip ettik.

Esas hisse. 1933 yılına kadar Kazak türkülerine ve şarkılarına dört veya beş kişiden oluşan topluluklar eşlik ediyordu. Ancak Kazak ulusal müziğinin gelişimi, yekpare bir bütünlük içerisinde halk çalgılarından oluşan bir orkestranın oluşturulmasını gerektirmiştir. Bu amaçla Kazak besteci ve orkestra şefi Akhmed Kuanovich Jubanov, besteci Yevgeny Brusilovsky ve usta müzisyen Romanenko kardeşlerle birlikte kobiz ve dombr çalgılarıyla ilgili çalgılar araştırmaya başladı. Farklı tiplerde dombra ve kobzi çalgıları yaratarak, bu çalgılarda kromatik ses üretebilmek için ek perdelerin kapatılması ve

enstrümanların nota sistemine aktarılması üzerinde sürekli çalıştılar. Sonuçta farklı boyutlarda ve farklı ses kayıtlarında *prima*, *saniye*, *bas*, *kontrbas* türleri *dombr* ve *kobiz* çalgıları yaratılmaktadır. Kazak milli çalgılarının nota sistemine aktarılması esas alınarak halk çalgılarından oluşan bir orkestranın oluşturulması talebi ortaya atılıyor.

1933 yılında Kazak milli çalgılarından oluşan ilk halk çalgıları orkestrası düzenlenmiş ve 1934 yılında bu orkestra resmi olarak tescil edilmiştir. [Gurbanov R. Bakü: İqtisad Üniversitesi Yayınevi, 2011, 165 s.]

Kazak halk çalgıları orkestrası ilk yıllarda bir takım zorluklarla karşı karşıya kaldı. Kazak türküleri ve şarkılarının seslendirilmesi sırasında topluluk üyeleri birbirleriyle iletişim kurmakta zorlandı. Tek başına oynamaya alışkın olan *Dombr* ve *kobzi* oyuncular, birlikte oynamaya alışamadı. Genellikle türküler ve ezgiler her icracı tarafından kendine göre icra edilirdi. Orkestranın sanat yönetmeni ve şefi Jubanov, solo çalmaya alışkın olan sanatçıları asırlık icra geleneklerinden kolektif yaratıcılığa ve orkestra performansına yönlendirmeye çalıştı.

"Sari-arka" (Geniş Çöl), "Serper" (Ayrılık), "Aday" (Nesil Adı), "Balbraun" (Dansçı), "Kobik Şaşgan" (Coşgun), "Kızıl Kayın" (Kızıl Çınar) Orkestra Kurmangaz, "Ala-tau" (Dağ adı), "Bayjuma" (Erkek adı) kuis, Dauletkereye'nin "Kudasha" (Kayınbiraderi), "Mundi-kız" (Üzgün kız), "Tortys" (Yarışma), "Kosalka" (Bir çift küpe), "Ayan-kız" (Kızın adı), "Demalis" (Dinlenme), türküler "Joldast" (Arkadaşlar), "Jirma bes" (Yirmi beş), " Bayajan" (Erkeğin adı) notalar olmadan uyum içinde icra ediliyordu [Hasanzade X. Baki, ADPU yayınevi, s. 127].

Yavaş yavaş orkestra üyeleri kolektif performansla alıştı, birbirlerine yardım etti ve şarkıları ritmik ve anlamlı bir şekilde çaldı. Orkestra, sıklıkla cumhuriyetin farklı bölgelerinde, geniş bir izleyici kitlesi önünde, radyo dalgaları aracılığıyla konserler veriyor ve halkın sempatisini kazanıyor. Orkestranın repertuarı genişletildi ve Rus bestecilerin eserleri repertuvara dahil edildi: I. Dzerzhinsky'nin "Sessiz Don" operasından "O taydan bu taya" şarkısı (Jubanov'un performansı), L. Knipper'in "Polyushko" şarkısı (L. Khamidin'in performansı) repertuvara dahil edilmiştir. Yetenekli şefler ve besteciler kısa sürede kolektifin içinden yetişiyor. Bu yıllarda kolektif, Shamgon Kazgaliyev, Latif Khamidi, Fuat Mansurov, Ermek Serkebayev ve Nurgisa Tlendiyeve gibi yetenekli müzisyenler tarafından yönetiliyor. Jubanov'un yolunu izleyerek orkestranın kompozisyonunu genişlettiler ve repertuarı zenginleştirdiler.

Kazak halk çalgıları orkestrası ülkenin kültürel yaşamında o kadar önemli ve önemli bir rol oynadı ki, 1935 yılında Jambul'un adını taşıyan Kazakistan Devlet Filarmoni Orkestrası onun temelinde kuruldu.

1936 yılında Moskova'da Kazakistan Kültür ve Sanat On Yılı düzenlendi. Kırk icracıdan oluşan Kazakistan halk çalgıları orkestrası bu on yılda sahne alıyor. Ünlü şarkıcı Cemal Omarova, orkestra eşliğinde türküler seslendirdi. Böylece ilk kez Kazak türküleri "Büyük Tiyatro" sahnesinde orkestra eşliğinde seslendiriliyor. "İzvestia" gazetesi bu konserin başarısı hakkında şunları yazdı: "Kazak halkı Avrupa senfonik orkestrasına yönelmenin yanı sıra müzik kültürünü de geliştirdi, ulusal enstrümanlarını unutmadı, çeşitli türlerini yarattı ve güzel sesli bir orkestraya sahip oldu. " [Moskova, İzvestia 1936, No. 12].

"Büyük Tiyatro"daki başarılı performans orkestraya heyecan katarken, yabancı bestecilerin eserlerine de yer verilerek orkestranın repertuarı daha da zenginleştiriliyor. Avrupalı ve Rus bestecilerin eserleri: L. V. Beethoven "Dokuzuncu Senfoni", V. Mozart "Rondo", P. Çaykovski "İkinci Senfoni", "Fındıkkıran" balesinden "Güllerin Valsi", F. Schubert "Serenade", J. Vertdi "Aida" operasından "Mart", J. Bize'nin "Carmen" operasından "Uvertür", "Giriş" vb. Orkestranın seslendirdiği eserler Kazak halkının sanat ve estetik zevkini yansıtıyor.

Kazak besteci ve şef L.M. Shagorodsky, 1942'den beri Kazak halk çalgıları orkestrasını yönetiyor ve 1944'te onun liderliğinde orkestra 10. yılını kutladı. Bu önemli yıldönümü gecesinde orkestra, W. Mozart'ın "Rondo"sunu, J. Bizet'in "Carmen" operasından uvertürü, F. Schubert'in "Waltz"ını (L. Khamidi'nin seslendirdiği), M. Glinka'nın "Waltz-fantasia"sını (L.M. Shagorodsky tarafından çalışıldı), yaklaşık altmış kişi Kui ve halk şarkılarını söylüyor. Bu yıldan itibaren orkestra, Kazak besteci S. Kurmangazi'nin adını taşımaya başlamış, Alma-Ata'da Kazakistan Devlet Konservatuvarı açılmış ve bünyesinde "Halk Müziği Aletleri" Fakültesi faaliyet göstermektedir.

1945'te orkestra, L. V. Beethoven'ın "İlk Senfonisini" (yöneten S. Shabelsky ve L. Shagorodsky) seslendirdi. Kazak besteciler de orkestra için büyük ölçekli senfonik eserler yazmaya başlıyor. S. Shabelsky ve L. Shagorodsky'nin "Kazakistan" senfonik şiiri, E.G. Brusilovsky'nin "Jelderme" senfonik şiiri, Jubanov'un "Abay" süiti, "Kurmangazy anısına yürüyüş" vb. gibi örnekler gösterebiliriz.

1949'da Moskova'da düzenlenen Kazak Kültürü ve Edebiyatı On Yılı'nda halk çalgılarından oluşan bir orkestra sahne aldı. Moskova'da ilk kez notasız performans sergileyen orkestra, Çek besteci Dvořák'ın "Slav Dansı", Glinka'nın "Waltz-fantasia" ve Mozart'ın "Rondo" adlı eserini seslendirerek müzik camiasının

dikkatini çekti. Orkestra ayrıca "Asem konır" (Güzel giyimli), "Oyuncak piç" (Tatil), "Jenis" (Zafer), "Kişkentay" (Küçük), "Zaureş" (Kızın adı), "Akhay semey" (Semipalatinsk), "Zaman ay" (Ah zaman), "1916 yılı" (1916 yılı), "Arman" (Rüya), "Elimay" (Vatan).

1950 yılında Kazakistan halk çalgıları orkestrası Çin Cumhuriyeti ile yakın kültürel ilişkilere başladı. Bu bağlamda orkestra Pekin, Şanghay, Hangzhou, Nanjing ve Shenyang'da iki kez konser vererek Çinli bestecilerin "Sapczidema", "Çoban Günü", M. Borodin'in senfonik tablosu "Orta Asya", F. Schubert'in "eserlerini seslendirdi. Müzikal Anı", M. Mussorgsky'nin "Sorochin Fuarı" operasından giriş, N. Rimsky-Korsakov'un "Snow Maiden" operasından giriş, "Sadko" operasından "Hintli Konuğun Şarkısı" vb. çalışmalar gerçekleştirir. Kazak halkı, milli orkestranın seslendirdiği yabancı bestecilerin eserlerini dinlemekte ve bu eserleri kolaylıkla anlamaktadır.

1987 yılında orkestra Bakü'de bir konser turnesinde muhteşem bir program sergiledi. Bu konserde Azerbaycan halk şarkıları ve halk oyunlarının yanı sıra farklı ülke bestecilerinin eserleri de Kazak milli çalgılarıyla seslendirildi. Orkestra, Gara Garayev'in "Yedi Güzeller" balesinden "Vals" ve Arif Malikov'un "İki Kalbin Destanı" balesinden "Comden'in Düşleri"ni muhteşem bir şekilde seslendirdi. Bu eserler, Kazak ulusal çalgılarının icrasında alışılmadık bir ses çıkarmış ve izleyiciler tarafından alkışlarla karşılanmıştır.

S.Kurmangazy adını taşıyan Kazak halk çalgıları orkestrası, ülkenin kültürel yaşamına aktif olarak katılmakta ve modern zamanımızın halkına hizmet vermektedir. S. Kurmangazy'nin adını taşıyan Kazak halk çalgıları orkestrası, ülke müzik sanatı tarihindeki ilk profesyonel orkestra olarak görev yapmakta ve Kazak kültürünü tüm dünyada temsil etmekte ve tanıtmaktadır. Orkestra, modern zamanlarımızda bile yaratıcı yoluna başarıyla devam ediyor. Bugün kolektifte 135 sanatçı çalışıyor ve orkestra yılda 100'den fazla konser veriyor. Orkestranın repertuarında beş binin üzerinde eser yer alıyor. Orkestra, Kazak ulusal çalgılarından oluşuyor: dombra, kobiz, daulpaz ve bu çalgıların çeşitli türleri.

Dombra ve kobyz ailesinin Kazakistan'da faaliyet gösteren orkestra ve topluluklara katılması, Kazak ulusal müziğinin tınısını zenginleştirmiş, bu müzik aletlerini çalabilen bir icracı nesil yetiştirmiştir. Türkülerle birlikte dombra ve kobiz çalgılarının teknik yeteneklerini geliştirmeye yönelik besteci eserleri yaratılmıştır. G. Rzayeva şunları söylüyor: "Kazak halkının en sevdiği müzik aleti dombra çalgısıdır, bu çalgının yaratılışı çok eski zamanlara dayanmaktadır. Dombra yıllar geçmesine rağmen yapısını korumayı başarmıştır. Kazak müzisyenler enstrümanın ses aralığını ve teknik yeteneklerini her zaman genişletti." [Rzayeva G. Öğretim materyalleri. Bakü, Bin şarkı yayınevi, 2020, 55 sayfa.]

Orkestranın hizmetleri göz önüne alındığında Kazakistan devleti, ekibi defalarca onur ödülleriyle ödüllendirdi. Böylece 1967'den beri Kazakistan Onur Orkestrası, 1978'den beri Akademik Orkestra gibi fahri unvanlarla ödüllendirilmektedir.

1984 yılında Halkların Dostluk Nişanı ile ödüllendirildi ve 2020 yılında Kazakistan Cumhurbaşkanı'nın kararnamesi ile ulusal statü aldı. Orkestrayı bugün şef Abilay Tlepbergenov ve baş şef Medet Kuanishyev yönetiyor. Solistler Talgat Düsenbayev, Jenis Iskakova, Kayrat Kerimov orkestrayı üst düzeyde temsil ediyor.

S.Kurmangazy Halk Çalgıları Orkestrası bu yıl 90. yılını dolduruyor. [6].

Sonuç. Kazakistan Cumhurbaşkanı Kasım-Jomart Tokayev, orkestranın 90'ıncı kuruluş yıldönümü törenlerinin düzenlenmesine ilişkin kararnamayı imzaladı. Onun emriyle orkestranın yıldönümüne adanan bir dizi konser ve etkinlik programı hayata geçiriliyor. Bu etkinliklerde, Kazak bestecilerinin eserleri ve Kazak ezgileri, dombra ve kobiz'in muhteşem eşliğiyle çalınarak, halkın ebedi hafızasına kaydedilmektedir.

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Economic sciences

HISTORICAL OVERVIEW OF INVESTMENT POLICY IN AZERBAIJAN

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АНАЛИЗ ИСТОРИЧЕСКИХ ЭТАПОВ РАЗВИТИЯ ИНВЕСТИЦИЙ В ЭКОНОМИКУ НАШЕЙ СТРАНЫ

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Abstract

The purpose of writing the thesis is to look at how the historically formed investment environment of Azerbaijan was formed. We know that there cannot be a universal plan for attracting investments. Therefore, it is necessary to look at the past, analyze it, and act in accordance with the requirements of today. Each country should develop its own strategy based on its specific conditions and environment, as well as taking into account its needs and capabilities. The goal here is to reinforce the idea that business and investment climates are indeed important and that every country that wants to improve these environments can increase its economic well-being.

Аннотация

Цель написания тезиса – рассмотреть, как формировалась исторически сложившаяся инвестиционная среда Азербайджана. Мы знаем, что универсального плана привлечения инвестиций быть не может. Поэтому необходимо посмотреть на прошлое, уточнить его и действовать в соответствии с требованиями сегодняшнего дня. Каждая страна должна разработать свою собственную стратегию, основанную на ее конкретных обстоятельствах и окружающей среде, а также принимая во внимание ее собственные потребности и возможности. Цель здесь состоит в том, чтобы укрепить идею о том, что деловая и инвестиционная среда действительно важна и что любая страна, желающая улучшить эту среду, может повысить свое экономическое благосостояние.

Keywords: *investment, investment policy, economy, socio-economic development, non-oil sector, investment projects.*

Ключевые слова: *инвестиции, инвестиционная политика, экономика, социально-экономическое развитие, нефтегазовый сектор, инвестиционные проекты.*

Introduction

At the end of the 20th century, progress with oil production also affected the development of other areas of the economy. The state of the industrial sector where oil is processed and produced in Baku has played an important role in the future development of many other industries. During this period, it is observed that the oil industry, machinery and automobile, as well as the chemical industry developed significantly. This process played an exceptional role in the change of the economic system of Azerbaijan and the formation of modern industrial infrastructure.

Factories and plants located in Transcaucasia demonstrated the industrial potential of this region, since most of the industrial products produced belonged to the Azerbaijani side. During that period, Azerbaijan was at the forefront as an important industrial center in the Russian Empire. In various production areas, Azerbaijan produced 74.6% of the oil produced in the Russian Empire, 10% of the

cotton fiber, 9% of the fish, 8% of the raw yarn and 6% of the electricity. These facts clearly revealed the strength and importance of Azerbaijan in the industrial sphere.

In the first decade of the 20th century, Azerbaijani manufacturing enterprises accounted for 5% of the total factory output of the Russian Empire. The workers employed in these enterprises covered 8% of the country's population. The industrial sector of Azerbaijan, despite its small territory and population, demonstrated an extraordinary pace of development. In particular, the development of the oil industry in Baku gave impetus to the formation of the national bourgeoisie and the expansion of capitalist relations.

Investment processes in our country after the restoration of independence. Between 1991 and 1994, after the restoration of independence, Azerbaijan experienced a political and economic collapse, and social and economic problems deepened. In 1992, the negative trend in the economy reached its most critical level. Between 1992 and 1994, GDP more than doubled, falling to 52% of 1991. In 1990 and 1994, GDP decreased by an average of 13-20% annually, and amounted to \$1,629.3 million in 1994.

Under the leadership of the head of state Heydar Aliyev, a strategic investment project was developed to strengthen the economy of the Republic of Azerbaijan, and the main goal of this plan was to increase the importance of the oil sector. On September 20, 1994, the Republic of Azerbaijan signed the "Contract of the Century" between the largest oil companies in the world, including the American "Amoco", "Unocal", "Pennzoil", "McDermott", the British "British Petroleum" and "Ramco", the Norwegian "Statoil", the Russian "Lukoil", the Turkish "Türkiye Petrolleri" and the Saudi Arabian "Delta". While 9 million tons of oil were produced in 1997, this figure reached 11.4 million tons in 1998, and 13.8 million tons in 1999. In 2000, 14.5 million tons of oil were produced.

On April 17, 1999, with the participation of Heydar Aliyev, Georgian President Eduard Shevardnadze and Ukrainian President Leonid Kuchma, the Baku-Supsa oil pipeline and the Georgian Supsa export terminal were opened. The length of this pipeline is 850 kilometers and the annual output capacity is 5 million tons. The oil produced from the Chirag field began to be exported to world markets from the Supsa port under the name Azeri Light. This is one of the important projects in terms of Azerbaijan starting to export oil in the western direction, not the north. Also, on November 18, 1999, Heydar Aliyev, Eduard Shevardnadze and Suleyman Demirel signed an agreement in Istanbul on the "Transportation of Crude Oil between Azerbaijan, Georgia and Turkey via the Baku-Tbilisi-Ceyhan Pipeline" [2].

In the 1970s, 70% of the main production funds of industry in the Azerbaijan SSR, and only 40% of the manufactured product, belonged to the fuel, energy, metallurgy and chemical industries. During this period, although the fuel industry provided only 22% of the total industrial product, it played an important role and investments were directed to this area to a significant extent. More than 50% of capital investments made in this sector were included in the total capital investments of the industrial sector [1].

Having regained its independence, Azerbaijan, despite the difficulties, has entered a dynamic stage of socio-economic development and has achieved significant achievements. During this period, the creation of new political and economic structures created conditions for rapid development. Changes in the main sectors of the economy, changes in the composition of sales markets, centralization of production, the formation of mechanisms for the proper management and distribution of financial resources, as well as reforms such as price liberalization, have allowed for a more competitive and effective development of the industrial sector. As a result, the industrial sector has acquired a more dynamic and developed state based on market relations. "The lack of a statistically significant relationship between green economic growth indicators and investment spending in post-Soviet countries is due to fundamental systemic problems in public administration and shortcomings in fiscal, monetary and investment policies that seriously hinder strategic investors from investing in these countries. Due to the high risk of capital loss or a decrease in the value of the initial investment, it is unlikely that investors will use this investment pipeline to ensure green economic growth indicators. On the contrary, given the above-mentioned obstacles, institutional transformation can lead to high-quality capital inflows into the country from investors interested not only in quickly obtaining additional profits, but also in promoting green economic growth in the recipient country" [3].

The role of the energy sector in the economic and political life of Azerbaijan is gradually increasing. The economic achievements achieved in recent times with the development of this sector are closely related to the attraction of international oil companies to the country and the increase in oil production. This process ensures more effective use of rich energy resources and creates conditions for the flow of foreign investments. The expansion of the oil sector allows the country's economy to become more

diversified, incomes to increase and economic development to accelerate. As a result, Azerbaijan's strategic position in the energy sector is strengthened and it becomes a more effective actor on an international scale. Progress in oil and gas production, in accordance with modern standards, contributes to the increase in socio-economic well-being and the strengthening of defense capabilities. The development of this sector is combined with the creation of new job opportunities, the introduction of technological innovations, the modernization of infrastructure and the increase in production. At the same time, the high-tech oil and gas sector requires the development of a specialized workforce, so increasing investments in education and vocational training is of particular importance.

The development of the oil and gas sector helps to stimulate economic growth and finance social programs in the country. This opens up wider opportunities for improving the living standards of the population and providing social services and basic infrastructure. At the same time, the expansion of the oil and gas sector also supports the strengthening of the country's defense capabilities. The increase in revenues from the oil and gas industry allows for investments in the development of modern military systems, strengthening the defense sector, and higher security measures to protect against strategic threats.

The Baku-Tbilisi-Ceyhan oil pipeline is a unique example of engineering on a global scale. The 1,762-kilometer-long pipeline operates with 443 kilometers passing through Azerbaijan, 249 kilometers through Georgia and 1,070 kilometers through Turkey. The Baku-Tbilisi-Ceyhan pipeline is one of the most important components of the East-West energy corridor. As an important part of the world economy, this pipeline plays a key role in ensuring the economic development and energy security of transit countries.

The Baku-Novorossiysk (1,330 kilometers), Baku-Supsa (833 kilometers) and Baku-Tbilisi-Ceyhan (1,768 kilometers) main export oil pipelines are the most important transportation routes for transporting Azerbaijani oil from the Caspian Sea to world markets. The Azerbaijani government has signed agreements with officials from SOCAR, BP, Chevron, IMPEX, Statoil, Exxon Mobil, TP, ITOCHU and ONGC Videsh. BP continues as the operator of the project, SOCAR's share has increased from 11% to 25%, and 75% of the profit oil remains with Azerbaijan.

On December 31, 2020, Azerbaijan began transporting natural gas to European markets through the TAP pipeline. This fully ensured the delivery of Azerbaijani gas reserves to Turkish and European markets. The "Karabakh" field was discovered in 2020, creating a new stage in the development of the oil industry of independent Azerbaijan. 546 million tons of oil were produced from the "Azeri-Chirag-Guneshli" field block and more than 41 billion US dollars were invested. Azerbaijan's proven gas reserves are estimated at 2.6 trillion cubic meters, and predicted reserves are estimated at 3 trillion cubic meters.

The further development of Azerbaijan's oil and gas industry will contribute to the further integration of the country's economy into the world economy, strengthening independence, sovereignty, statehood and national security. This process will lead to an expansion of investment flows and an increase in Azerbaijan's power in the international arena. At the same time, these steps will support the diversification of the economy and other sectors, further strengthen Azerbaijan's leadership in the energy sector and increase its competitiveness in international markets.

The development of the oil and gas sector contributes to increasing income and financing social programs, improving the living standards of the population and increasing social security. At the same time, this sector allows for strengthening defense capabilities and improving modern weapons and military equipment systems.

In January-November 2023, enterprises, organizations and individual entrepreneurs operating in Azerbaijan produced products worth 110.2 billion manat. This is an increase of 0.8% compared to the corresponding period in 2022. While the added value produced in the oil and gas sector decreased by 1.6%, there was an increase of 3.2% in the non-oil and gas sector. 41.2% of total production was in industry, 9.9% in trade, 5% in construction, and 1.7% in information and communication.

In January-November 2023, industrial enterprises and individual entrepreneurs produced industrial products worth 608 billion manat. This is 1% less than the same period in 2022. The share of products in other areas is as follows:

- production, distribution and supply of electricity, gas and steam – 4.5%;*
- water supply, waste treatment and recycling – 0.8%.*

In the mining sector, commercial oil production decreased by 7.5%, while commercial gas production increased by 4.3%.

Foreign trade turnover decreased by 19.9% in actual prices and by 4.6% in real terms compared to January-October 2022. Imports increased by 4.6% in real terms, while exports decreased by 7.7%. In

January-October 2023, exports of non-oil and gas products increased by 11.1% in actual prices and by 6.2% in real terms, amounting to \$2,712.5 million.

In January-October 2023, the average monthly nominal wage of employees increased by 11.3% compared to 2022, reaching 921.1 manat. In the January-November period, the nominal income of the population increased by 12.8%, reaching 70.2 billion manat. 29,642.0 million manat was received by the state budget, and 29,155.2 million manat was spent.

Azerbaijan's GDP is projected to reach approximately 118.4 billion manat (approximately 69.6 billion USD) in 2024, an increase of 2.4% over the baseline scenario. Non-oil GDP growth is expected to be 4.6%. Azerbaijan's economy is largely dependent on the oil and gas sectors, which account for a significant portion of GDP. This dependence on natural resources makes Azerbaijan one of the most fossil fuel-dependent economies in the world.

For comparison, the GDP of the United States, one of the world's most developed countries, was approximately \$25.46 trillion at the beginning of 2023. The US economy is known for its broad industrial base, technological development, and financial sectors. Germany, on the other hand, is one of the world's most developed countries, with a GDP of approximately \$4.85 trillion in 2023. Germany is notable for its strong industrial sector, manufacturing, and engineering.

Conclusion

GDP and other economic indicators are invaluable tools for understanding and comparing the economic situation of a country. However, it is more objective to critically assess these indicators in a broader context, including social and environmental factors. A comprehensive analysis of economic indicators is essential for assessing a country's economic health and guiding future policy decisions. This analysis includes economic growth, employment, inflation, and other macroeconomic indicators.

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MARKETING STRATEGIES IMPLEMENTED BY AMAZON AND THEIR RESULTS

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AMAZONUN HƏYATA KEÇİRDİYİ MARKETİNG STRATEGİYALARI VƏ NƏTİCƏSİ

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МАРКЕТИНГОВЫЕ СТРАТЕГИИ, РЕАЛИЗОВАННЫЕ AMAZON, И ИХ РЕЗУЛЬТАТЫ

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Abstract

This article provides detailed information about Amazon's marketing strategies and its target audience. The article also discusses the successes the company has achieved through these marketing strategies.

Аннотация

В этой статье представлена подробная информация о маркетинговых стратегиях Amazon и ее целевой аудитории. В статье также обсуждаются успехи, которых компания добилась с помощью этих маркетинговых стратегий.

Keywords: Amazon, marketing, strategies

Amazon satış və bazar dəyərinə görə dünyanın ən böyük onlayn mağazasıdır. Amazon şirkəti bütün dünyada insanların biznes etmə vərdişlərini köklü şəkildə dəyişdirmiş oldu. Jeff Bezos Amazon şirkətini 1994-cü il 05 iyulda ABŞ-ın Vaşinqton ştatında öz evinin qarajında təsis edib. O, 2021-ci ilin iyul ayına qədər şirkətin baş icraçı direktoru olub. Endi Jassi 2021-ci il 05 iyulda Amazon şirkətinin prezidenti və baş direktoru vəzifəsini icra edib.

Amazon ilk dəfə onlayn kitab mağazası kimi başladı. Amazon ilk uğurunu 1997-ci ildə şirkət birjaya çıxmaqla əldə etdi. Amazon hazırda dünya üzrə 200-dən çox ölkədə fəaliyyət göstərir və onun veb-saytında demək olar ki, qanuni olan hər şey satın almaq mümkündür. Amazonun tömə şirkətlərinə Audible, Twitch, IMDb və Amazon Web Services kimi şirkətlər daxildir.

Amazonun həyata keçirmiş olduğu marketing strategiyası şirkətin global bazarda ən güclü oyunçulardan birinə çevrilməsində çox böyük faydası olmuşdu.

Bu məqalədə Amazon-un marketing məqsəd və vəzifələrini, hədəf auditoriyasını, marketing konsepsiyaları, əsas strategiyaları haqqında danışılmışdı.

İlk öncə biz belə bir sual verməliyik Amazon-un marketing məqsədləri və strategiyası nədir?

Amazon-un marketing strategiyası müştərilərdə qüsursuz alış-veriş təcrübəsi yaratmaq, müştəri loyallığını artırmaq və bazar payını genişləndirmək onun strategiyasının əsas məqsədidir. Bu yanaşma Amazona rəqabət üstünlüyünü qorumağa və davamlı böyüyərək inkişaf etməyə kömək etdi. Həmçinin Amazonun marketing strategiyasının əsas məqsəd və vəzifələrinə aşağıdakılar daxildir:

1. **Müştərilərin məmnuniyyəti:** Mükəmməl xidmət və istifadəçi dostu interfeyslə alış-veriş təcrübəsini yüksək səviyyədə təşkil edərək müştəri məmnuniyyətinin təmin edilməsi.
2. **Bazarın genişləndirilməsi:** Yeni bölgələrə daxil olaraq və yeni məhsulların kateqoriyalarını işə salmaqla bazardakı payını daim böyüdür.

3. **Innovasiya:** Əməliyyatları təkmilləşdirmək və müştəri təcrübəsini daha dərinə anlamaq üçün innovativ texnologiyalara investisiya qoymaq.

Amazon marketing strategiyalarını və məqsədlərini formalaşdırmazdan qabaq öz hədəf auditoriyasını müəyyən edir. Amazon hədəf auditoriyasını müəyyən etdikdən sonra, öz marketing strategiyalarını və məqsədlərini müəyyən edir. Onda belə bir sual ortaya çıxır ki, bəs Amazon hədəf auditoriyası kimdir? Aşağıda bu suala ətraflı şəkildə aydınlıq gətirilmişdi. Bu məqalədə bütün bu suallara aydınlıq gətirməklə biz mövzunu daha dərinə tədqiq etmiş oluruq.

Amazonun hədəf auditoriyası, şirkətin yenilikçiliyini və müxtəlif yaş kateqoriyalarından, cinslərdən ibarət müştəri bazasını əks etdirən geniş fərdləri əhatə edir. Amazon müştərilərinin kim olduğunu daha dərinə başa düşmək üçün onların müştəri segmentasiyasını müxtəlif aspektlərdən araşdırmaq vacibdir: demografik, coğrafi, davranış və psixografik aspektlər-bunlar segmentasiyalar dərinə anlamaq üçün əsasdır. (Colin Bryar and Bill Carr 2021: 155)

Demografik segmentləşdirmə: Amazon ilk növbədə 18-60 yaş arası fərdləri hədəfləyir və həmin fərdlərin əhəmiyyətli bir nisbəti 35-49 yaş aralığına düşür. Bu yaş qrupuna daxil olan şəxslər onlayn alış-verişlə fəal məşğul olan və Amazondan məhsul almaq üçün yüksək maliyyə imkanlarına malik olan çox vacib bir segmenti təşkil edir.

Amazonun coğrafi hədəf auditoriyasını araşdırarkən bizə məlum olur ki, şirkətin beynəlxalq səviyədəki müştəri bazasını əsasən ABŞ-dan olan müştərilər təşkil edir. Amazonun veb sayt istifadəçilərinin 60%-dən çoxu ABŞ-dakı müştərilərdir. Bu, Amazonun Amerika xüsusəndə ABŞ bazarındakı üstünlüyünü və elektron ticarət sektorunda əhəmiyyətli bir hissəsiyə malik olduğunu göstərir.

Davranış nöqteyi-nəzərindən: Amazon şirkətindəki müştəri segmentasiyası üzrə ixtisaslaşmış qrupu təsadüfi müştəriləri (Prime olmayan) Prime üzvlüyü olan müştərilərdən fərqləndirir. Bu iki qrupun davranış və fəallıqları baxımından əhəmiyyətli dərəcədə fərqlənir. Təsadüfi müştərilərin 37%-i il ərzində birdən çox alış-veriş edərkən, Prime üzvlüyü olanlar bir addım daha irəli gedir. Prime üzvlərinin təxminən 50%-ə yaxını hər həftə ən azı bir alış-veriş edir və 74%-i hər ay alış-veriş edir.

Psixografik segmentasiya: Bu segmentasiya Amazonun hədəf auditoriyasını başa düşməkdə də mühüm rola malikdir. Geniş yayılmış müştəri sorğuları, satınalma nümunələrinin təhlili Amazon müştərilərinin üstünlükləri, hobbiləri və maraqları haqqında təfəssilatlı məlumatları təmin etmişdir. Amazon texnologiya istifadəçiləri, kitab qurdcları, fitnes həvəskarları, dəbdə maraqlana fərdlər və.s. müxtəlif psixografik segmentlərə məxsus müştərilərə xidmət edir. (Brad Stone 2013:201)

Bəs Amazon öz hədəf auditoriyaları üçün müəyyənləşdirdiyi marketing strategiyalarını həyata keçirdikləri zaman hansı marketing konsepsiyalarından istifadə edir? İndi isə gəlin aşağıda bu sualı aydınlaşdırmaq.

Amazonun 4P kimi də tanınan marketing konsepsiyası şirkətin geniş çeşidli məhsullarının satışını təşkil etmək və gəlirlərin çoxaltmaq üçün müəyyən etdiyi marketing strategiyalarına uyğun konsepsiyalardan biridir. Bu konsepsiyada məhsulların təklifi, yer və ya paylama kanallarının müəyyən edilməsi, tanıtım fəaliyyətləri və şirkət tərəfindən tətbiq edilən qiymət strategiyaları daxildir.

Məhsul(Product): Amazon-un məhsul konsepsiyası olduqca geniş bir mühiti əhatə edir. Amazon şirkət fəaliyyətinə əvvəlcə onlayn kitab mağazası kimi başladı və qısa bir müddət sonra onlayn pərakəndə satış nəhənginə çevrildi. Pərakəndə mal və xidmətlərlə yanaşı, şirkət müxtəlif növ məhsulları istifadə etmək və yaxud daxil etmək üçün məhsul xəttini genişləndirmişdi.

Bundan əlavə, Amazon e-oxuyuculara ağıllı dinamiklər kimi istehlakçılar üçün böyük yeniliklər həyata keçirdilər. Məsələn Kindle e-reader, Echo smart dinamikləri və Fire TV kimi yeniliklər müştəri tərəfində əhəmiyyətli dərəcədə populyarlıq qazandı.

Amazon-un məhsul konsepsiyasına bulud hesablama platforması olan Amazon Web Services (AWS) də daxildir. AWS saxlama, hesablama gücü, server hostingi, verilənlər bazası idarəetməsi və s. kimi bir sıra xidmətlər təklif edir. Bu, Amazon-a biznes-to-business (B2B) bazarına uğurla daxil olmağa imkan verdi. Buna digər məhsul konsepsiyalarını nümunə göstərə bilərik. (Brad Stone 2021: 165)

Qiymətləndirmə (Pricing): Bu konsepsiyaya əsasən Amazon hər fərqli növ məhsulu üçün müxtəlif qiymət strategiyaları qəbul edir. Onların əsas strategiyalarından biri bazar yönümlü qiymət yanaşmasıdır. Rəqib şirkətlərin təklifləri ilə yanaşı məhsullarının qiyməti rəqabət qabiliyyətinə uyğun olub, olmamasını nəzərə alaraq, Amazon məhsulları tez-tez müştərilərin pulları üçün yaxşı dəyər almasını təmin edir.

Bundan əlavə, Amazon diferensial qiymət strategiyasından istifadə edir. Fərqli müştəri segmentlərini alım güclərini hədəf alaraq xidmətləri üçün həmin segmentlərə uyğun fərqli qiymət

səviyyələri təklif edir. Məsələn, Amazon Prime, istifadə tezliyinə əsaslanan bir çox abunə variantları mövcuddur.

Amazon həmçinin bir sıra məhsul və xidmətləri üçün pulsuz qiymət strategiyasından istifadə edir. Pulsuz əsas xidməti təklif etməklə, onlar müştəriləri pullu versiyalardan istifadə etməyə vadar edir. AWS-ni buna ən uyğun nümunə kimi göstərmək olar. (Brad Stone 2021: 235)

Başda Amazon AWS bulud xidmətlərindən pulsuz istifadə üçün şərait yaradır daha sonra isə AWS üçün getdikcə istifadə etdikdən sonra ödə strategiyasından istifadə edir. İlkin ödəniş və ya abunə tələb etmək əvəzinə, müştərilərdən xidmətin faktiki istifadəsi görə ödəniş alınır.

Yer (Place): Amazon-un satış yerlərinə və yaxud paylama kanallarına onun onlayn platforması, Amazon Go kimi fiziki mağazalar və üçüncü tərəf tərəfindən satıcılar ilə əməkdaşlıq daxildir.

Amazon şirkətinin rəsmi e-ticarət platformaları, veb saytları və proqramları onun məhsullarının satışı üçün əsas paylama kanalları kimi xidmət edir. Müştərilər alış-veriş üçün Amazon-un geniş çeşidli təkliflərinə onun istifadəçi dostu interfeysli veb saytları və ya mobil proqramları vasitəsilə dünyanın istənilən yerindən daxil ola bilərlər.

Təşviqat (Promotion): Reklam Amazonun bu qədər məşhur olmasında mühüm rol oynayır. Geniş onlayn və oflayn reklam kampaniyaları vasitəsilə Amazon bütün dünyada milyonlarla potensial müştərilərə öz təsirini çatdırır. Geniş marketing büdcəsi ilə Amazon televiziya, radio, rəqəmsal reklamlar və sosial media platformalarında sponsorlu reklamlar kimi müxtəlif üsullardan istifadə edir. (Jonathan Taplin 2017: 236)

Amazon rəqəmsal marketingdə üstün olsa da, birbaşa marketing təşəbbüslərindən də istifadə edir. Məsələn, müştərilər maraq göstərə biləcək məhsulları vurğulayan baxış davranışlarına əsasən fərdiləşdirilmiş e-məktublar alırlar.

Dünyanın iqtisadiyyatına böyük təsir edən şirkətlərdən olan Amazon şirkətinin uğurunun arxasındakı başlıca səbəblərdən biri də onların həyata keçirmiş olduqları marketing strategiyalarıdır. Amazonun marketing strategiyaları haqqında məqalənin davamında daha təfəssilatlı şəkildə tanış olacağıq.

Amazonun ən çox istifadə etdiyi marketing strategiyaları:

1. müştəri mərkəzli yanaşma,
2. innovasiya və texnologiya,
3. bazarın genişləndirilməsi,
4. məlumata əsaslanan qərarların qəbulu,
5. omni-kanal marketingi-bunlardır.

İndi isə gəlin Amazonun tətbiq etmiş olduğu marketing strategiyalarının hər-birini daha ətraflı şəkildə aydınlaşdırmaq.

1. Müştəri mərkəzli yanaşma: Amazonun müştəri mərkəzli yanaşması onun marketing strategiyasının əsasını təşkil edən sütunlardan biridir. Bu strategiyadan istifadə etməklə Amazon şirkəti müştərilərinin ehtiyac və istəklərini ön plana çəkir və bununlada Amazon müştəriləri ilə güclü əlaqələr qurub, təkrar biznesi idarə etməkdə böyük uğurlar əldə etmişdir.

Amazon-un müştəri mərkəzli yanaşmasının əsas aspektlərindən biri onun fərdiləşdirilmiş tövsiyə sistemidir. Müştəri davranışını və alış tarixini təhlil edərək, Amazon müştəriləri üçün fərdi tövsiyələr təklif edə bilər. Məsələn, müştəri kitab alan zaman Amazon alqoritmi müştəriyə maraqlı ola biləcək oxşar kitablar təklif edə bilər. Bu, təkcə ümumi alış-veriş təcrübəsini deyil, həm də çarpaz satış imkanlarını artırır.

Müştəri mərkəzli yanaşmalarını daha da gücləndirmək üçün Amazon əngəlsiz geri qaytarma prosesini təmin edir. Onlar başa düşürlər ki, müştəri məmnuniyyəti alış təcrübəsindən kənarıdır əhatə edir, hətta məhsul alındıqdan sonra da genişlənir. Amazonun qaytarma siyasəti müştərilərə məmnun qalmaqda və ya səhv qəbul etdikləri əşyaları asanlıqla geri qaytarmağa imkan verir. Beləki məhsulların qaytarılması prosesinin asanlığı və rahatlığı müştərilərin şirkətə olan etibarını və sədaqətini artırır. Bu təkcə müştəri məmnuniyyətini artırmır, həmçinin Amazon şirkətinin müştəriləri ilə uzunmüddətli əlaqələr qurmağa və onun daimi müştəriyə çevrilməsində böyük rol oynayır. (John Rossman 2018: 89)

Amazonun müştəri loyallığına və qorunub-saxlanmasına çox böyük önəm verir. Çünki bu çox gəlirli sahədir. Araşdırmalar göstərir ki, yeni müştəri əldə etmək mövcud müştəriləri saxlamaqdan beş dəfə baha başa gələ bilər. Müştərilərin müsbət təcrübələri olduqda, nəinki Amazonda alış-verişə davam etmək ehtimalı daha yüksəkdir, həm də platformanı başqalarına tövsiyə etməyə daha çox meylli olurlar.

2.İnnovasiya və texnologiya: Amazon-un innovasiya və texnologiyaya sadıqlığı onu e-ticarət sənayesində fərqləndirən əsas amillərdən biridir. Şirkət mükəmməl müştəri təcrübəsi təqdim etmək, əməliyyatları asanlaşdırmaq və global bazar lideri mövqeyini qorumaq üçün ardıcıl olaraq qabaqcıl texnologiyalara sərmayə qoyur.

Amazonun innovasiya və texnologiyasının ən önəmli nümunələrindən biri onun səsli idarə olunan virtual köməkçi Alexa-nı müştərilərin xidmətinə təqdim etməsidir. Amazon Echo ağıllı dinamik ilə təqdim edilən Alexa bütün dünyada bir çox ev təsərrüfatlarının ayrılmaz hissəsinə çevrildi. Alexa ilə müştərilər məhsul almaq, alış-veriş siyahılarını idarə etmək və ağıllı ev cihazlarına nəzarət etmək də daxil olmaqla, Amazon ilə qarşılıqlı əlaqə yaratmaq üçün sadəcə səsindən istifadə edə bilirlər.

Amazon həmçinin əməliyyatlarını optimallaşdırmaq və ümumi müştəri təcrübəsini artırmaq üçün süni intellekt (AI) alqoritmlərindən istifadə edir. Süni intellektlə vasitəsilə işləyən alqoritmlər Amazon spesifik məhsul tövsiyələrini yaratmaq üçün daim müştərilərin davranışını, alış-verişlərini və üstün cəhətlərini təhlil edir. Hər bir müştəri üçün məhsul seçimini fərdiləşdirməklə Amazon daha fərdiləşdirilmiş alış-veriş təcrübəsi yaradır və bununlada müştəri məmnuniyyətini artıraraq sədaqətli müştərilərin sayını artırır. (Colin Bryar and Bill Carr 2021: 236)

Amazon Go mağazaları şirkətin başqa böyük bir innovative yeniliyidir. Bu mağazalar müştərilərə kassirsiz alış-veriş təcrübəsi təklif etmək üçün bir sıra texnologiyalardan istifadə edir. Avtomatlaşdırılmış kameralar, sensorlar və kompüter görmə texnologiyası müştərilərə sadəcə ehtiyac duyduqları əşyaları götürməyə imkan verir. Mağazadan çıxdıqdan sonra müştərilərin Amazon hesabları vasitəsilə alış-verişlərinə görə avtomatik olaraq müştərilərin hesablarındakı puldan ödəniş tutulur.

3.Bazarın genişləndirilməsi: Amazon davamlı olaraq yeni bölgələrə yəni yeni ölkələrin, regionların bazarlarına daxil olmaqla və yeni məhsul kateqoriyaları təqdim etməklə bazardakı payını genişləndirərək öz imkanlarını artırır. Bu yanaşma Amazona öz bazarın daha böyük hissəsini tutmağa imkan verir.

Amazon-un inkişaf etməkdə olan ölkələrin bazarlarına daxil olması onun bazarın genişləndirilməsi strategiyasında da mühüm rol oynayır. Məsələn, şirkət 2018-ci ildə Hindistanın yerli e-ticarət nəhəngi Flipkartı əldə etmək üçün bir sıra addımlar atdı ancaq Walmart pərakəndə satış şirkətinə uduzdu. Bu yanaşma şirkətə regional ehtiyacları ödəməyə imkan verir, həm də ona tənzimləmə tələblərini idarə etməyə və yerli icmalarla əlaqələr qurmağında müstəsna rol oynamış olur. (Jonathan Taplin 2017: 286)

4.Məlumat əsaslanan qərarların qəbulu: Amazon-un məlumatlara əsaslanan qərar qəbul etmək üçün fərdiləşdirilmiş tövsiyələrdən istifadə edir. Qabaqcıl alqoritmlərdən və müştərilərin hansı məhsullara marağının olduğunu öyrənməklə, Amazon şirkəti hər bir istifadəçiyə müvafiq məhsulları bağlı tövsiyə edə bilər. Məlumatların təhlilindən istifadə etməklə Amazon fərdiləşdirilmiş və dinamik tövsiyələr təklif edə bilər və hər bir müştəriyə fərdi alış-veriş təcrübəsi təqdim edir.

Amazonun istifadə etdiyi digər məlumatlara əsaslanaraq keçmiş satınalma davranışını və digər müştəri məlumatlarını təhlil edib, gələcək alış nümunələri və meylləri haqqında dəqiq proqnozlar verir. Bu, onlara müştəri tələblərini qabaqcadan görməyə və marketinq strategiyalarını buna uyğun şəkildə qurmağa kömək etmiş olur.

Omni-kanal marketinqi: Amazonun omni-kanal marketinq strategiyası müştərilər üçün fasiləsiz və problemsiz alış-veriş təcrübəsini təmin etməyə yönəlmiş marketinq yanaşmasının mühüm aspektidir.

Amazonun omni-kanal marketinq strategiyasının əsas üstünlüyü müştərilərin Amazon veb-saytında məhsul axtarışında olmasından, gözdən keçirmək üçün mobil proqramdan istifadə etməsindən və ya hətta fiziki mağazaya baş çəkməsindən asılı olmayaraq, şirkət müştərilərin brendlə əlaqə saxlamasına və problemsiz alış-veriş etməsinə imkan yaratmış olmasıdır.

Amazon həmçinin mobil ticarətin əhəmiyyətini dərk edir və bu anlayışdan öz omni-kanal strategiyasını təkmilləşdirmək üçün istifadə edib. Doğma alış-veriş proqramından başqa, Amazon veb-saytını mobil cihazlar üçün optimallaşdırıb, mobil uyğun interfeys, sürətli yüklənən səhifələr təklif edir. Bu, müştərilərin smartfon və planşetləri vasitəsilə Amazon-a asanlıqla daxil olmasını və naviqasiyasını təmin edir. (Brad Stone 2013: 343)

Amazon şirkəti həyata keçirmiş olduğu marketinq strategiyaları şirkətə biznes sahəsində böyük uğurlar qazandırmışdır. Belə ki, şirkət sürətlə böyüdü və 2000-ci ilə qədər dünyanın ən böyük onlayn pərakəndə satışına çevrildi. Amazon.com indi bazar kapitallaşması 500 milyard dollardan çox olan açıq bir şirkətdir.

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METHODOLOGICAL ASPECTS OF ASSESSING THE ECONOMIC RISKS OF A TRADE WAR AND AN ALGORITHM FOR SETTLING THE INTERESTS OF THE COUNTRIES INVOLVED (ON THE EXAMPLE OF THE USA AND CHINA)

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МЕТОДИЧЕСКИЕ АСПЕКТЫ ОЦЕНКИ ЭКОНОМИЧЕСКИХ РИСКОВ ТОРГОВОЙ ВОЙНЫ И АЛГОРИТМ УРЕГУЛИРОВАНИЯ ИНТЕРЕСОВ ВОВЛЕЧЕННЫХ СТРАН (НА ПРИМЕРЕ США И КИТАЯ)

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Введение. Современный этап развития мировой экономики и международных экономических отношений, характеризующийся наличием серьезных противоречий между странами так называемых «Западного Мира» и «Глобального Юга», прежде всего США и Китая, свидетельствует о необходимости разработки теоретической методики оценки экономических рисков торговой войны в вовлеченных странах (на уровне отрасли) и алгоритма урегулирования интересов вовлеченных стран с целью перехода к взаимовыгодному сотрудничеству.

Результаты исследований. Торговая война КНР-США, начатая в 2017 году по инициативе США, представляет собой новый феномен в развитии международных экономических отношений. Анализ существующих теоретических исследований показал, что большая часть из них традиционно относятся к дискурсу вокруг преимуществ свободной торговли и протекционизма. Некоторые авторы исследуют ситуации торговых войн, однако их исследования в недостаточной мере раскрывают принципиальную новизну ситуации торговой войны КНР-США. Данная торговая война представляет собой конфликт между двумя крупнейшими национальными экономическими системами современного мира и развивается в более широком геополитическом контексте новой глобальной биполярности. Несмотря на то, что в отдельных эпизодах торговой войны КНР-США, касающихся конкретных секторов экономики, этот геополитический контекст может не присутствовать явно, именно он задает политические цели торговой войны, превалирующие над соображениями экономической эффективности.

Сегодня можно сделать вывод о том, что современная политика США ведет к эскалации торговых конфликтов. Данная политика имеет следующие цели:

1) устранение дефицита торгового баланса США. Совокупный дефицит торгового баланса США в 2022 году составил 948,1 млрд. дол. США, что составляет 3,5 % от ВВП [1];

2) ослабление политических и экономических противников, подчинение их своей политике, ограничение их возможностей конкурировать с политикой США, а также разрушение мощи и влияния Китая;

3) ограничение влияния Китая в своем регионе и в то же время сохранение его экономики в части, соответствующей экономическим интересам США в области импорта, экспорта и валютных отношений;

4) привлечение иностранного капитала в США с целью увеличения размера экономических проектов;

5) обеспечение доминирующего положения над внешними рынками, импортом и экспортом, а также контроль над нефтяными рынками и ценами.

В результате, основой принятия решений становится принцип нанесения сопернику максимального ущерба, не считаясь с ущербом собственным. Торговые войны наносят ущерб американской экономике как непосредственно, так и опосредованно – через сложившуюся систему межотраслевых связей, вертикальной и горизонтальной интеграции бизнеса, а также посредством дестабилизации фондовых рынков.

На основе всестороннего изучения ситуации можно сделать вывод о том, что для результативного исследования данной ситуации требуется определенное совершенствование теоретического инструментария. Нами предлагается методика, которая впервые обеспечивает возможность сравнения: показателей стохастической крайне неблагоприятной ситуации (задаваемой уровнем значимости при заданном вероятностном распределении величины прибыли/убытков от экспорта) с условно детерминированным размером ущербом от конкретных инструментов торговой войны на отраслевом уровне [2; 3]. Причем здесь подразумевается использование строго математического аппарата [4].

Риск сокращения экспорта, основанные на «нормальной» волатильности условий торговли оценивается посредством таких показателей, как стоимость под риском (VaR – Value-at-Risk) (формула 1) и ожидаемые максимальные потери (ES – Expected Shortfall) (формула 2):

$$VaR_{\alpha} = E_0 q_{\alpha} \sigma_E \sqrt{t}, \quad (1)$$

$$ES_{\alpha} = \frac{1}{\alpha} \int_{-\infty}^{VaR_{\alpha}} x p(x) dx, \quad (2)$$

где E_0 – стоимость экспорта базового периода анализируемой страны в страну-соперник;

q_{α} – односторонняя квантиль стандартного нормального определения;

α – уровень значимости;

σ_E – ожидаемая волатильность экспорта;

t – временной период оценки в днях.

Риск сокращения экспорта (в страну соперник) в случае использования инструментов торговой войны оценивается на основе эластичности Армингтона (эластичности замещения между спросом на экспорт и спросом на внутреннее производство в стране-сопернике). Формально – это величина ε в модели вида (формула 3):

$$S = \left[\beta M^{(\varepsilon-1)/\varepsilon} + (1 - \beta) D^{(\varepsilon-1)/\varepsilon} \right]^{\frac{\varepsilon}{\varepsilon-1}}, \quad (3)$$

где β – калибруемый параметр;

S – суммарный спрос на импорт и внутреннее производство в стране-сопернике на уровне отрасли;

M – спрос на импорт из анализируемой страны в стране-сопернике;

D – спрос на внутреннее производство в стране-сопернике.

Новизна предложенной методики заключается в способе использования указанных показателей для выделения трех качественно различных ситуаций (таблица 1):

Таблица 1

Три качественно различные ситуации, выделяемые на основе применения методики

$\Delta E(\varepsilon) \leq \Delta E(ES_{\alpha})$	Чрезвычайно большой ущерб от торговой войны. Требуется государственная поддержка отрасли в форме субсидий и льготных кредитов.
$\Delta E(\varepsilon) \cong \Delta E(VaR_{\alpha})$	Кризисная ситуация, соответствующая наиболее пессимистической оценке обычных производственно-сбытовых рисков. Предприятия отрасли должны справляться в основном своими силами.
$\Delta E(\varepsilon) \gg \Delta E(VaR_{\alpha})$	Ущерб от торговой войны сопоставим с рядовыми трудностями при колебаниях рыночной конъюнктуры. Достаточно обычных механизмов оптимизации ценообразования и затрат.

Примечание – Источник: авторская разработка

Принципиальный результат предложенной методики может быть использован для формирования **алгоритма урегулирования интересов вовлеченных стран с целью перехода к взаимовыгодному сотрудничеству стран (далее – Алгоритм)**.

Процесс, реализуемый Алгоритмом, с теоретической точки зрения представляет собой процесс трансформации конфликта переговорной силы в экономический механизм, совместимый со стимулами для всех вовлеченных стран. В прикладном аспекте предлагаемый нами Алгоритм опирается на несколько ключевых экономических и торгово-политических идей, которые в их взаимосвязи могут быть кратко представлены в виде схемы (рисунок 1).

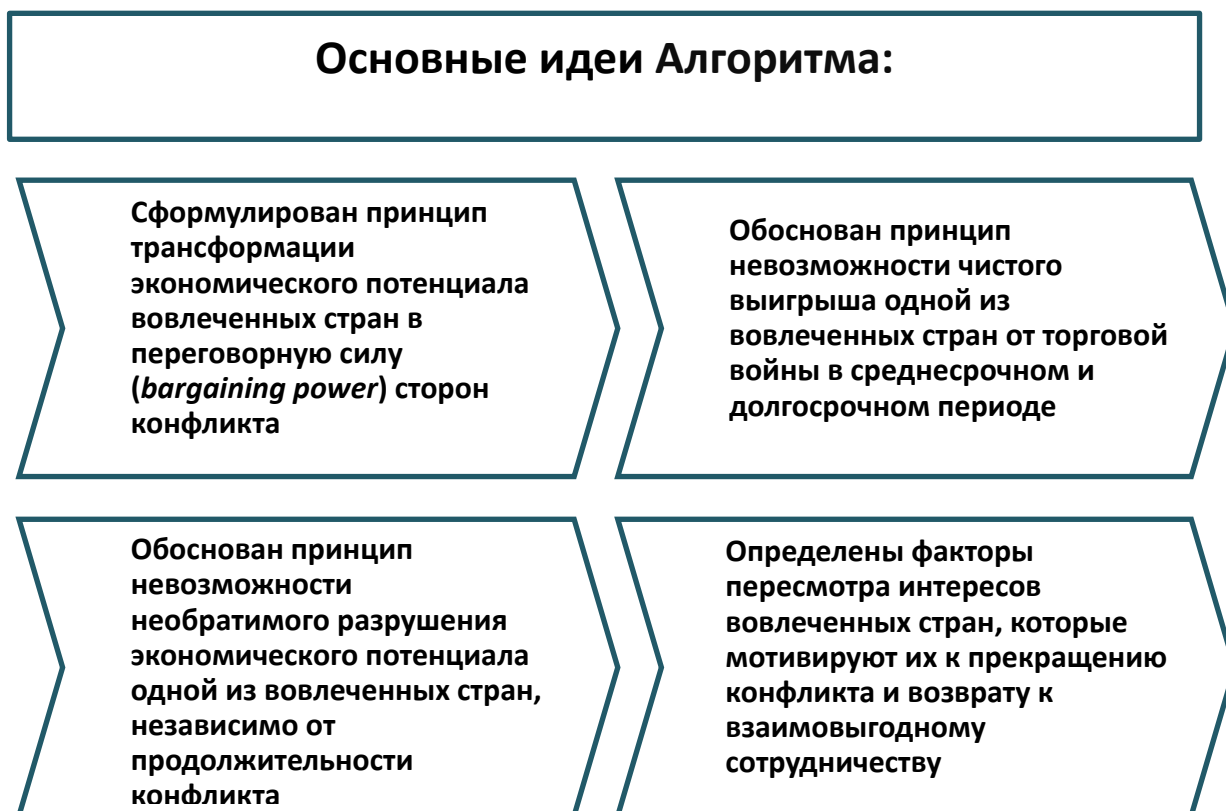


Рисунок 1 – Основные концептуальные положения в основе Алгоритма

Примечание – Источник: авторская разработка.

Торговая война заканчивается, когда ее разорительный характер становится очевиден для обеих конфликтующих сторон. Однако, механизм ее завершения не является тривиальным. Более того, существуют альтернативные завершения торговых войн, которые могут иметь разную эффективность для обеих сторон конфликта.

Отсюда следует необходимость выработки Алгоритма как оптимального **алгоритма урегулирования интересов торгующих стран с целью прекращения торговой войны и перехода к взаимовыгодному сотрудничеству**.

Предложенный Алгоритм включает в себя 1) определение фундаментального экономического потенциала Китая, достигнутого к настоящему времени (т. е. по состоянию на середину 2023 года), и определяющего переговорную силу (*bargaining power*) сторон конфликта; 2) формулировку принципа невозможности торговой войны с КНР, которая носила бы односторонний разрушительный характер для китайской экономики и односторонний выигрышный характер для оппонентов Китая в такой торговой войне; 3) выявление структуры интересов сторон торговой войны (на примере США и Китая), которые мотивируют конфликтующие страны к прекращению конфликта и возврату к взаимовыгодному сотрудничеству; 4) характеристику геополитического и глобального экономического контекста урегулирования торгового конфликта, включая ключевые геоэкономические прогнозы.

Далее дадим теоретическое обобщение Алгоритма урегулирования интересов вовлеченных стран с целью перехода к взаимовыгодному сотрудничеству, изложив его в следующем виде.

Концептуально Алгоритм опирается на арбитражную схему Нэша с параметром переговорной схем первого участника θ (соответственно, второго $1 - \theta$, участники или игроки в арбитражной схеме Нэша симметричны). В результате выделены 9 ситуаций, когда различные соотношения экономического потенциала сторон (оцененного на экспортного сектора в целом или на уровне конкретной отрасли) приводит к различному распределению переговорной силы (таблица 2).

Таблица 2

Девять ситуаций переговорной силы страны (на уровне экспортирующей отрасли или экспортного сектора в целом).

Страна А	Страна Б		
	$\Delta E(\varepsilon) \leq \Delta E(ES_{\alpha})$	$\Delta E(\varepsilon) \cong \Delta E(VaR_{\alpha})$	$\Delta E(\varepsilon) \gg \Delta E(VaR_{\alpha})$
$\Delta E(\varepsilon) \leq \Delta E(ES_{\alpha})$	$\theta = 0,5$	$\theta = 0,25$	$\theta = 0,05$
$\Delta E(\varepsilon) \cong \Delta E(VaR_{\alpha})$	$\theta = 0,75$	$\theta = 0,5$	$\theta = 0,25$
$\Delta E(\varepsilon) \gg \Delta E(VaR_{\alpha})$	$\theta = 0,95$	$\theta = 0,75$	$\theta = 0,5$

Примечание – Источник: разработка автора

Опираясь на эти аргументы, мы можем наглядно представить факторы пересмотра интересов вовлеченных стран, которые мотивируют их к прекращению конфликта и возврату к взаимовыгодному сотрудничеству (рисунок 2).

Структурно-логическая схема на рисунке 2 является естественным логическим звеном перехода к выработке стратегии преодоления конфликта интересов США-КНР и снижения негативных эффектов торговой войны.



Рисунок 2 – Факторы пересмотра интересов вовлеченных стран, которые мотивируют их к прекращению конфликта и возврату к взаимовыгодному сотрудничеству

Примечание – Источник: разработка автора

Выводы. Сегодня основой принятия решений становится принцип нанесения сопернику максимального ущерба, не считаясь с ущербом собственным. Торговые войны наносят ущерб американской экономике как непосредственно, так и опосредованно – через сложившуюся систему межотраслевых связей, вертикальной и горизонтальной интеграции бизнеса, а также посредством дестабилизации фондовых рынков. Для результативного исследования данной ситуации требуется определенное совершенствование теоретического инструментария. С этой же целью нами предложены методика оценки экономических рисков торговой войны в вовлеченных странах (на уровне секторов экономики) и алгоритм урегулирования интересов вовлеченных стран с целью перехода к взаимовыгодному сотрудничеству.

Предложенная методика впервые обеспечивает возможность сравнения: показателей стохастической крайне неблагоприятной ситуации (задаваемой уровнем значимости при заданном вероятностном распределении величины прибыли/убытков от экспорта) с условно детерминированным размером ущербом от конкретных инструментов торговой войны на отраслевом уровне. В свою очередь, предложенный алгоритм основан на: 1) противопоставлении двусторонних выгод от возврата к «нормальным» (основанным на нормах ВТО) инструментам тарифного и нетарифного регулирования взаимной торговли; 2) сравнительном анализе девяти качественно различных ситуаций (по девять ситуаций для каждой из вовлеченных стран; всего восемнадцать ситуаций), когда экономический потенциал сторон (оцененный на национальном уровне или уровне конкретной отрасли) приводит к различному распределению переговорной силы в торговой войне.

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Geographical sciences

RATIONAL LAND USE AND COMPREHENSIVE ASSESSMENT OF SUSTAINABILITY OF SOIL AND BOTTOM SEDIMENTS ECOSYSTEMS IN THE UKRAINIAN DANUBE REGION

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Abstract

This work is devoted to the development of action plans for integrated land resources management at the regional level, taking into account the comprehensive assessment of the state of pollution of the soil ecosystem and bottom sediments in water bodies of the Ukrainian Danube region. The study used the methods of analysis and generalization of monitoring data of natural objects, comparative comparison, logical generalization and analogies in combination with expert assessments, monographic and graphoanalytical studies. The results are presented on the basis of field and laboratory studies. The general condition of land resources of the Danube region of Ukraine is defined as "unsatisfactory". The risk of disturbance of soil ecosystems for most of the region is assessed as "increased". The results of environmental monitoring in places of storage of obsolete chemical plant protection products indicate an excess of maximum permissible concentrations of individual pollutants by 5.0-32.0 times. The ecological state of soils as a whole is assessed as "average" - "severe" with risks at the level of "significant" - "high". The general ecological state of bottom sediments in the water bodies of the Danube region of Ukraine is assessed as "satisfactory". In order to develop plans for sustainable land use, a comprehensive assessment of the sustainability of the soil ecosystem and an assessment of the risk of storing unsuitable chemical plant protection products were carried out. Recommendations are proposed for the use of indicators of the ecological state, taking into account the criteria of physical degradation of soils and the characteristics of pollution of the object of study. The obtained results can be used to formulate a regional strategy for effective and sustainable land use based on tools and mechanisms aimed at solving the problems of socio-economic development, taking into account the probable impact of destabilizing anthropogenic factors.

Keywords: *Ukrainian Danube Region, Sustainable Land Use, Anthropogenic Pollution, Environmental Risk.*

Introduction. *The main national wealth of Ukraine is land resources with its fertile soils, the quality of which is one of the highest in Europe, and the amount of arable land per capita in Ukraine exceeds the similar indicator of the European Union countries on average by more than 2.5 times [12]. According to the State Statistics Service of Ukraine, for 2018-2020, the area of agricultural land in our country was 41,489.3 thousand hectares and accounted for 68.7% of the total area of the state territory [7]. In terms of the volume of agricultural land per capita, Ukraine has an indicator of 0.93 hectares and ranks fourth among other countries in the world after Canada (1.73 hectares), Russia (1.51 hectares), and the USA (1.26 hectares). In terms of the volume of arable land per capita, Ukraine, with an indicator of 0.74 hectares, ranks second after Canada (1.25 hectares) [6]. Considering also that Ukraine has a significant part (3%) of the world reserves of black soil and other most fertile types of soil, it can be argued that Ukraine occupies one of the leading positions in the world in terms of the quantity and quality of land resources. However, despite the high land resource potential, the return on 1 ha of agricultural land in Ukraine is 270–320 euro, and in the EU countries this figure exceeds 2000 euro [4, 7].*

Unsolved aspects of the problem. *It should be noted that despite the significant volume of publications on environmental risk assessment research, there remain questions for the scientific search for modern comprehensive approaches to ensuring regional resource and environmental security. In addition, environmental risk assessment is significantly limited by the lack of data on the impact on land resources as risk objects in terms of assessing consequences. This necessitates the need to provide a*

systematic approach to collecting this data and modeling the assessment of the safety of the functioning of regional ecological systems. Such an approach is extremely important, since the main goal of risk assessment is to convey complex and specific scientific information to persons who must make effective management decisions.

The uniqueness of the Danube region within the Odessa region of Ukraine in terms of geographical location, environment and prospects for economic development, as a direction of European integration processes, the need to develop effective plans for sustainable and rational land use, as well as the lack of a developed comprehensive strategy for effective and sustainable land resources management based on regional risk assessment, aimed at solving problems between the goals of socio-economic development and the negative consequences of the impact of destabilizing factors, determine the relevance and practical significance of the study.

The basis for a comprehensive assessment of the ecological state of soils and bottom sediments of the Danube region of Ukraine and the determination of the risks of their pollution were carried out using the methods proposed in the works [8, 13]. It should be noted that the results obtained allow for specific management decisions to mitigate the negative impact on land resources and prioritize the implementation of environmental protection measures.

Results. The development of agricultural lands and the plowing of the territories of the Danube districts of Odessa region (Tatarbunarsky, Artsyzsky, Reniysky, Izmailsky and Kiliya districts) are characterized on average by the following indicators: 66.2% - the level of development of agricultural lands; 87.0% - plowing of territories [1].

It was established that the integral indicator of the assessment of the state of land resources Iz_{st} of the Danube districts of Odessa region (Table 1) varies from 3.00 to 3.17 and corresponds to the II group of objects ($3.0 < Iz_{st} < 3.3$), in which the condition of the soils is assessed as "unsatisfactory".

Table 1

Assessment of the lands condition in the Danube areas of Odesa region [9]

Administrative-territorial entity*	Ecological condition indicators						Integrated index of condition	Group acc. to the integrated index Iz_{st}
	ploughness	humus content	ecological resistance	forest cover	erosional feature	reserves		
Artsiz district	3	3	3	2	4	4	3.17	II
Kiliya district	4	3	3	2	4	2	3.00	II
Izmail district	4	3	2	2	4	4	3.00	II
Reni district	3	3	3	2	4	4	3.17	II
Tatarbunar district	4	3	3	2	4	2	3.00	II
Danube districts in whole	4	3	3	2	4	3	3.17	II
Odesa region in whole	3	3	2	3	4	4	3.17	II

* Remarks: administrative-territorial units of districts of Odessa region are listed before the implementation of the 2020 administrative reform

From an ecological point of view, the land resources of the Danube region of Ukraine should be considered as reclaimed agricultural landscapes that have been exploited for more than one century. The current state of land resource use does not meet the requirements of rational environmental management, primarily due to the violation of the ratio of arable land area, natural fodder lands, which negatively affects the stability of the agricultural landscape. Agricultural land development exceeds the ecologically permissible norm and in recent years it has only increased.

The main problem of the deterioration of the state of the lands of the Ukrainian Danube region, as well as the Odessa region as a whole, remains soil degradation, primarily the development of erosion processes and physical soil degradation. Table 1, based on the results of [10], shows general indicators of the state of land resources of the Danube regions of the Odessa region.

Calculations of the risk assessment of soil ecosystem stability for the Artsyz, Kiliya and Tatarbunary districts showed a "minimum" level ($P_s^c = 0.20$), and for the Izmail and Reniy districts – "increased" ($P_s^c = 0.25$).

The assessment of soil contamination was carried out by comparing the measured concentrations

of pollutants (cadmium, copper, zinc, manganese, cobalt, total iron, nickel, arsenic, lead, mercury, DDT, DDE, DDD, γ -HCCH/lindane, heptachlor) with the MPCs established in Ukraine [2] and sanitary standards [9].

The assessment of the ecological risk of contamination of bottom sediments of water bodies of the Ukrainian Danube region and the final results of the research are given in Table 2.

Spatial analysis of sediment pollution indicators in the Ukrainian section of the Danube River shows that the greatest pollution is observed in the transboundary section near the city of Reni, where the maximum permissible limit for lead (1.70-4.95 times) and copper (2.30-2.70 times) is exceeded.

On the section of the river near the city of Izmail, the quality indicators of sediments generally comply with the established maximum permissible limit, however, for copper, the contamination of bottom soils is 1.25-1.50 maximum permissible limit.

On the section of the river near the city of Kiliya, a deterioration in the quality indicators of sediments is again observed: for copper - up to 2.70 maximum permissible limit, for manganese - up to 1.60 maximum permissible limit, for nickel - up to 1.35 maximum permissible limit.

On the Danube section 500 m above and 500 m below the city of Vylkove, the pollution of bottom sediments continues to increase: for copper - up to 3.05 MPC, for manganese - up to 1.70 MPC, for nickel - up to 1.40 MPC.

In the Danube Delta, in the areas of the Ochakiv estuary, the Bystry branch and the Starostambul branch, the MAC in bottom sediments was found to be exceeded only for copper (1.15-2.00 times).

The analysis of the degree of contamination of bottom sediments in the Danube lakes showed that, in general, they meet the established requirements for soil quality. MAC exceedances were found in only 3.0% of all samples taken in lakes Kugurluy and Yalpug, for three pollutants: lead (1.77 MAC), zinc (1.55 MAC), and copper (2.6 MAC).

The assessment of bottom sediment contamination indicates a "satisfactory" condition of bottom soils in areas near the city of Izmail, within the channels of the Ochakiv estuary, the Bystry branch and the Starostambul estuary. For river sections within the cities of Reni, Kiliya and Vylkove, the ecological state of bottom soils is assessed as "unsatisfactory".

The level of ecological risk for the entire Ukrainian section of the Danube is assessed in the range of expert assessments "increased" - "significant".

In the Danube lakes, the ecological state of bottom sediments is currently assessed as "satisfactory", with the exception of lakes Kugurluy, Yalpug and Kitay, where the expert assessment determines the level - "unsatisfactory".

The level of ecological risk of bottom sediment pollution in the Danube lakes is assessed as "increased" (54.5%) - "significant" (45.5%).

When carrying out assessment measures to determine the risks of bottom sediment pollution in water bodies of the region, it should be taken into account that bottom sediments are a receiving environment, as well as a secondary source of pollutants present in the aquatic environment. Erosion processes associated with the dynamics of riverbed flows and wind and wave impacts cause high risks of secondary pollution of water bodies.

Table 2

Results of the expert assessment of the ecological condition of bottom sediments and ecological risks within the boundaries of the Ukrainian section of the Danube and in the Danube lakes [10]

Water basin site	Residual HCHH quantity (vs MAC)*	Heavy metals content (vs MAC)*	Excess of MAC by pollutants of various hazard categories*			Probability of excessive MACs of various categories pollutants	Assessment of ecological condition of pollutant indicators*	Ecological risk level***
			1 st hazard category	2 nd hazard category	3 rd hazard category			
Danube – Reni town	II	IV	IV	III	II	0.30	B	considerable
Danube – Izmail town	II	III	II	II	II	0.20	A	high
Danube – Kiliya town	II	IV	III	III	II	0.40	B	considerable
Danube – Vylkove town	II	IV	III	III	II	0.40	B	considerable
Danube – Ochakiv estuary	II	III	II	II	II	0.20	A	high
Danube – Bystryi estuary	II	III	II	II	II	0.20	A	high
Starostambulske estuary	II	III	II	II	II	0.20	A	high
Kagul Lake – vil. Nagirne	II	III	I	II	II	0.20	A	high
Turka Lake – vil. Orlovka	II	III	I	II	II	0.20	A	high
Katral Lake – vil. Orlovka	II	III	I	II	II	0.20	A	high
Yalpug Lake – vil. Kotlovyna (potable water intake)	II	III	III	III	II	0.40	B	considerable
Lung Lake – vil. Bogate	II	III	I	II	II	0.20	A	high
Safyan Lake – vil. Safyany	II	III	I	II	II	0.20	A	high
Kitai Lake – vil. Stary Troyany	II	III	II	II	II	0.30	B	considerable
Sasyk (Kunduk) liman – near vil. Borysivka	II	III	II	II	II	0.30	A	considerable

Remarks:

* ecological condition of the bottom sediments versus to the appropriate MACs and residual quantities of the plant protection chemicals (HCHH) meet: I – “safe”; II – “satisfactory”; III – “medium”; IV – “bad”; V – “very bad”;

** ecological condition of pollution indicators is defined as: “satisfactory” if the indicator $I_{z_st} < 3.0$ (A); “unsatisfactory” if the indicator $3.0 < I_{z_st} < 3.3$ (B); “bad” if the indicator $I_{z_st} > 3.4$ (C);

*** the ecological risk level is defined as “minimum” – at $p_s^c < 0.20$ probability; “high” – at $p_s^c = 0.21 - 0.37$ probability; “considerable” – at $p_s^c = 0.38 - 0.63$ probability; “very high” – at $p_s^c = 0.64 - 0.80$ probability; and “catastrophic” – at $p_s^c > 0.80$ probability.

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Journalism

MONITORING OF INTERNET MEDIA RESOURCES

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Abstract

In the modern era, monitoring of media resources does not only involve the analysis and search of information circulating in traditional media, but also involves working with Internet resources, as well as monitoring of forums and blogs on various topics that do not have the direct meaning of the term "media" but can significantly influence the formation of public opinion and serve as a source of information. The article examines the monitoring of Internet media and social media, world experience in this field, the goals of conducting media monitoring, as well as existing problems in the field of monitoring Internet media resources, etc.

Keywords: *Internet media, media monitoring, monitoring services, social media*

The place and role of Internet media in the globalizing world is increasing. The abundance of information in media resources requires its reception, sorting, evaluation and drawing the right conclusions. The development of web technologies allows for a more accurate and objective determination of the rating of electronic media, articles, and the social composition of the readership [1]. This is also very important for the high-level organization of the activities of the press. With the application of such a system, the assessment of the activities of mass media (mass media) allows for the management of their quality indicators.

The mass media is one of the most important sources of information and is the subject of analysis by officials of many organizations, experts of commercial structures, etc. Monitoring and evaluation of newspaper, radio, television and Internet-media resources gives the journalist an important direction in his professional activity. Today, for the vast majority of state, public and business structures, the effectiveness of the public relations department and the formation of a positive image of itself in the mass media are an integral condition for their continued activity [2].

Monitoring involves identifying and observing sources of information, collecting and storing information, selecting the most relevant information through categorization and filtering, and analyzing the collected information [3].

Media organizations conduct monitoring in order to effectively organize their activities in competition with other media organizations. Systematic collection of information during monitoring allows obtaining accurate and reliable information on a given topic, assessing the influence of media organizations in the region or country, and having an idea of the means of transmitting information. Evaluating the results obtained allows for more effective organization of the activities of media resources and making optimal decisions. [4]

In the world, media monitoring was first carried out by "press-clipping" agencies. "Press-clipping" is the selection of publications and visual materials from the media based on the use of keywords or other criteria. The first press-clipping agency was founded in London in 1852 by the Polish news agent Romeike, and the first company to monitor Internet media was WebClipping, which began operating in 1998 [5].

One of the most professional and leading organizations in this field, FIBEP (International Federation of Press-clipping Services), was founded in Paris in 1953 [6]. The organization currently has 92 members from 43 countries around the world.

Currently, media monitoring does not only involve searching and analyzing information in traditional media, but also working with Internet resources, as well as monitoring social media, which do not have the direct meaning of the term "media", but can significantly influence the formation of public opinion and serve as a source of information - forums on various topics, blogs [7].

Data collection is an important step in the technology of analyzing materials published in the media. Monitoring, which is a type of information activity aimed at collecting and using information, acts as an information basis for making informed management decisions [8].

There are regular, initial, competitive, thematic, reputational, etc. types of media monitoring. Media monitoring is carried out in the following stages:

- *observation of a potential source: TV channel, radio station, periodical, news website, etc.;*
- *collection of materials;*
- *filtration and categorization;*
- *transfer of collected materials for further analysis [4].*

What are the main features of media monitoring?

According to research, 9 out of 10 large US companies annually allocate an average of \$ 1 million to monitor the activities of their competitors. These funds are paid for by the right decisions made based on the information obtained and analyzed as a result of monitoring. Many monitoring and analysis products are equipped with personal or built-in auto-subscribers, including annotators. This indicates that these tools are gradually becoming standard for information-analytical systems. To use such programs, it is important to have the ability to work with a thesaurus and take into account the morphology of the language: without these functions, it is possible to miss the necessary documents during the search [9].

As a rule, Internet monitoring is used as an addition to monitoring other media or as part of other marketing projects. The results of monitoring are presented in the following forms:

- *"press clipping": scanned form (electronic versions) of articles;*
- *short summaries in the required language;*
- *a statistical report with the date, publications, author, names, pages of the article and size with a hypertext corresponding to the scanned version of the original text*
- *an analytical report in accordance with the purpose of monitoring; [4]*

During media monitoring:

- *negative and potential information risks are monitored promptly;*
- *a daily report of positive and negative news in information wars and crisis conditions is conducted;*
- *information presented in the media is analyzed;*
- *information about the company in the media is compared based on quality indicators;*
- *the number of positive and negative references is compared;*
- *qualitative changes in the information field of the company are assessed in comparison with competitors over any period of time. [4]*

During monitoring, Internet search engines or specialized media databases (Integrum, Addictomatic, Alterian, Prnews, Semantic Force, Mediateka, TextAnalyst, TopSOM, IntellSoft Vision, etc.) are usually used. CyberAlert, the most well-known media monitoring company in the world, monitors 50,000 online news sources in more than 75 languages in 189 countries of the world every day, as well as more than 50 million blogs, 100,000 message boards, forums, complaint sites, and more than 200 video sharing sites, including Twitter, in social media [10].

The services of monitoring companies include the following:

- *monitoring of all types of media in countries on given topics;*
- *monitoring of the current situation;*
- *monitoring of information about organizations, companies, trademarks, as well as individuals in the media;*
- *monitoring of past, present, and future events;*
- *analysis of the current situation;*
- *analysis of information in the media about organizations, companies, trademarks, including individuals;*
- *analysis of materials published in the media about the client's main competitors;*
- *preparation of statistical characteristics, conclusions and recommendations, identification of main trends [4].*

The main products of monitoring (on the example of the monitoring department of the ITAR-TASS agency) can be the following [8]:

- *daily monitoring;*
- *operational monitoring in online mode;*
- *weekly monitoring with the issuance of an analytical note;*
- *weekly monitoring of foreign media;*
- *monthly monitoring of a media organization;*
- *monitoring of commissioned publications and plots;*
- *monitoring of television and radio broadcasts, presentation of video and audio plots through encoding of information (in text*

- form);
- monitoring of the press based on the results of holding a press event;
- preparation of a report based on published materials, television and radio plots;
- monitoring of publications about the company's activities in regional media by sector (review is presented twice a month and is accompanied by an analytical note);
- formation of a review of news of interest to the customer by topics;
- search for necessary information by keywords.

Media monitoring tools include computer programs that help collect and sort information from the media. There are about 100 such programs on the market, but all of them, as a rule, have simple search capabilities or thematic rubricators without offering any mechanism for organizing the storage of medium or large volumes of information, qualitative analysis [11].

Media monitoring is based on the classical methods of factographic analysis, as well as quantitative and qualitative content analysis of the information flow:

- analysis of facts;
- assessment;
- analysis of news topics;
- analysis of news contexts;
- analysis of relationships between contexts;
- analysis of the logical expression of news;
- media-statistical analysis;
- analysis of the chronology of news;
- analysis of bibliographic information of news (authors, geography, etc.);
- analysis of additional materials of news (photos, cartoons, etc.) [12].

Monitoring and evaluation:

- helps to identify problems and their causes;
- shows possible solutions to problems;
- allows to direct the direction of the media organization's activities;
- provides information;
- helps to act on information;
- increases the likelihood of the company's activities developing in a positive direction. [13].

Monitoring social media

In modern times, along with professional media, social networks also play an important role in shaping public opinion. In this case, the media acts primarily as a means of informing citizens, and on the other hand, as a means of social participation [14].

It is no coincidence that after the emergence of the Internet, studies have been conducted in Western countries to reveal the level of readiness of journalists to establish a dialogue with the audience. Studies show that the majority of journalists do not seek to communicate with the audience. Information technologies can affect the development of the media only if they can evaluate the capabilities of these technologies and use them [15].

It is an undeniable fact that social media has already become a new means of communication. Today, people and companies turn to social networks, since social media is one of the best methods of presentation. Social media is a direct and clear dialogue with the audience targeted by the website [16].

Social media tools include social networks, blogs, microblogs, forums, etc. In addition to monitoring Internet media resources, many media organizations also monitor social media, reviewing the information disseminated about them. There are more than 100 different services in the field of monitoring and evaluation of social media. The most well-known companies providing free blog monitoring services are Technorati, Blog Pulse, IceRocket, Google Blogs. According to research by Technorati, one of the giants of the US web services and software industry, 75 thousand blogs with 1.2 million new posts containing opinions about companies' products and services are created every day.

Social media monitoring helps to solve the following problems [17]:

- take into account the interests of the audience, accurately determine people's desires and wishes;
- create interactive contacts with people;
- disseminate information that the audience needs through social media;
- analyze the future activities of the organization.

Although the number of Internet media resources in our country is sufficient, Internet media is still in the formation stage. Currently, in Azerbaijan, a commission on Internet media resources operates under the Azerbaijan Press Council to monitor these resources. This commission reviews complaints

received by the Press Council regarding online media resources, conducts monitoring by reviewing trends on a national and international scale, and also assists in eliminating negative situations related to journalistic responsibility in the Internet media.

The Media Monitoring Center, the Calibri media monitoring company, the A-Vision media and communication company, and the Azerbaijan Media Monitoring Institute, which are engaged in monitoring and analyzing the media in Azerbaijan, offer a wide range of operational and professional services in analyzing the media and social networks and building marketing strategies and tactics in accordance with current trends. The service areas of these companies include the following:

- monitoring of the country's media;
- monitoring of foreign media;
- monitoring of the press;
- monitoring of television broadcasts;
- monitoring of radio;
- monitoring of social media;
- monitoring of news agencies;
- monitoring of television advertisements;
- monitoring of street advertisements;
- monitoring of advertisements in the press.

These companies prepare statistics of news presented on Internet-media resources every month. These announced statistical data express the number of times certain keywords are used in articles published on the website using a counter. Graphic tables are prepared based on the obtained figures. These tables only express the number, taking into account the different spellings of a word. One of the shortcomings of this service is that the content of the news is not analyzed when preparing the tables.

In addition, various non-governmental organizations also conduct media monitoring from time to time for various purposes.

Thus, media resource monitoring allows for the following:

- comprehensive assessment of the situation in the information field;
- identifying opportunities for improving the indicators of the information field through media analytics;
- developing an information policy taking into account the media image and situation formed in this field as a whole;
- planning various measures in the field of public relations based on the experience of competitors and companies from other similar fields;
- predicting events and actions of competitors;
- optimize work with publications and journalists (updating the database of journalists, rating of journalists, rating of publications, databases of media outlets by field) [4].

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Jurisprudence

POLITICAL-LEGAL VIEWS OF THE NIQVİLİS MOVEMENT

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Abstract

The article explores the essence and political-legal views of the Niqvilis' opposition movement that emerged and lasted for many years during the Safavid Empire in the Middle Ages. The Niqvilis were a branch of the widespread Hurufism in the Islamic East. The Niqvilis' teachings, which were directed against the heavy feudal oppression and the official Qizilbash doctrine, presented a number of progressive ideas for their time.

In the early decades of the 17th century, considered the final stage of the Middle Ages, feudal oppression, heavy taxes, and military expeditions in the Safavid Empire, one of the most powerful states in the Islamic East, had increased drastically. During this time, the policies of Shah Abbas I, including mass deportations, continuous wars, and military campaigns, burdened the common people, exacerbating their social deprivation and worsening their economic conditions. As a result, the growing dissatisfaction of the peasant masses and urban poor found its theoretical foundation in various emerging sectarian teachings and political-legal views, leading to anti-feudal movements.

Keywords: Niqvili, Middle Ages, Safavids, Sufism, Qizilbash, Religion

Just like in the Western world, in the Islamic East, no form of independent thought, doctrine, or worldview could exist outside the dominant religious ideology. The official Islamic ideology dominated both the ruling feudal class and the oppressed masses, justifying their existence. In other words, both the oppressed classes, who revolted, and the feudal rulers, who suppressed their dissent, tried to legitimize their actions through religious dogmas. However, the difference was that while the ruling orthodox religious teachings always served the feudal class, various sectarian religious teachings and ideologies expressed the desires and aspirations of the oppressed masses. Thus, sectarian movements, which were directed against the existing feudal state system, also became opposition to the official religious ideology. For this reason, sectarian movements everywhere were considered heretical by the dominant religious ideology, and both the state and the official orthodox institutions acted together to suppress them.

Although the broad masses were dissatisfied with the existing order and their dire social-economic situation, they would not follow the opposition leaders they considered heretics. Therefore, all anti-feudal movements carried religious flags and slogans, and their leaders were cloaked in religious rhetoric. Even members of the Safavid dynasty, like some opposition leaders (e.g., Fazlullah Naimi), claimed to be descendants of the prophet.

During the 14th and 15th centuries, South Azerbaijan, Khorasan, Kashan, and many other territories, which were part of the Hulaguids, Timurid, Qaragoyunlu, and Aq Qoyunlu states, were highly sensitive regions for religious-political movements. In these areas, the ideas of movements such as the Khurramis, Hurufis, Serbedars, and other sects still resonated among the people.

In the 16th century, with the rise of the theocratic Safavid Empire, new divisions emerged among existing political-religious sects and movements. Some of these sects gradually merged with the ruling Qizilbash ideology, while others, remaining in opposition, were considered heretical. In the Safavid state, Qizilbash clergy fanatically persecuted any form of free thought, considering all non-conformists as opposition.

Despite all propaganda, punishment, and executions, the official Qizilbash ideology was not the only political worldview in the Safavid Empire. Secret and open opposition teachings such as Qalandariyya, Niqvilis, Hurufism, Rövşaniyyah, Aliallahism, and others were widespread. Extremist Shiism continued to thrive as well. In the early 16th century, the urban population supported by the Safavids

inclined toward Sufi organizations promoting asceticism, such as the "Heydariyya" and the pantheistic "Nem'atullahi" sect.

According to the famous 17th-century Azerbaijani historian Iskander Bay Turkman (Munshi), in 1455, a group of "Qalandaris and the remnants of the society" appeared with new religious teachings, attempting to present Shah Tahmasp as the embodiment of Imam Mahdi. The movement gained such momentum that it was only suppressed after the Safavid ruler had executed its leaders (1, s.340).

In the 16th and 17th centuries, Niqvilis, a heretical movement that opposed the official Qizilbash doctrine and was relentlessly persecuted, became widespread.

The origins of Niqvilis trace back to the 14th century during the time of Fazlullah Naimi, a prominent ideologue of Hurufism. The basic principles of Niqvilis were formulated by Naimi's disciple, Mahmud Pəsihani. Over time, this teaching gained more followers and became a significant opposition movement by the end of the 16th century. Numerous intellectuals and artisans joined the movement. In the early 17th century, prominent leaders of the movement included Dervish Khosrov Qazvini, Yusuf Terkeshduz, and Dervish Kichik Qalandar. In Azerbaijan, Niqvilis spread, with figures like Budak Bey Ustacli and Mowlana Suleyman Təbib Savəci leading the movement.

The characteristics of Niqvilis included materialist tendencies, pantheism, rationalism, and opposition to many Islamic dogmas. As mentioned above, "The founder of the movement was Mahmud Pəsihani, who was once a follower of Fazlullah Naimi but later distanced himself from him" (9). The teaching that Pəsihani created was significantly different from Hurufism, being more radical and systematic.

Unlike Hurufis, Niqvilis believed that existence begins not from letters but from the point. They saw everything's origin in the earth, regarding it as the point. "All secrets are in the point. The point contains infinity. The opening and closing of the point create time. The moment is a point. When this point is extended, it forms an infinite line. Letters are written on this line. Hurufism could not perceive the secrets of the point. The point precedes the letter. On this line, one point is taken as the basis. If this point draws a circle with its center, the diameter of this circle is called time. The moment, the point that gathers 18,000 worlds within itself. The absolute concept of time is also united in the point. Life ends in absolute time, and we exist and die within the point. Our connection to God is also a point. The inside and outside of this point are surrounded by God" (10).

Niqvilis considered the world (universe) as eternally existing, seeing all beings in the world as ultimately converging into a unity (oneness), with the point representing this ultimate unity.

Politically and socially, Niqvilis criticized the feudal regime, the ruling system that unquestioningly followed Islamic dogmas, and advocated for the free exchange of ideas, moral and legal equality, social justice, and the reconstruction of society. According to sources, Niqvilis interpreted the Quran differently, did not believe in the afterlife, paradise, or hell, and believed in the transmigration of souls (tanassukh). In Niqvilis doctrine, the belief in a savior (Mahdi) who would rescue people from the world's evil and violence played a major role. Humans were considered divine, capable of determining their own fate and the fate of the world.

Niqvili dervishes tried to convince people that both good and evil are found in this world. To reach true happiness, freedom, and a happy life, they believed in the need to fight for one's rights. Criticizing the feudal system, Niqvilis called on people to struggle for their freedom and rights.

Niqvilis, with its revolutionary spirit and uncompromising stance against official religious ideologies, was even more radical and consistent than many other branches of Hurufism. I. Munshi described the social-political essence of Niqvilis as follows: "Niqvilis, relying on the rulers, consider the world to be the ancient world, rejecting the resurrection of the dead on the Day of Judgment, and seeing the rewards for good and bad deeds in the prosperity and misfortune of this world, relating both heaven and hell to their earthly existence" (8, s.806).

The Expansion of the Niqvili Movement and its Political and Religious Persecution

By the second half of the 16th century, the Niqvili movement had significantly expanded, covering areas like Kashan, Shiraz, Qazvin, and others. The movement attracted many artists and intellectuals, even managing to infiltrate the court of Shah Təhmasib. Towards the end of Təhmasib's reign, a dervish named Khusrow Qazvini led the Niqvili in Qazvin. This dervish continued his activities during the reigns of Shah Ismail II and Sultan Muhammad Khudabanda. According to Iskander Bey Munshi, a high-ranking government official who was not sympathetic to the Niqvili, Khusrow abandoned his family's profession, adopted the attire of a dervish, and began long travels. He integrated into Niqvili circles, indulging in alcohol, and eventually settled near a mosque in Qazvin. He opened a spiritual shop, attracting a group

of dervishes who engaged in the sale of religious ideas. The ulema and the religious authorities banned him from entering mosques due to his controversial practices.

During the reign of Shah Abbas I (1587-1629), a monarch who was a staunch defender of Shia Islamic law and fiercely opposed any movements that threatened his authority, the Niqvili movement came under heavy persecution. Shah Abbas saw the movement's teachings as dangerous both religiously and legally, and he had its leaders hunted down and executed. The Niqvilis, who often concealed their radical messages with symbolic and secretive means, were seen as a direct threat to the Shah's reign. Their belief that everything in the world is cyclical, with death leading to rebirth, made them fearless of both death and the harsh punishments of the Safavid regime.

After the execution of Yusif Tərkeşduz, a prominent Niqvili figure, Dervish Kiçik Qələndər expressed the idea of continuous struggle by stating, "We went so that we can come back another time." This reflects the Niqvilis' belief in spiritual domination and their desire to eventually overthrow the ruling system.

In the seventh year of Shah Abbas's reign, the persecution of the Niqvilis escalated. Dervish Khusrow Qazvini was secretly monitored, and his activities came to the attention of the Shah, who tried to disguise his intention to learn more about Khusrow's beliefs by engaging him in theological debates. Khusrow, however, was careful and avoided direct confrontation with the Shah's political ideology. Despite this, his followers, such as Ustad Yusif Tərkeşduz and Dervish Kiçik Qələndər, openly articulated their beliefs and were not afraid to challenge the authority of the state. Eventually, Khusrow was arrested, and Shah Abbas ordered his execution after confirming his Niqvili beliefs.

Iskander Bey Munshi also mentions the death of other Niqvili figures, including Yusif Tərkeşduz, who was briefly put on the throne as a puppet ruler by the Shah's enemies before being executed. The Niqvili movement's doctrines were perceived as a major political threat, and the Safavid state undertook systematic efforts to eliminate it. Munshi describes how, despite their persecution, the Niqvilis persisted in their ideas. After the Niqvilis were persecuted in Iran, some of them fled to India, where Mughal Emperor Akbar, interested in their philosophical and political ideas, offered them refuge and allowed them to continue their activities.

This account highlights the complex relationship between the Niqvilis and the Safavid state, focusing on the political, religious, and legal implications of their persecution and their eventual exile.

Additionally, it should be noted that one of the main reasons for the migration of many free-thinking intellectuals to India in the early decades of the 17th century was the harsh persecutions of the reign of Shah Abbas I.

Despite their defeat and the destruction of several prominent figures, the fight of the Niqultes against the "despotic rule" was a model of bravery and heroism. As it appears, Niqvili was not just a theoretical movement. The leaders of the Niqultes, who gathered around them the poor classes of the city and village, as well as the prominent intellectuals of the time, led the masses in the struggle against feudal oppression and the ruling Qizilbash sect. The political-legal views of the Niqvili later influenced many liberation movements, including the famous "Bablers" movement in the 19th century. Prominent Azerbaijani thinker Mirza Fathali Akhundzade, based on the writings about one of the prominent figures of Niqvili, Yusif Terkeshduz, in I. Munshi's work, wrote the famous "Aldanmış Kəvakib" (Deceived Stars) in 1857.

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Medical sciences

UDC: 616.24-006.6

LUNG CANCER: A MODERN VIEW OF THE PROBLEM

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This scientific and analytical work presents modern world and local-regional data on incidence, mortality, lethality and five-year survival rate of such a common oncological pathology as lung cancer. The issues of etiology and pathogenesis, features of distribution, modern principles of diagnostics, including screening, as well as prognosis are covered in detail. The epidemiological characteristics of this pathology in our republic are given in the context of regions of the country.

Keywords: *oncology, lung cancer, biomarkers, bronchoscopy, low-dose computed tomography, screening, epidemiology, incidence, mortality, lethality, five-year survival rate, prognosis.*

Lung cancer (LC) is a tumor of epithelial origin developing in the mucous membrane of the bronchus, bronchioles and mucous bronchial glands. Central LC is localized in the bronchi (main, intermediate, lobar, segmental, subsegmental). According to the direction of growth, a distinction is made between exophytic (endobronchial) cancer, in which the tumor grows into the lumen of the bronchus; endophytic (exobronchial) cancer, in which the tumor grows mainly into the thickness of the lung parenchyma; branched cancer with a cuff-shaped peribronchial growth of the tumor around the bronchi, as well as tumors with a mixed growth pattern with the predominance of one or another component. Peripheral LC is localized in the peripheral parts of the lung. A distinction is made between a nodular form of tumor, pneumonia-like cancer and cancer of the apex of the lung with Pancoast syndrome [1].

The diagnostic criteria are as follows. Complaints: cough with or without sputum, presence or absence of blood streaks in sputum (hemoptysis), shortness of breath during physical exertion, weakness, sweating at night, subfebrile temperature, weight loss. Anamnesis: the symptoms of LC are nonspecific, therefore they are characteristic of many diseases of the respiratory system; this is why diagnostics in many cases is untimely. The tumor in the initial stage is asymptomatic due to the absence of pain endings in the lung tissue. When the tumor grows into the bronchus, a cough appears, initially dry, then with light sputum, sometimes with an admixture of blood. Hypoventilation of the lung segment occurs, followed by its atelectasis. The sputum becomes purulent, which is accompanied by an increase in body temperature, general malaise, shortness of breath. Cancerous pneumonia joins. Cancerous pleurisy, accompanied by pain syndrome, may join cancerous pneumonia. If the tumor grows into the vagus nerve, hoarseness is added due to paralysis of the vocal muscles. Damage to the phrenic nerve causes paralysis of the diaphragm. Invasion of the pericardium is manifested by pain in the heart area. Damage to the superior vena cava by the tumor or its metastases causes a violation of the outflow of blood and lymph from the upper half of the body, upper limbs, head and neck. The patient's face becomes puffy, with a cyanotic tint, the veins on the neck, arms, and chest swell.

Physical examination: weakening of breathing on the affected side, hoarseness (if the tumor grows into the vagus nerve); puffiness of the face, with a cyanotic tint, swollen veins on the neck, arms, and chest (if the tumor grows into the superior vena cava).

Laboratory tests. It is recommended to determine the levels of the following tumor markers (depending on the histological structure of LC) for the purposes of differential diagnostics at the diagnosis stage and to assess the effectiveness of treatment: neuron-specific enolase for small cell LC; soluble fragment of cytokeratin 19 (CYFRA 21-1) in the blood, squamous cell carcinoma antigen (SCC) in the blood; CYFRA 21-1 in the blood, adenogenic cancer antigen CA-125 in the blood for adenocarcinoma; CYFRA 21.1 and SCC in the blood, cancer embryonic antigen for large cell LC. Cytological examination of pleural fluids and tumor smears for atypical cells (increase in cell size up to giant, change in shape and number of intracellular elements, increase in size of the nucleus, its contours, different degrees of maturity of the nucleus and other cell elements, change in the number and shape of nucleoli), examination of pleural fluids. Histological examination - large polygonal or spiky cells with well-defined cytoplasm, round nuclei with clear nucleoli, with the presence of mitoses, cells are located in the form of cells and cords with or without keratin formation, presence of tumor emboli in vessels, severity of lymphocytic-plasmocytic infiltration, mitotic activity of tumor cells. Molecular genetic testing of tumors (biopsy and postoperative materials, glass blocks, fluids, free circulating tumor DNA): EGFR (with formalin-fixed and paraffin-embedded tissue samples or blood plasma samples) - for non-small cell LC, regardless of the prevalence of the process (adenocarcinoma, squamous cell carcinoma in young non-smoking patients); T790M - should be performed in case of ineffectiveness and resistance to targeted drugs; ALK, ROS1 - for non-small cell LC (in patients with adenocarcinoma, for squamous cell carcinoma - in young non-smoking patients or with a mixed histological variant); PD-L1 - for non-small cell cancer (with locally advanced or metastatic cancer); BRAF - for non-small cell cancer; KRAS - for non-small cell cancer; MET mutation with loss of exon 14 in patients with locally advanced and metastatic non-small cell LC (MET gene amplification is one of the causes of secondary resistance to tyrosine kinase inhibitors, which is observed in 20% of patients resistant to EGFR tyrosine kinase inhibitor therapy); comprehensive genomic profiling of patients - in patients with a severe clinical course, aggressive tumors, with a high risk of progression, no effect from traditional antitumor treatment methods (advanced non-small cell LC). If clinically significant genomic changes/tumor biomarkers are detected as a result of comprehensive genomic profiling, the use of registered drugs for unregistered indications is allowed to provide medical care/treatment of a specific patient based on the conclusion of a multidisciplinary group of the supervising organization in the field of oncology in cases where standard therapeutic options have been exhausted [1,2].

Instrumental studies: chest radiography in two projections (peripheral cancer is characterized by fuzziness, blurring of shadow contours; tumor infiltration of lung tissue leads to the formation of a kind of radiance around the node, which can be detected only in one of the edges of the neoplasm; in the presence of peripheral LC, a path can be detected that connects tumor tissue with the root shadow, caused by either lymphogenous spread of the tumor or its peribronchial, perivascular growth; X-ray picture for central cancer - the presence of tumor masses in the area of the root of the lung; hypoventilation of one or more segments of the lung; signs of valvular emphysema of one or more segments of the lung; atelectasis of one or more segments of the lung; X-ray picture for apical cancer is accompanied by Pancoast syndrome - it is characterized by the presence of a rounded formation in the

apex of the lung, pleural changes, destruction of the upper ribs and the corresponding vertebrae); computed tomography (CT) of the chest and mediastinum - clarification of the nature of the process, the degree of damage to the root of the lung, mediastinum and chest, assessment of metastatic lesions of the lymph nodes (when conducting a study with contrast enhancement, determination of damage to the main vessels of the mediastinum; is a mandatory examination method for making a diagnosis); diagnostic bronchoscopy - the presence of a tumor in the lumen of the bronchus, completely or partially obstructing the lumen of the bronchus (with a central location of the pathological focus, diagnostic bronchoscopy is recommended under sedation with histological and cytological examination); with a peripheral location of the tumor, therapeutic and diagnostic thoracoscopy or thoracotomy with express histological and cytological examination is necessary; ultrasound examination of the supraclavicular and cervical lymph nodes; complex ultrasound diagnostics (liver, gallbladder, pancreas, spleen, kidneys); esophagoscopy; ultrasound-guided puncture/aspiration biopsy; open biopsy of enlarged supraclavicular and cervical lymph nodes (if enlarged lymph nodes are present); magnetic resonance imaging of the brain with contrast (CT of the brain if there are contraindications to magnetic resonance imaging); positron emission tomography + CT of the whole body; spirometry [1].

As noted by a number of researchers [3-6], LC is the second leading cancer in terms of new cases and the leading cancer in terms of cancer deaths worldwide. From a rare disease about a 100 years ago, LC has gained prominence as one of the leading cancers by the twenty-first century. The growth in LC burden has largely been attributed to the rise in cigarette smoking, which is expected to have peaked in industrialized countries. It should be emphasized that, the tobacco smoking epidemic is unfolding in regions of Asia and Africa, due to which, the LC burden is increasing in several countries of these regions. Although LC survival rates are one of the lowest among frequent cancer groups, there are wide disparities in five-year survival rates across countries, from less than 10% in countries such as Brazil, Bulgaria, India, and Thailand to 32.9% in Japan. About 80-85% of LC is non-small cell LC, which is further sub-divided into adenocarcinoma, squamous cell carcinoma, and large cell carcinoma and 10-15% of LC is small cell LC and the rest is lung carcinoid tumor and other LC. About 8% of LC is inherited or occur due to genetic predisposition. Tobacco smoking is by far the single most significant risk factor of LC, followed by air pollution, passive smoking, and occupational exposure to carcinogens such as asbestos and radon.

Sharma R. [3] in his work indicates that globally, there were 2.21 million (2.18-2.24 million) new cases and 1.8 million (1.77-1.83 million) deaths due to LC in 2020. Males accounted for approximately two-thirds of the global burden [1.44 million (1.41-1.46 million) new cases and 1.19 million (1.16-1.21 million) deaths]. The global age-standardized incidence rate (ASIR) of LC was 22.4/100,000, with males ASIR (31.5/100,000) being more than double that of females (14.6/100,000). Global age-standardized mortality rates (ASMR) was 18.0/100,000, varying from 11.2/100,000 in females to 25.9/100,000 in males. The mortality-to-incidence ratio (MIR) at the global level was 0.82 with not much difference between males (0.83) and females (0.79). It is important to note that East Asia was the leading region in terms of incident cases and deaths with an estimated 1.01 million (1.00-1.02 million) incident cases and 841,174 (831,852-850,601) deaths in 2020, followed by Northern America [cases: 253,537 (252,452-254,627); deaths: 159,641 (158,736-160,551)]. LC was ranked among the top three cancer groups out of 34 cancer groups in terms of new cases in 11/21 regions and among top three in 15/21 regions in terms of cancer deaths. The MIR of LC varied from 0.63 in Northern America to 0.96 in Micronesia, with MIR being 0.80 or above in the majority of regions except Australia/New Zealand (0.69), Northern Europe (0.73) and Western Europe (0.78). Polynesia had the highest ASIR (37.3/100,000) and Micronesia had the highest ASMR (34.9/100,000). Majority of African regions had low age-standardized rates, with Western Africa recording the lowest ASIR (2.2/100,000) and ASMR (2.1/100,000). In 2050, the global burden of LC is projected to reach 3.8 million new cases and 3.2 million deaths each year. In 2050, LC cases and deaths will be more than 100,000 in 10/21 regions led by Eastern Asia, which is projected to record 1.7 million incident cases and 1.5 million deaths. The burden of LC in regions of Asia (South-Eastern Asia, South-Central Asia, and Western Asia) and Africa (Northern Africa, Southern Africa, and Western Africa) is expected to double or more between 2020 and 2050, whereas regions in Europe (Northern Europe, Southern Europe, Western Europe, Central and Eastern Europe) are expected to witness the smallest increases in the LC burden. As a result of these changes, the LC burden in several Asian regions will surpass that in a few regions of Europe. For instance, South-Eastern Asia (123,309) and South-Central Asia (121,369) had lesser number of incident cases than Central and Eastern Europe (151,632) and Western Europe (146,460) in 2020; however, by 2050, these two regions in Asia will surpass the number of incident cases in Central and Eastern Europe and Western Europe. In 2050, LC is projected to claim similar number of lives in South-Eastern Asia (248,326) and South-Central Asia

(238,020) as that in Northern America (253,058), although the projected number of incident cases in Northern America (378,587) is much higher than projected new cases in South-Eastern Asia (271,416) and South-Central Asia (264,309). In addition, even though Asia is in the initial stages of the smoking epidemic, the continent already accounted for 60% of incident cases and 62% of all LC deaths in 2020. If current rates persist in the future, there will be 2.4 million new cases and 2.2 million deaths in Asia due to LC in 2050. Therefore, anti-smoking campaigns and public awareness campaigns about health risks of smoking are urgently required to stop and reverse the smoking epidemic in Asia.

Today, molecular genetic studies are becoming an integral part of diagnosing the type and kind of oncological pathology in order to develop an optimal individual treatment plan for the patient.

In its fundamental review Saller J.J., Boyle T.A. [7], consecrated the current most clinically relevant aspects of thoracic molecular pathology. Historically, genomic alterations (GAs) that were considered drivers in LC were interrogated in panels using an à la carte approach with techniques such as Sanger sequencing, pyrosequencing, immunohistochemistry (IHC), and fluorescence in situ hybridization (FISH), which limited reportable GAs to select genes. Mutations in EGFR and translocations in the ALK gene and the ROS1 gene were the first three alterations recognized as clinically actionable drivers, and comprised the majority of the initial clinical genetic testing in LC. As the use of next-generation sequencing (NGS) became more cost-effective and widely used, it revealed additional actionable GAs. Evidence has accumulated to prove that NGS is an accurate technology with performance that is concordant or better than conventional methods. Advances in information about actionable GAs from comprehensive genomic profiling (CGP) has propelled precision medicine forward with the aim to provide evidence-based interpretation of GAs for targeted therapy. The increase in the number of genes and GAs covered by NGS has expanded the variety of GAs identified as actionable in LC. A shift toward NGS-based testing in advanced LC has decreased the number of LC cases where a driver is not identified. Increasingly, case reports describe patients with novel drivers identified by NGS that would not have been identified if they were evaluated solely by hotspot-based panels. The researchers point out that historically, LC was divided categorically into non-small-cell LC (NSCLC) (~85%) and small-cell LC (SCLC) (~15%) by pathologist review of hematoxylin and eosin (H&E) stained slides. NSCLC is a heterogeneous category of entities that includes lung adenocarcinoma (LUAD) as the most common histologic cancer type (~50%), squamous cell carcinoma of the lung (SqCCL) as the second most common type (~30%), large-cell lung carcinoma (LCLC) (~10%), and combinations of histologic phenotypes such as adenosquamous carcinoma (ASC), and rare histologic entities, such as atypical carcinoid (AC) tumor, bronchial gland carcinoma, and sarcomatoid carcinoma, collectively accounting for the remaining types of NSCLC (~10%). In clinical practice, LC patients typically undergo an initial biopsy to determine whether there are histomorphologic features on H&E that are able to diagnostically distinguish between NSCLC or SCLC. Performance of IHC typically will assist in determining the subtypes of NSCLC. IHC that favors NSCLC that is LUAD is typically positive for CK7 and TTF-1, and negative for p63, CK5/6, and p40. IHC that favors NSCLC that is SqCCL is typically positive for p63, CK5/6, and p40 and negative for TTF-1 and CK7. The art of establishing a diagnosis may be challenging as many pathologists are aware that, in practice, some tumors might not have «read the book» regarding conventional IHC staining patterns. In such cases, other special stains such as mucin can assist (e.g., mucin is typically positive for LUAD, and negative for SqCCL). ASCs are a rarely encountered tumor that is biphasic, meaning there is a component that is LUAD and a component that is SqCCL. These components by definition have at least 10% each of malignant squamous and glandular components. Neuroendocrine IHC markers (CD56, chromogranin, and synaptophysin) are typically positive for neuroendocrine carcinomas such as SCLC and LCLC. In NSCLC, the tumor proportion score (TPS) for PD-L1 as determined by IHC (e.g., PD-L1 IHC 22C3 pharmDx) assists in determining eligibility for immunotherapy. While tissue is submitted for NGS, rapid testing for mutations in EGFR, KRAS, and BRAF are selectively tested via a rapid method such as pyrosequencing, while rearrangements in ALK and ROS1 can be rapid identified via FISH. When NGS results are made available, these results can corroborate the results of rapid testing, and potentially provide other GAs that may be actionable targets.

Oncogenotypes are molecular alterations that include genomic mutations, alterations that cause dysregulation in mRNA expression, dysregulation in expression of miRs, and epigenomic changes. As NGS-based DNA sequencing has become increasingly available, the knowledge about different types of mutations that are potentially actionable beyond the genetic biomarkers with associated FDA-approved targeted therapies has expanded. An oncogene is a gene in which activating mutations confer gain-of-function to a gene, which ultimately promotes oncogenesis. Conversely, a tumor-suppressor gene is a gene in which inactivating mutations confer loss-of-function to a gene, which ultimately promotes oncogenesis. In this paper, our colleagues detailed genomic, transcriptomic, epigenomic and proteomic

differences between different histological types of LC relevant to research and therapeutic strategies [7].

Next, we will consider issues of early diagnosis of LC, including, of course, screening.

As noted, Lam S. et al. [8], low-dose CT (LDCT) screening for LC substantially reduces mortality from LC, as revealed in randomized controlled trials and meta-analyses. This review is based on the ninth CT screening symposium of the International Association for the Study of LC, which focuses on the major themes pertinent to the successful global implementation of LDCT screening and develops a strategy to further the implementation of LC screening globally. These recommendations provide a five-year roadmap to advance the implementation of LDCT screening globally, including the following: 1) establish universal screening program quality indicators; 2) establish evidence-based criteria to identify individuals who have never smoked but are at high-risk of developing LC; 3) develop recommendations for incidentally detected lung nodule tracking and management protocols to complement programmatic LC screening (LCS); 4) integrate artificial intelligence and biomarkers to increase the prediction of malignancy in suspicious CT screen-detected lesions; and 5) standardize high-quality performance artificial intelligence protocols that lead to substantial reductions in costs, resource utilization and radiologist reporting time; 6) personalize CT screening intervals on the basis of an individual's LC risk; 7) develop evidence to support clinical management and cost-effectiveness of other identified abnormalities on a LC screening CT; 8) develop publicly accessible, easy-to-use geospatial tools to plan and monitor equitable access to screening services; and 9) establish a global shared education resource for LC screening CT to ensure high-quality reading and reporting.

Barta J.A. et al. [9] in their work they emphasize that, lung nodules are frequently detected on LDCT scans performed for LC screening and incidentally detected on imaging performed for other reasons. There is wide variability in how lung nodules are managed by general practitioners and subspecialists, with high rates of guideline-discordant care. This may be due in part to the level of evidence underlying current practice guideline recommendations (primarily based on findings from uncontrolled studies of diagnostic accuracy). The primary aims of lung nodule management are to minimize harms of diagnostic evaluations while expediting the evaluation, diagnosis, and treatment of LC. Potentially useful tools such as LC probability calculators, automated methods to identify patients with nodules in the electronic health record, and multidisciplinary team evaluation are often underused due to limited availability, accessibility, and/or provider knowledge. Finally, relatively little attention has been paid to identifying and reducing disparities among individuals with screening-detected or incidentally detected lung nodules. At the same time, lung nodules may be identified on chest scans of individuals who undergo LC screening (screening-detected nodules) or among patients for whom a scan was performed for another reason (incidental nodules); although the vast majority of lung nodules are not LC, it is important to have evidence-based, standardized approaches to the evaluation and management of a lung nodule; the primary aims of lung nodule management are to diagnose LC while it is still in an early stage and to avoid unnecessary procedures and other harms.

In Kazakhstan, methods for improving the early diagnosis of such a formidable disease as LC are also being actively developed. Including this method [10]. The aim of this study was to present the baseline results of a pilot project conducted to evaluate the effectiveness of LC screening using LDCT in regions with excessive radon levels in the Republic of Kazakhstan. In total, 3671 participants were screened by low-dose chest CT. Current, former, and never-smokers who resided in regions with elevated levels of radon in drinking water sources and indoor air, aged between 40 and 75 with no history of any cancer, and weighing less than 140 kg were included in the study. All lung nodules were categorized according to the American College of Radiology Lung Imaging Reporting and Data System (Lung-RADS 1.0). Overall, 614 (16.7%) participants had positive baseline CT findings (Lung-RADS categories 3 and 4). Seventy-four cancers were detected, yielding an overall cancer detection rate of 2.0%, with 10.8% (8/74) stage I and a predominance of stage III (59.4%; 44/74). Women never-smokers and men current smokers had the highest cancer detection rates, at 2.9% (12/412) and 6.1% (12/196), respectively. Compared to never-smokers, higher odds ratios (OR) of LC detection were found in smokers (OR, 2.48; 95% confidence interval [CI], 1.52 to 4.05, $p < 0.001$) and former smokers (OR, 2.32; 95% CI, 1.06 to 5.06, $p = 0.003$). The most common histologic type of cancer was adenocarcinoma (58.1%).

Ning J. et al. [11] in their study provide data showing that the prognosis of patients with LC at different clinical stages differs significantly. The five-year survival rate of stage IA groups can exceed 90%, while patients with stage IV can be less than 10%. Therefore, early diagnosis is extremely important for LC patients. This research focused on various diagnosis methods of early LC, including imaging screening, bronchoscopy, and emerging potential liquid biopsies, as well as volatile organic compounds, autoantibodies, aiming to improve the early diagnosis rate and explore feasible and effective early

diagnosis strategies. Let us dwell in more detail on endoscopic methods of diagnosing LC for verification of a malignant tumor. Nowadays, pathological diagnosis has been regarded as gold standard for diagnosing cancer. There are several methods for obtaining histological specimens, including bronchoscopy, ultrasound or CT-guided percutaneous lung biopsy. Among them, bronchoscopy has been developed rapidly and widely recognized in recent years. It not only expands the field of vision for diagnosis, but also improves the efficiency of diagnosis. So, the following types of endoscopic diagnostics of LC are distinguished:

1. White light bronchoscopy (WLB). It is mainly used for early detection and diagnosis of central LC, and the diagnosis rate can reach more than 95% in detecting high-grade dysplasia or worse. However, for some mucosal, submucosal early lesions and preneoplastic lesions, the diagnosis rate is very low.

2. Autofluorescence bronchoscopy (AFB). The operating principle of AFB is that different spectrum emerge in normal tissues, dysplasia and carcinoma in situ. As an important means for early detection of bronchial premalignant lesions, some studies have proposed that compared with sputum cytology, the sensitivity of AFB to detect hyperplasia and metaplasia was higher. Regardless of the results of sputum cytology, AFB can be recommended to high-risk patients. Moreover, when combined with spiral CT, sputum examination or WLB, AFB can obviously enhance the diagnosis rate of premalignant lesions and carcinoma in situ.

3. Narrow band imaging (NBI). NBI is an imaging technique that can visualize vascular morphology and mucosal structure. Analysis indicated that NBI has higher sensitivity (80%), specificity (84%), and diagnostic odds ratio (31.49%) than AFB when detecting premalignant airway lesions; NBI was also superior to WLB in detecting early and invasive LC, visual drawing of point blood vessel visual pattern highly supported adenocarcinoma histology of LC and tortuous vessels favored squamous cell cancer. Therefore, when examining lung-occupying lesions with NBI, not only can the diagnosis rate be improved, but also the pathological type can be evaluated initially. So, in the detection of early LC, NBI can be used as an effective method.

4. Endo-bronchial ultrasound (EBUS). EBUS combined with a special aspiration biopsy needle can be used for real-time ultrasound guided transbronchial needle aspiration biopsy, namely EBUS-TNAB. Compared with traditional diagnosis strategies, EBUS-TNAB can shorten the time for treatment decisions and may improve the survival of LC patients without increasing costs.

Now, regarding this pathology in our country at the republican level. The incidence of LC in the Republic of Kazakhstan in 2023 was 19.5 (30.6 - men; 8.8 - women) per 100 thousand population (20.1 - in 2022), which in absolute numbers amounted to 3873 people (3925 cases - a year earlier), taking the 2nd rank place in the general population, second, of course, only to breast cancer. The proportion of cases with a diagnosis established for the first time in life, recorded by oncological organizations was 10.5% (11.2% - in 2022). At the same time, 2974 men fell ill (proportion - 18.4%, 1 rank place), women - 899 (proportion - 4.3%, 9 rank place) [12]. The LC level is above the national average in 9 regions of the country: North Kazakhstan - 42.3 (the highest level); Karaganda - 36.5; East Kazakhstan - 34.6; Akmola - 32.6; Pavlodar - 32.5; Kostanay - 30.9; West Kazakhstan - 27.1; Abay - 24.3; Aktobe - 21.7. This indicator is below the national average in 11 regions: Turkestan - 8.4; (the lowest level); Mangistau - 9.5; the city of Shymkent - 10.6; Zhambyl - 11.5; Almaty - 13.6; Kyzylorda - 14.7; the city of Almaty - 15.1; Zhetysu - 15.9; the city of Astana - 16.4; Atyrau - 17.6; Ulytau - 18.1 regions per 100 thousand population. Mortality from this pathology was 10.3 (men - 16.7; women - 4.1) per 100 thousand population. In the structure of causes of death of persons of both sexes in 2023, this pathology continues to occupy a leading position (1st rank place), both in men, amounting to 23.7% (1626 people), and in the general population, amounting to 15.8% (2046 people). For women, this figure was 6.9% and 4th rank place.

The regions with the mortality rate from LC above the national average (10.3 per 100,000 population) are: East Kazakhstan - 22.4 (maximum level); Abay - 19.5; Pavlodar - 18.2; North Kazakhstan - 16.0; Karaganda - 15.5; Akmola and West Kazakhstan - 14.6; Kostanay - 11.6. The lowest rates were recorded in Turkestan - 4.0 (minimum level); Mangistau - 5.7; the city of Shymkent - 6.5; Atyrau - 6.7; Kyzylorda - 7.0; Almaty - 8.0; Aktobe - 8.4; Zhambyl - 8.9; Zhetysu - 9.2; in the city of Almaty - 9.4; Ulytau - 9.5; in the city of Astana - 10.1 regions per 100 thousand population [12].

The number of deaths from LC, not registered with oncological organizations and diagnosed posthumously in the Republic of Kazakhstan in 2023 amounted to 83 people; at the same time, the specific weight was 2.1% and this is the 5th rank place, as in the previous year.

At the same time, the one-year lethality rate was 37.2%, taking the 6th rank place among all nosological forms of malignant neoplasms. At the same time, the ratio between one-year lethality and neglect (stage IV) was, as in 2022, 1.4. At the same time, we recall that the farthest from "1" is the worst

ratio between the indicators of one-year lethality and neglect.

Now, regarding preventive examinations. It should be noted that during large-scale preventive examinations of the population in 2023, significantly more patients with malignant neoplasms were actively identified than in 2022. This is 25,193 patients versus 23,623 patients identified in 2022, i.e. +6.6%. This is due to the further abatement of the epidemiological situation with coronavirus and the increased availability of preventive care for the population. The proportion of patients identified during preventive examinations increased from 62.0% to 62.4% of the total number of patients identified per year.

As for LC, the early detection of this pathology during preventive examinations increased from 33.6 to 35.2%. The number of newly diagnosed LC patients registered with oncology organizations was 3,754 patients (3,821 patients in 2022). At the same time, the absolute number of LC patients identified during preventive examinations was 2,213 people (2,088 a year earlier), and the proportion was 59.0% and 54.6%, respectively. 779 people out of 2,213 are patients with stages I and II (in 2022 - 702 patients out of 2,088). The proportion of LC patients identified at early stages, as indicated above, was 35.2% versus 33.6 a year earlier.

Of course, when analyzing the epidemiological situation, early diagnosis indicators are very important issues. The regions where the proportion of patients with early stage I of the pathology in question is above the national average (9.5% - 8th place among the worst indicators together with malignant lymphomas) include the following: North Kazakhstan - 27.5% (the best indicator); Karaganda - 19.3%; Akmola - 13.4%; Ulytau - 12.5%; Astana city - 11.7%; Kyzylorda - 11.4%. West Kazakhstan region is on par with the national average. The lowest indicators of early diagnosis were recorded in Zhambyl and North Kazakhstan - only 2.2%; Atyrau - 2.4%; Aktobe - 3.0%; Abay - 4.2%; Mangistau - 5.5%; Almaty city - 5.6%; Kostanay - 6.0%; Almaty - 6.4%; Shymkent city - 7.1%; Pavlodar - 7.5%; East Kazakhstan - 8.2% and Zhetysu - 8.3% regions of the country [12].

Unfortunately, for a number of reasons, which include objective reasons, only every fourth patient with LC is detected in the early (I-II) stages of this pathology.

The regions where the proportion of patients with LC detected at stages I-II is above the national average (28.0% - 6th rank place "from the bottom") include the following regions. The uncontested leader is the North Kazakhstan region, where every second patient with this formidable disease is detected in the early stages (50.0%). Next come: Akmola - 36.2%; Aktobe - 35.1%; Kyzylorda - 35.0%; Zhetysu - 34.3%; Almaty city - 30.5%; West Kazakhstan - 29.1%; Astana city - 29.0% and Kostanay - 28.6% regions. Low rates of early diagnosis were recorded in Mangistau - 13.7% (the worst result in the country); Almaty - 15.8%; Turkestan - 16.2%; East Kazakhstan - 19.8%; Abay - 21.0%; Ulytau - 22.5%; Pavlodar - 24.7%; Karaganda - 25.2%; Shymkent city - 26.0%; Atyrau - 26.8% and Zhambyl - 27.3% regions [12].

As is clearly seen from the above data, there is a very large spread in early diagnostic rates across the country, from very good to dismal. Of course, it is necessary to take into account migration processes and other factors that affect early diagnostic rates, but nevertheless, the results obtained give reason not to stop there, both for oncologists and pulmonologists, general practitioners, since improving the rates of early diagnostics of malignant tumors, as one of the main postulates and one of the main tasks of medicine in general, continues to be relevant today. The proportion of stage IV LC among all nosological forms of malignant neoplasms was 26.5%. Unfortunately, in this indicator, LC is higher than all other localizations, second only to pancreatic cancer. At the same time, as was said above, the proportion of patients with LC detected at stages I-II was 28.0%, which indicates that the overwhelming majority of patients with LC were detected at locally advanced with loco-regional lesions - stage III of the disease. This stage was 45.5%, i.e. almost half of all patients, and we know what aggressive, often complex treatment is used for such a spread of the oncological process and what a disappointing prognosis is for these patients.

As for the average republican indicator of the proportion of stage IV (26.5%), against this background, Turkestan - 46.4%; Abay - 43.4% and Ulytau - 40.0% regions stand out. They are followed by: Akmola - 35.0%; Karaganda - 33.8%; the city of Astana - 33.2%; Zhetysu - 32.4%; Kostanay - 31.9% and other regions. The lowest proportion of stage IV LC was noted in the North Kazakhstan region, where this figure was 12.6% [12].

The morphological verification rate of the disease in the country was 77.2%. The leaders in this aspect with a 100% rate are Zhambyl and Ulytau regions; then come Almaty (92.6%), Atyrau (90.2%), the city of Shymkent (87.4%), the city of Astana (84.6%), Karaganda (84.5%), Turkestan (84.4%), Abay (83.2%), Kostanay (83.1%), East Kazakhstan (78.0%) regions. Aktobe region is on par with the national

average. This indicator is below the national average in the following regions: Kyzylorda (37.4% - the worst indicator in the republic), the city of Almaty (54.8%), Pavlodar (65.7%), Akmola (68.3%), Mangistau (71.2%), North Kazakhstan (74.8%), Zhetysu (75.0%) and West Kazakhstan (76.0%) regions [12].

The total number of patients with malignant neoplasms registered with specialized oncology organizations of the republic continued to grow and by the end of 2023 amounted to 218,186 people, with an increase of 6.0% compared to the level of the previous year (2022 - 205,822, +5.8%). The overall incidence rate of malignant neoplasms increased by 3.9%, from 1055.3 to 1096.4 per 100 thousand people. The growth of this indicator is due to both the increase in the incidence and detection of pathology, and the increase in the survival rate of cancer patients. In addition, statistical data on patients diagnosed with malignant neoplasms, who have been under observation for 5 years or more and continue to be observed in 2023, showed that the number of patients under observation by oncological organizations in Kazakhstan for over five years continued to grow and at the end of the reporting year amounted to 117,616 people, with an increase of 6.2% (2022 - 110,790 people, +6.6%) (form No. 7).

One cannot ignore such an important clinical aspect as the coverage in the Republic of Kazakhstan of special treatment for patients diagnosed with LC for the first time in their lives. In 2023, the number of hospitalizations for all nosological forms of malignant tumors in oncological organizations of the country amounted to 108,252 cases (2022 - 101,095), with an increase of 7.1% compared to the previous year, which is associated with a constant increase in the number of cancer patients, improvement of the standardization of oncological care, and the development of palliative and restorative services. At the end of 2023, the absolute number of patients with LC who completed specialized treatment was 1,448 people, continuing treatment - 1,102 patients. In percentage terms, the following results were obtained by methods and types of treatment. Only 21.3% of patients received surgical treatment, only radiation - 4.6%, only drug treatment - 25.0%, combined - 3.2%, complex - 38.0% and chemo-radiation - 5.6%.

Further, regarding the five-year survival rate of patients. As for LC, at the end of 2023, 7,119 people or 35.8 per 100 thousand of the population were registered with the dispensary. At the end of 2022, there were 6,702 patients or 34.4 per 100 thousand of the population, respectively.

At the same time, the mortality rate of the observed contingents in 2023 decreased compared to the previous year and amounted to 28.7% in 2023 (31.6% in 2022).

The five-year survival rate of patients with LC was 55.4% in 2023 and 55.3% in 2022 [12].

Summarizing the above, we can conclude that LC, along with breast cancer, continues to firmly occupy a leading place from year to year among all existing malignant tumors of other localizations. At the same time, taking into account a number of factors, the indicators of early diagnosis do not allow oncologists to "sleep peacefully", since the locally advanced stage III, which significantly prevails over all stages, in addition to the prevalence itself, gives a large number of complications due to the location of vital centers and tissue structures near the primary focus and locoregional metastases. Variability and veiling of symptoms, their similarity with various non-core processes, leads to neglect of the disease. All this requires both oncologists and, first of all, primary health care workers and, of course, pulmonologists, phthisiologists to increase the level of oncological alertness, inform the population about early symptoms that may indicate this pathology or the onset of proliferative changes and conduct high-tech diagnostic measures, including for the purpose of differential diagnosis and, as a result, timely treatment. People from the risk group are recommended to visit a pulmonologist annually and, if necessary, undergo an examination. Epidemiological assessment of the situation with LC in our country suggests that there are sometimes significant differences in the regions not only in incidence rates, but also in the parameters of early diagnosis and mortality from this pathology. In connection with the above, this pathology continues to be a serious problem of modern clinical oncology.

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Pedagogical sciences

METHODOLOGY OF FORMATION OF PROJECT ACTIVITY OF STUDENTS IN TEACHING BIOLOGY

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Abstract

The methodology of forming project activities in teaching biology is an innovative approach aimed at enhancing student engagement, critical thinking, and the application of biological concepts to real-world problems. Project-Based Learning provides a student-centered framework that encourages active participation, collaboration, and problem-solving through hands-on projects. In the context of biology education, this methodology involves selecting relevant topics, facilitating research, conducting experiments, and creating final deliverables such as reports, presentations, or models. Key components include planning, group formation, data collection, experimentation, and evaluation through both formative and summative assessments. Technology integration, peer collaboration, and community involvement further enrich the learning experience. The benefits of this approach include fostering a deeper understanding of biology, developing transferable skills like teamwork, communication, and scientific inquiry, and enhancing students' motivation to learn. Ultimately, project-based activities not only deepen biological knowledge but also prepare students with essential skills for future academic and professional pursuits.

Keywords: learning activities, project activities, educational and research work, the ability to see a problem, raise questions, put forward hypotheses, explain, prove, defend one's ideas, explain, classify, master the methods of scientific knowledge, conduct experiments, draw conclusions and conclusions.

Introduction.

One of the ways of creative perception of modern sciences is systematic teaching and research-project work. Competently conduct research can not only a person engaged in science professionally, but also someone who is still in school. The current stage of development of society takes place in conditions of hypercompetition. At the same time, the following are taken as the most significant factors of competitiveness: the availability of qualified, creatively thinking personnel; ability to organize their creative activity; willingness to accept an innovative idea and create conditions for its implementation. However, in a modern school, most of the knowledge is presented in a ready-made form and does not require additional search efforts, and the main difficulty for students is the independent search for information, the acquisition of knowledge. Therefore, one of the most important conditions for increasing the effectiveness of the educational process is the organization of educational research activities and the development of its main component - research skills, which not only help schoolchildren to better cope with the requirements of the program, but also develop their logical thinking, create an internal motive for learning activities in general. When studying biology, the main types of educational activities include the student's ability to characterize, explain, classify, master the methods of scientific knowledge, conduct experiments, draw conclusions and conclusions. Practice shows that one of the ways of creative perception of modern sciences is systematic research work. In this regard, the problem of organizing educational and research activities of students in the classroom and outside of school hours becomes relevant. State educational standards suggest the possibility of implementing currently relevant competency-based, systemic-activity approaches that define a number of tasks for teaching biology. One of the tasks is to master the ability to creatively solve educational and practical problems, independently perform various research work, and participate in project activities. This is connected with the introduction of methods and technologies into the practice of educational institutions based on the research activities of students. School graduates must master the components of research, including the ability to see the problem, raise questions, put forward hypotheses, explain, prove, defend their ideas. When teaching students research activities, the following tasks are set:

- formation and development of creative abilities of students;
- development of skills and abilities in posing problems and finding ways to solve them;
- development of individual responsibility for their actions, decisions and actions; - development of

the student's communication skills. The variety of objects and processes studied in biology lessons provides great opportunities for research activities, during which students learn to express their thoughts, work individually, in a group and in a team, construct direct and feedback. During the research work, each student has the opportunity to realize himself, apply his knowledge and experience, and feel success. In the course of work on educational research, it is possible and advisable to develop the following research skills: understanding the essence of the problem and formulating a problematic issue, formulating and substantiating a hypothesis, defining research objectives, selecting and analyzing literature data, conducting an experiment or observation, recording and processing results, formulating conclusions. As well as the development of such communication skills as organizing intra-group cooperation, joint development of methods of action, public presentation of work. Research methods. The use of the research method implies the following stages of organizing educational activities: determining the general topic of research, the subject and object of research; identifying and formulating a common problem; formulation of hypotheses; determination of methods for collecting and processing data in support of the hypotheses put forward; data collection; discussion of the obtained data; hypothesis testing; formulation of concepts, generalizations, conclusions; application of conclusions.

1. Determination of the general topic of research, subject and object of research. When choosing a topic, social, cultural, environmental, economic and other significance is of great importance. The outlined idea can be realized only after consideration in a certain system of knowledge, a social phenomenon, an economic problem, etc. That is, an idea can pull along a whole series of interrelated projects that make up a single topic that it is advisable to consider, analyze, consistently study, deeper and deeper delving into the problem, considering its various aspects.

2. Identification and formulation of a common problem. Students are presented with a number of problems, questions, the discussion of which leads to the next step - the formulation of a general problem on the basis of particular ones. Discussion of the relevance and novelty of the research helps to solve the formulated problems.

3. Formulation of hypotheses. Students, with the help of a teacher, formulate a research hypothesis, which later serves as a guideline in the search for the necessary information. For example, a hypothesis may correspond to one or more of the problem questions discussed earlier. Usually hypotheses are formulated in the form of certain relations between two or more events, phenomena.

Purpose of the study.

When the problem is defined, the subject, object of research are outlined, the hypothesis is formulated, you can start writing an introduction to future research. For him, the figures of speech given in the table can be recommended. Involving students in research, it is necessary, first of all, to rely on their interests. Everything that is studied should become personally significant for the student, increase his interest and level of knowledge. Research activities should arouse a desire to work, and not repel with their complexity. Teacher and student together must discover something. Then the attitude of students to the experiments will be thoughtful and meaningful. They themselves will begin to express a lot of hypotheses and offer different options for explaining what they saw. Here the teacher, as a more knowledgeable experimenter, will be able to analyze the results obtained together with them, explain their essence, causality and find answers. Research activities under the guidance of a teacher allow students to:

- master essential scientific concepts, ideas;
- independently identify problem situations, find ways to resolve them;
- Accurately describe facts, phenomena using generally recognized technology;
- acquire the skill of selecting facts according to their essential characteristics;
- group facts, signs in accordance with general scientific rules;
- to analyze the facts and phenomena, to isolate from them the general and uniform, accidental and natural;
- build evidence and give a refutation. When writing a research paper, students develop the skills

to:

- analyze, systematize (analysis is a way of knowing an object by studying its parts and properties);
- compare (comparison is a way of knowing by establishing similarities and differences);
- generalize and classify (generalization is a way of knowing by defining common essential features);

- define concepts (a concept is a word or phrase denoting a separate object or a set of objects and their essential features);
- prove and refute (proof is a reasoning that establishes the truth of a statement by citing previously proven statements).

Refutation is a reasoning aimed at establishing the falsity of a statement put forward). By participating in research work, students learn ready-made forms of social life, acquire their own social experience, take an active life position, which helps to achieve positive self-realization. The skills and abilities acquired in the process of creative activity will allow students to feel attached to culture and science, able to actively express themselves in the labor market, freely dispose of educational capital. The advantage of the research method of organizing educational activities is instilling in students the skill of cooperation. Participants in research activity are not limited to personal interests, they learn to see the problems and interests of their partners and understand that the results of their research will be used to analyze the data obtained and formulate conclusions. It would be wrong to say that, using the research method of teaching, students imitate the work of scientists - they really carry out scientific research if the problems, topic and goals of the work are correctly defined. Such research may be significant in terms of contribution to science or drawing public attention to a particular problem. Therefore, in order to form a holistic, harmonious and proactive personality of the pupil in the learning process, the research method should be used as often as possible.

The methodological literature offers an algorithm for performing research work in a certain sequence: 1) the formulation of the topic

2) formulation of the purpose and objectives of the study

3) conducting a theoretical study;

4) experimental verification;

5) analysis and presentation of the results of scientific research;

6) implementation and effectiveness of scientific research results;

7) public presentation of works at scientific and practical conferences.

Types of research activities in the lesson

The structure of research activities is defined as follows: Search activity —> analysis —> evaluation —> forecasting the development of the situation —> actions —> search activity. Based on this, the following types of research can be used when organizing the research activities of middle-level students. Solving creative biological problems. Elements of the theory of inventive problem solving (TRIZ) are used to successfully solve biological problems. TRIZ has a large number of tricks and methods that help create a solution and "extract" the solution from the subconscious. 1. Reception "On the contrary" He recommends that instead of a direct action dictated by the conditions of the problem, try to carry out the reverse action, change the generally accepted solutions to the reverse ones. For example: There are very tasty chocolate sweets - "bottles with syrup". In their manufacture, they encounter a contradiction: – The sweet jelly-like syrup needs to be hot so that it can be easily poured into a chocolate bottle, but then the chocolate melts. - If the syrup is cold, then the chocolate does not melt, but it is very difficult to pour it. What to do? They do the opposite: the syrup is not heated, but frozen in the form of a bottle, and the chocolate is made liquid and the bottle is dipped into it. 2. Reception "Turn harm into favor." This is a difficult, but at the same time wise technique. He requires to know the system well, to know what is bad in it, to try to turn harm into good. For example: At present, the number of working industrial enterprises and agricultural enterprises has sharply decreased. This is bad. So what's so good about it? Answer: The ecological situation in many regions has become noticeably better. Charles Darwin was sick a lot as a child. This is bad. So what's so good about it? Answer: This tempered his will, and he gave humanity a new scientific concept of life on Earth.

Theoretical Express Research.

Theoretical express studies are focused on the study and generalization of facts, materials contained in various sources. The topics of such research should allow studying a variety of objects in their real environment, in action, provide a lot of material and allow you to see a lot of topics for your own research, building various hypotheses. Students in grades 5-6 successfully cope with this form of research. So, when studying the topic "Adaptation of animals and plants to environmental conditions", the children, using the materials of the textbook, get acquainted with how cacti, camel thorn are adapted to living in arid conditions, how penguins and pinniped mammals are adapted to living in terrestrial-air and aquatic environments. Possible research topics: "Adaptation of steppe plants to arid habitat conditions", "Peculiarities of insectivorous plants", "Plant adaptations for pollination", "Insect adaptations for collecting pollen and nectar". Based on the results of the research, the authors make

brief reports, necessarily containing conclusions. In grades 7-9, theoretical studies are drawn up in the form of an abstract containing a much larger amount of information in the chosen area of research. In the process of searching for information for writing an essay, the student acquires the skills of working with catalogs in the library, classifying and systematizing material, getting acquainted with the basics of designing text documents, learning to highlight the main thing, analyze data and draw conclusions. Working on an essay helps to understand the topic deeper, to assimilate it, develops the skills of organization and purposefulness necessary when studying any subject.

Conducting an educational experiment.

This includes all laboratory and practical work in biology, from the 6th grade to the 11th grade. Performing laboratory work, the student receives subjectively new knowledge. When performing these works, students acquire the skills of observing, fixing and correctly formatting the results of observations, analyzing the data obtained, and drawing conclusions. In the 6th grade, when conducting laboratory work, I organize a small study using a digital microscope. For example, the study of the structure of the mold fungus *mukor*. A problematic issue in the study of a mold fungus may be to find a difference and identify its cause between the considered temporary micropreparations of a mold fungus that develops on a substrate in the initial period of development and during maturation of spores. Students perform work at their workplaces using a light microscope. The teacher demonstrates micropreparations using a digital microscope.

Conclusion

A learning experiment is one of the productive teaching methods. Research-competitions They are also effective in the classroom. For example, a competition for the best cheat sheet. Students in grades 10-11 are given this opportunity. The teacher prepares the text in advance. This text can be a textbook section: "The Theory of the Origin of Life on Earth", "Origin of Species", "Fundamentals of Cytology", etc. When compiling a cheat sheet, the attention of students becomes selective, students try to choose the text that is the main, fundamental of the whole topic. Separate plots of the cheat sheet are united by logical connections. This method teaches students to rationally use scientific literature. Non-traditional lessons (lesson-presentation "Ancient reptiles", lesson-discussion "The origin of man") Students prepare for the discussion on their own. On the topic of discussion, they explore not only educational literature, but also additional ones, in order to show their significance in the issue under discussion. When preparing messages, students often look for "tricky" questions to participate in the discussion.

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THE ROLE OF ONLINE TOOLS IN ENHANCING FOREIGN LANGUAGE COMMUNICATIVE COMPETENCE

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Abstract

This literature review explores the role of online tools in enhancing communicative competence in foreign language education, particularly in secondary schools. Communicative competence, defined as the ability to effectively use language in various contexts, is crucial for students navigating globalized environments. While traditional methods often focus on grammar and vocabulary, online tools provide dynamic and interactive opportunities to develop practical communication skills. The aim of this review is to examine how technologies like ChatGPT, ELSA Speak, and Busuu improve language proficiency, specifically in speaking and listening, through personalized, engaging, and adaptive learning experiences. Key findings indicate that online tools facilitate vocabulary acquisition, pronunciation accuracy, and conversational fluency by leveraging real-time feedback and contextual learning. Podcasts, for example, offer authentic exposure to language, enriching listening skills and contextual vocabulary. However, challenges such as teacher preparedness and unequal access to technology limit the full potential of these tools. Integrating online resources through frameworks like TPACK ensures that technology complements pedagogical and content goals effectively. The review concludes that online tools, despite infrastructural and training barriers, hold transformative potential to foster communicative competence and improve learner outcomes when combined with strategic implementation and support.

Keywords: *communicative competence, online tools, speaking skills, listening skills, TPACK, secondary education, artificial intelligence.*

Introduction

The concept of communicative competence, encompassing the ability to effectively use language in diverse contexts, is central to foreign language education (Canale & Swain, 1980). In secondary education, fostering communicative competence equips learners with essential skills for global communication and cross-cultural engagement. Traditional language teaching methods often focus on grammatical accuracy and vocabulary acquisition but may fall short in developing the interactive and practical communication skills required for real-world application (Nthutang, 2024).

The integration of online tools into language education has shown significant potential to address these gaps by offering interactive, adaptive, and personalized learning experiences. Tools like ELSA Speak and Busuu leverage AI to enhance pronunciation and conversational fluency, fostering skills that are critical in professional and academic settings (Nthutang, 2024). Similarly, asynchronous platforms such as ChatGPT and Copilot provide opportunities for students to practice interpersonal communication, self-disclosure, and composure in simulated contexts, creating a safe environment for experimentation and growth (Kovačić & Bubaš, 2024).

These technologies not only support the development of foundational skills such as listening, speaking, and reading but also enable students to engage with language in dynamic and meaningful ways. By incorporating multimodal elements and real-time feedback, online tools cater to diverse learner profiles and enhance engagement (Abdullayeva, 2024). Despite challenges such as technological accessibility and teacher readiness, the increasing integration of online tools into secondary education highlights their transformative potential in reshaping language instruction (Rudik & Onyshchuk, 2024).

This review explores the role of online tools in enhancing foreign language communicative competence in secondary education, focusing on their impact on interactional skills, motivation, and overall language proficiency. By synthesizing recent studies, this review aims to provide insights into the opportunities and challenges associated with using online tools for language education.

TPACK framework

The Technological Pedagogical Content Knowledge (TPACK) framework provides a comprehensive model for understanding the integration of technology into education. It emphasizes the interplay

between three core components: content knowledge (CK), pedagogical knowledge (PK), and technological knowledge (TK). This interplay is particularly relevant in language education, where integrating online tools requires careful alignment with curriculum goals and instructional strategies (Toding et al., 2024).

In the context of language education, content knowledge refers to the teacher's expertise in linguistic elements such as grammar, vocabulary, and pronunciation. Pedagogical knowledge involves understanding effective teaching strategies, such as collaborative learning or scaffolding, to enhance communication skills. Technological knowledge entails the ability to select and utilize online tools effectively to support language learning (Nthutang, 2024). When these domains intersect, as described by the TPACK framework, educators can create dynamic learning experiences that foster communicative competence.

For example, tools like ChatGPT and ELSA Speak, when integrated through the TPACK lens, allow teachers to enhance speaking and listening activities by providing real-time feedback and personalized language practice (Kovačić & Bubaš, 2024; Abdullayeva, 2024). Similarly, tools like Busuu support grammar and vocabulary acquisition, which, combined with interactive teaching methods, help learners apply these skills in real-world scenarios (Nthutang, 2024).

The TPACK framework also underscores the importance of addressing challenges in technology integration, such as infrastructure limitations and teacher preparedness. For instance, while teachers may recognize the value of tools like Google Classroom or language learning apps, they may require additional training to align these tools with pedagogical goals effectively (Rudik & Onyshchuk, 2024).

By situating online tools within the TPACK framework, educators can design lessons that not only leverage technological innovation but also ensure these tools align with effective pedagogy and curricular objectives, ultimately enhancing language learning outcomes.

Blended learning

Blended learning plays a transformative role in language education by combining traditional classroom instruction with online tools to create a flexible and engaging learning environment. Abdullayeva (2024) highlights that this approach leverages the strengths of both methods, providing students with structured face-to-face interaction while enhancing learning with the interactivity and accessibility of digital platforms.

Blended learning is particularly effective in promoting active participation and autonomy among students. Online tools such as mobile apps and interactive platforms allow learners to practice grammar, vocabulary, and pronunciation at their own pace, complementing the guided instruction they receive in traditional classrooms (Abdullayeva, 2024). These tools also provide immediate feedback and gamified learning experiences, which motivate students and reinforce key concepts.

In addition, blended learning supports differentiated instruction by tailoring activities to individual learners' needs. For instance, digital resources can adapt to varying proficiency levels, helping both advanced and struggling students achieve their learning goals. Abdullayeva (2024) emphasizes that integrating these resources into classroom instruction enriches the learning experience and fosters critical language skills such as speaking and listening.

However, Abdullayeva (2024) also notes challenges, such as ensuring equitable access to technology and the need for teacher training to effectively implement blended learning models. Addressing these barriers is crucial to fully realize the potential of this approach in language education.

Impact of online tools on language skills

Online tools significantly enhance speaking skills by providing learners with interactive and personalized practice opportunities. Yakhyo qizi (2024) highlights that platforms such as virtual language labs and speaking-focused apps allow students to engage in simulated conversations and receive instant feedback on pronunciation and fluency. These tools create a safe space for learners to practice without fear of judgment, which is crucial for building confidence in oral communication. Similarly, Dhivya et al. (2024) emphasize that digital tools, such as AI-driven applications like ELSA Speak, use advanced speech recognition technology to evaluate and refine pronunciation, stress, and intonation patterns. This targeted feedback helps learners address specific weaknesses and improve their overall fluency. Furthermore, both studies underscore the role of these tools in fostering real-time interaction, enabling learners to apply their speaking skills in practical contexts. By bridging gaps in traditional classroom methods, online tools empower students to develop their speaking abilities effectively and confidently.

Podcasts are powerful tools for improving vocabulary and listening skills by exposing learners to authentic and contextually rich language use. According to Deepa (2024), podcasts provide access to diverse topics and real-world conversations, enabling students to learn new words in meaningful

contexts. This exposure helps learners understand not just the definitions but also the appropriate usage of vocabulary in everyday speech. Additionally, listening to podcasts enhances auditory comprehension as students become familiar with various accents, intonation patterns, and speech speeds, which are essential for effective communication. Deepa (2024) also emphasizes the self-paced nature of podcasts, allowing learners to replay and analyze segments, reinforcing language acquisition. By combining these benefits, podcasts serve as an engaging and flexible resource for developing both vocabulary and listening proficiency.

Advantages of online tools

Online tools offer significant advantages in language education, particularly in their ability to provide personalized learning experiences and foster student engagement. Nthutang (2024) highlights that online tools like interactive language apps and AI-driven platforms adapt to individual learners' proficiencies, offering tailored lessons and exercises. For instance, apps such as Duolingo and ELSA Speak analyze user performance and adjust the difficulty level to match their learning pace, ensuring that learners stay challenged without feeling overwhelmed. This personalization enhances motivation and helps address specific weaknesses effectively.

In addition to personalization, online tools also promote engagement through interactive and gamified experiences. Dhivya et al. (2024) note that features like real-time feedback, leaderboards, and rewards in platforms such as Quizlet and Kahoot turn language practice into a dynamic and enjoyable activity. These tools encourage active participation and sustained interest, making language learning more appealing to students who might otherwise find traditional methods monotonous. By combining tailored instruction with engaging content, online tools create an effective and immersive environment for language acquisition.

Challenges and limitations

The integration of online tools in language education is not without its challenges, with teacher preparation and access issues being significant barriers. Tessema (2024) highlights that many educators lack the necessary training to effectively utilize digital tools in their teaching practices. Insufficient professional development opportunities and unfamiliarity with emerging technologies often result in underutilization of tools such as virtual language labs and AI-driven platforms. This gap between technological advancements and teacher readiness can diminish the potential benefits of online resources in fostering language learning.

Access issues further compound these challenges, as outlined by Rudik (2024). Limited infrastructure, such as unreliable internet connectivity and inadequate access to devices in under-resourced schools, restricts the equitable adoption of online tools. Even when schools implement digital learning programs, disparities in students' home access to technology can create uneven learning opportunities. Rudik (2024) also points out that resolving these challenges requires systemic investment in infrastructure and targeted support for teachers to develop the skills needed to integrate online tools effectively. Addressing these barriers is crucial for ensuring that the benefits of online tools are accessible to all learners.

Conclusion

The literature review reveals that online tools play a pivotal role in enhancing communicative competence in language education, offering significant benefits while presenting notable challenges. Among the benefits, online tools such as ChatGPT, ELSA Speak, and Busuu provide personalized and interactive learning experiences, which are essential for developing speaking and listening skills (Nthutang, 2024; Dhivya et al., 2024). These tools enable learners to practice language use in real-life contexts, receive instant feedback, and build confidence in their communicative abilities (Yakhyo qizi, 2024). Additionally, podcasts and multimedia applications contribute to vocabulary enrichment and auditory comprehension by exposing learners to authentic language in diverse contexts (Deepa, 2024).

However, challenges such as teacher preparedness and unequal access to technology hinder the effective integration of these tools. Teachers often lack the training to utilize advanced digital resources, leading to inconsistent implementation in classrooms (Tessema, 2024). Access disparities, including inadequate internet connectivity and limited device availability in under-resourced settings, further exacerbate the issue, creating barriers to equitable learning (Rudik, 2024).

Despite these challenges, the review underscores the transformative potential of online tools in bridging gaps in traditional methods, promoting learner engagement, and fostering communicative competence. Addressing the barriers through targeted teacher training and infrastructure investment is essential to maximize the benefits of these technologies in language education.

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THE ROLE OF DIFFERENTIATED LEARNING IN THE DEVELOPMENT OF FOREIGN LANGUAGE COMMUNICATIVE COMPETENCE AMONG UNIVERSITY STUDENTS

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Introduction

Differentiated learning has become a cornerstone in modern educational methodologies, particularly in higher education, where diverse student needs and abilities require tailored approaches. This is especially critical in the context of foreign language education, where communicative competence is a primary goal. Communicative competence encompasses not only linguistic knowledge but also the ability to use language effectively in diverse contexts. Differentiated learning strategies provide a framework for addressing individual differences in language proficiency, learning styles, and motivation, ensuring that each student has the opportunity to succeed.

This paper explores the role of differentiated learning in fostering foreign language communicative competence among university students. It investigates how tailored instruction can enhance skills such as listening, speaking, reading, and writing while addressing cultural and contextual nuances essential for effective communication.

Differentiated Learning: Theoretical Framework

Differentiated learning is grounded in the understanding that students vary in their readiness, interests, and learning profiles. According to Tomlinson (2014), differentiation involves modifying content, process, products, and the learning environment to meet diverse needs. In foreign language education, this approach can be implemented by:

- Grouping students by proficiency levels: Allowing tasks to align with their current skills.
 - Incorporating multiple teaching methods: Such as visual aids, auditory resources, and interactive activities.
 - Using adaptive assessments: Offering formative feedback tailored to individual progress.
- Research by Richards and Rodgers (2014) highlights that differentiated strategies improve learner engagement and motivation, crucial for developing communicative competence.

Differentiated Strategies in Developing Communicative Competence

1. Listening Skills

Differentiated activities, such as using audio materials at varying difficulty levels, help students improve comprehension. Podcasts, for example, expose learners to authentic language use, accents, and real-life conversations (Mendelsohn, 2016). Beginner students might focus on slow-paced materials, while advanced learners tackle complex dialogues.

2. Speaking Skills

Role-playing, group discussions, and peer feedback sessions can be adjusted to suit individual confidence and ability levels. By creating a safe space for experimentation, students are more likely to participate actively, thus improving fluency and accuracy.

3. Reading and Writing Skills

Tailored reading materials that match students' vocabulary levels ensure comprehension while gradually challenging them. Similarly, writing exercises such as reflective journals or collaborative tasks allow for personalized feedback and growth.

4. Cultural Competence

Differentiated learning also integrates cultural contexts into language education. For instance, students might engage with texts or media from different regions where the target language is spoken, fostering a deeper understanding of cultural norms and practices.

Impact of Differentiated Learning on Communicative Competence

Differentiated learning has proven effective in enhancing communicative competence through personalized engagement. Studies by Godwin-Jones (2017) show that students who receive instruction tailored to their unique needs demonstrate greater confidence and ability in language use. This approach:

- Builds motivation and reduces language anxiety.
- Promotes active participation in authentic communication scenarios.
- Encourages self-regulation and lifelong learning habits.

Challenges and Solutions

Despite its benefits, implementing differentiated learning can be resource-intensive and demanding for educators. Key challenges include:

- *Time constraints: Preparing individualized materials requires additional effort.*
- *Classroom management: Ensuring all students are equally engaged in diverse activities.*

To address these issues, educators can use technology, such as language learning apps and platforms, to automate differentiation. Collaborative teaching and ongoing professional development also support effective implementation.

Conclusion

Differentiated learning plays a pivotal role in developing foreign language communicative competence among university students. By addressing individual differences, it creates an inclusive and effective learning environment that promotes linguistic and cultural proficiency. While challenges exist, strategic planning and resource utilization can ensure successful implementation. This approach not only prepares students for academic success but also equips them with the skills necessary for real-world communication.

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APPLYING THE PROJECT METHOD TO ENHANCE STUDENT SKILLS IN FOREIGN LANGUAGE ACQUISITION

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Abstract

Project-Based Learning (PBL) has emerged as a transformative educational approach, proving particularly effective in university settings for fostering critical thinking, problem-solving, and self-directed learning. Unlike traditional lecture-based methods, PBL shifts the educational paradigm from passive reception to active engagement, compelling students to become practitioners in their own learning process. This methodology not only promotes deeper understanding and retention of material but also cultivates essential 21st-century skills such as collaboration, communication, and digital literacy.

Keywords: Project-based learning (PBL), active learning, student-centered learning, collaboration, critical thinking, problem-solving, inquiry-based learning, motivation, assessment, teamwork, learning by doing, engagement, 21st century skills, constructivist approach, reflection, peer learning.

Project-based learning is becoming an important part of how universities teach students. Researchers believe that PBL can play a strong role in shaping the mindset of middle-level students. Let's explore why this method is getting so much attention and how it can affect learners.

Firstly, what is PBL? It's a teaching method where students work on real-world projects over a period of time. Instead of just listening to lectures, students actively engage with the material. They explore solutions, ask questions, and even make mistakes. Some researchers suggest that this hands-on approach helps students to understand the subject better and remember what they learn.

One important benefit of PBL is that it helps students become more independent thinkers. When students work on projects, they have to make decisions on their own and solve problems. This kind of learning can help students to develop their own opinions and viewpoints. For middle-level students, forming an independent opinion is crucial. It is at this point in their education that they start to make decisions about their future careers and personal interests.

Moreover, PBL encourages teamwork and collaboration. In today's working environment, being able to work well with others is very important. By working in groups on projects, students learn how to share ideas and listen to others. Researchers argue that these skills are not only important in school but also in professional and personal life.

However, some researchers also note a few challenges with PBL. Not all students are used to this style of learning. Some may feel uncomfortable with the freedom they are given, preferring more traditional methods. Also, PBL requires a lot of resources and preparation. Teachers have to carefully design projects that are meaningful and align with curriculum goals.

Despite these challenges, researchers generally see the positive impact of PBL on middle-level students. It supports the development of a student's subjective position—how they see themselves in the context of their learning and future roles. By learning through real-world projects, students not only understand content better but also learn more about themselves.

Project-Based Learning: Boosting Reading and Social Studies Competence

In teaching and learning English Project-Based Learning (PBL) helps improve reading and social studies skills, especially for students from low-income backgrounds. PBL allows students to work on real-world projects, which makes learning more engaging and active.

One of the key benefits of PBL is how it increases student engagement. Unlike traditional lessons, where students passively listen to lectures or complete worksheets, PBL involves hands-on activities that encourage them to take an active role in their learning. For example, instead of reading about environmental issues from a textbook, students might work on a project to clean up their schoolyard. They research topics like recycling, read articles about pollution, and write letters to local organizations asking for support. This kind of active involvement keeps students interested and motivated.

PBL also promotes active learning, where students learn by doing. For instance, in a social studies project about world cultures, students could create a cultural festival. Each group researches a different country, prepares food, designs costumes, and presents their findings to the class. Instead of just memorizing facts, students actively use their knowledge to create something meaningful. This hands-on approach helps them better understand and remember what they learn.

In reading, PBL encourages students to interact with texts in a deeper way. If students are creating a newspaper about a historical event, they actively analyze primary sources, such as letters or speeches. This helps them not only understand the content but also develop skills like summarizing, evaluating, and critical thinking. For example, while working on a project about the Civil Rights Movement, students might read Dr. Martin Luther King Jr.'s speeches, discuss the meaning, and use this understanding to write articles for their project.

PBL is particularly effective in making students feel responsible for their learning. When they know their project will be presented to others or used to solve a real-world problem, they are more likely to stay focused and put in effort. For example, in one school, students worked on a project to improve their community park. They actively participated by meeting with local officials, presenting their ideas, and organizing a cleanup day. This not only taught them about civic responsibility but also kept them highly engaged because they could see the impact of their work. Research shows that PBL significantly improves student engagement. In low-income schools, where students often face challenges that can affect their focus and motivation, PBL provides a way to make learning more exciting and relevant. Students feel a sense of ownership and pride when they complete a project, which boosts their confidence and encourages them to stay involved in their education.

I found some interesting information about how Project-Based Learning (PBL) can enhance self-efficacy beliefs among middle-level students, especially false beginner language learners. The studies suggest that PBL is particularly effective in helping students who may have had previous exposure to a language but lack confidence in using it.

PBL works by creating opportunities for students to actively engage with material they've already learned, but in a meaningful and practical context. For example, instead of traditional drills or rote memorization, students might participate in a group project where they design and present a travel brochure in the target language. This requires them to revisit vocabulary and grammar they've learned before, but in a way that feels purposeful and relevant. One of the key findings is that PBL helps increase students' confidence in their language abilities. By working on real-world tasks, students can see tangible results from their efforts, which boosts their belief that they are capable of succeeding in the language. This is particularly valuable for false beginners, who may feel discouraged by their perceived lack of progress in traditional learning settings. For instance, completing a project such as a role-play or a cultural presentation allows students to practice speaking and writing in a low-pressure, collaborative environment, making them more comfortable with the language.

Additionally, PBL has been shown to improve motivation. When students are actively involved in hands-on projects, they feel a greater sense of ownership over their learning. This sense of control is essential for building self-efficacy, as students begin to associate their efforts with their success. For example, a project where students create a short film in the target language not only reinforces their existing knowledge but also encourages them to go beyond and explore new vocabulary and expressions, driven by the excitement of completing their project.

Overall, this approach demonstrates that PBL can be a highly effective tool for helping middle-level, false beginner students rebuild their confidence and motivation in language learning, setting a strong foundation for further development.

Project-Based Learning: A Pathway to Student-Centered Education

Recent findings highlight how Project-Based Learning (PBL), as a learner-centered approach, effectively enhances student motivation and autonomy. This method focuses on placing students at the center of the learning process, allowing them to take ownership of their projects and actively engage in meaningful tasks. One of the key benefits of PBL is its ability to improve language skills. Instead of learning passively, students use the target language in real-world contexts. For example, they might create a podcast or write a report about a topic they are passionate about, which allows them to practice vocabulary, grammar, and communication skills in a practical and engaging way. This hands-on involvement helps learners develop fluency and confidence in using the language. PBL also encourages collaboration, as students often work in groups to complete their projects. This teamwork helps them develop important social skills, such as negotiation, sharing ideas, and problem-solving. For instance, while working on a project to create a class magazine, students must discuss and agree on topics, divide

responsibilities, and support one another in achieving their goals. These collaborative experiences mimic real-world scenarios, preparing students for similar tasks outside the classroom. Another significant benefit of PBL is the development of critical thinking skills. Since students are required to plan, research, and present their projects, they engage in higher-order thinking processes. For example, in a project about environmental issues, students might analyze data about local pollution, compare solutions from other regions, and present a strategy tailored to their community's needs. This kind of analysis and decision-making goes beyond rote learning, fostering deeper understanding and creativity. What makes PBL particularly effective is how it boosts motivation and autonomy. When students have the freedom to choose their project topics and how they approach them, they feel more invested in their learning. This sense of control not only keeps them engaged but also encourages them to take responsibility for their progress, which is crucial for lifelong learning. Overall, PBL stands out as an effective method for enhancing language skills, fostering collaboration, and developing critical thinking, all while promoting motivation and autonomy among learners.

Project-Based Learning (PBL) is more than just an instructional approach; it's a powerful tool for equipping students with the skills they need to thrive in the 21st century. In a world that demands critical thinking, collaboration, adaptability, and technological proficiency, PBL offers a practical framework for preparing students to meet these challenges.

One of the most compelling aspects of PBL is its focus on real-world applications. Unlike traditional rote learning, which often emphasizes memorization, PBL immerses students in projects that mimic real-life scenarios. For example, a project on renewable energy might involve designing a solar-powered device, requiring students to research, plan, and present their findings. This hands-on approach ensures that students not only acquire knowledge but also understand how to apply it, fostering critical thinking and problem-solving skills. Collaboration is another cornerstone of PBL that aligns with 21st-century workplace expectations. In a typical PBL environment, students work in teams to complete their projects. This requires them to share ideas, manage tasks, and resolve conflicts, which are essential interpersonal skills for modern careers. By learning to navigate group dynamics early, students become better communicators and team players.

Furthermore, PBL promotes digital literacy, a vital skill in today's technology-driven world. Many PBL activities involve using digital tools for research, creating multimedia presentations, or coding solutions. This exposure helps students become comfortable with technology and prepares them for the evolving demands of digital workplaces.

Adaptability and resilience are also nurtured through PBL. Unlike traditional education, where success is often defined by a single correct answer, PBL encourages students to explore multiple pathways to solutions. When projects don't go as planned, students must reflect, adapt, and try again. This iterative process mirrors real-world problem-solving and builds a growth mindset.

Finally, PBL emphasizes self-directed learning, which is crucial for lifelong education. By giving students ownership of their projects, PBL fosters autonomy and intrinsic motivation. Students learn to set goals, manage their time, and evaluate their progress—skills that are invaluable in both professional and personal contexts. In reflection, PBL is not just about academic achievement; it's about shaping individuals who are ready to contribute meaningfully to society. By fostering critical thinking, collaboration, adaptability, and technological fluency, PBL equips students with the tools they need to navigate the complexities of the 21st century. It is a transformative approach to education that bridges the gap between classroom learning and real-world application, preparing students not just to succeed in the future but to shape it.

Project-Based Learning: A Catalyst for Improved Problem-Solving Skills

Recent studies demonstrate that Project-Based Learning (PBL) significantly enhances problem-solving skills compared to conventional teaching methods. In PBL, students are tasked with tackling complex, real-world problems, which allows them to apply theoretical knowledge in practical contexts. This approach encourages active learning, where students explore, research, and work collaboratively to find solutions. By doing so, PBL fosters critical thinking, creativity, and adaptability—skills that are essential for effective problem-solving.

In conventional learning environments, students typically engage in passive learning, such as memorizing facts or following prescribed methods. While this may help students recall information, it does not fully cultivate the problem-solving skills needed for real-world situations. In contrast, PBL immerses students in the process of inquiry, where they must identify problems, hypothesize solutions, test those solutions, and refine their approaches based on feedback and evidence.

The collaborative nature of PBL also plays a critical role in enhancing problem-solving skills. Working in teams, students learn to communicate effectively, delegate tasks, and consider diverse perspectives, all of which are key elements in solving complex problems. Furthermore, PBL emphasizes self-directed learning, as students are given more autonomy to explore topics of interest and design their projects, which increases their engagement and motivation to solve problems creatively.

Additionally, PBL helps students develop a deeper understanding of the subject matter by engaging them in tasks that require both critical and analytical thinking. This method encourages students to think outside the box, adapt to new information, and approach problems from multiple angles. Over time, these experiences help students build resilience and persistence—qualities that are essential when facing difficult challenges in both academic and real-world contexts.

In contrast, traditional education systems, which often prioritize memorization and test-based learning, do not always foster the same level of critical thinking or problem-solving abilities. The hands-on, experiential nature of PBL ensures that students develop skills they can directly apply in their future careers and daily lives, making it a more effective approach for enhancing problem-solving skills than conventional methods.

Ultimately, PBL not only strengthens problem-solving abilities but also prepares students for the challenges they will face in the rapidly changing world, where creative thinking, collaboration, and adaptability are essential.

Conclusion

In conclusion, Project-Based Learning (PBL) has demonstrated significant potential in enhancing various academic skills, particularly in the areas of reading and social studies. Through the use of hands-on, inquiry-based projects, students not only engage with the material on a deeper level but also develop critical thinking, problem-solving, and research skills that are essential in today's fast-paced, information-driven world. Unlike traditional learning methods, PBL encourages students to take ownership of their learning process, fostering greater motivation, autonomy, and accountability. This active engagement with content helps students develop a more profound understanding of complex topics, as seen in reading comprehension and social studies where students synthesize information, analyze different perspectives, and communicate effectively.

Moreover, PBL's emphasis on collaboration and teamwork mirrors the real-world skills that students will need in their future careers, especially in diverse, multi-disciplinary contexts. The integration of project-based tasks in the classroom not only supports academic achievement but also nurtures soft skills, such as communication, collaboration, and leadership. The iterative, reflective nature of PBL also allows students to learn from their mistakes, fostering a growth mindset that enhances their problem-solving abilities over time.

In social studies, PBL facilitates the exploration of historical, cultural, and societal issues from multiple viewpoints, allowing students to better understand the interconnectedness of global events and local contexts. In reading, it supports comprehension by encouraging deeper exploration of texts and the integration of various sources to form a holistic understanding of a topic.

Ultimately, PBL represents a transformative shift from traditional, teacher-centered instruction to a more student-driven, collaborative learning environment. It prepares students for the challenges of the 21st century by equipping them with the skills necessary to solve real-world problems, think critically, and work effectively with others—skills that extend beyond the classroom and into their personal and professional lives. As such, PBL is an indispensable pedagogical approach for enhancing students' academic abilities and overall development.

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FORMATION OF COGNITIVE COMPETENCE OF HIGH SCHOOL STUDENTS IN ENGLISH USING INNOVATIVE TECHNOLOGY

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Abstract

This article addresses the challenges of developing students' cognitive competence in English at general education institutions through the use of innovative technologies, highlighting the significance of cognitive psychology.

Keywords: *Learner, english, english language teaching, cognitive competence, linguistic personality.*

INTRODUCTION

The contemporary social and cultural environment is marked by the widespread growth of multilingualism, making language acquisition, including foreign languages, a critical aspect of shaping a linguistic personality. Renowned scholar A.N. Shchukin asserts that "mastering a language involves not only learning linguistic units (language material) but also understanding the rules and methods for their application in communication."

Additionally, the positive role of the state in fostering the education of the younger generation and supporting comprehensive labor activities is increasingly emphasized in regulatory documents. These documents place significant focus on the quality of education and upbringing of youth, as well as aligning the local education standards with broader compatibility requirements.

The pursuit of innovative methods to enhance the quality of education is closely tied to modern market dynamics, which have increasingly raised the bar for educational content and the organization of the learning process. This has challenged the traditional knowledge paradigm of education, driving a shift toward a competency-based approach across the education system.

Currently, our country's education system is undergoing adaptation to innovative technological processes. High school students in general education institutions are being integrated into a communication and information environment. Authorities are paying particular attention to issues such as stimulating cognitive and mental activity in learning foreign languages (especially English), leveraging modern technology and tools, engaging in intercultural communication, and independently acquiring and processing information from diverse sources.

Graduates of general education institutions are now expected to possess strong language skills in English, develop foreign language competencies, and actively engage in social and cultural activities. These activities include participation in various meetings, events, Olympiads, and conferences, preparing them for active involvement in both academic and cultural spheres.

The formation of students' psychological qualities, their level of foreign language preparation, independent organization, cognitive and mental potential, and their ability to apply these skills in practical communication are critical components of language learning.

However, the modern education system often falls short in developing comprehensive linguistic abilities in high school students, despite the era's demand for cultivating a language personality equipped with universal linguistic and communicative skills. This gap underscores the importance of integrating modern technologies into education to prepare students as competent linguistic individuals in a dynamic and data-driven environment.

Such an educational framework should incorporate cognitive pedagogy that enables:

1. Preparing students in general education institutions to meet the rigorous demands of modern society, particularly in the context of teaching and learning English.

2. Aligning the process of learning a foreign language not solely with communicative objectives but with broader social relevance and established standards shaped by current socio-cultural conditions and the aspirations of the younger generation.

In line with these requirements, English language instruction in the general educational institutions of Kazakhstan begins in the 1st grade. Early engagement with foreign language materials is prioritized

throughout the learning journey. By addressing all levels of English instruction—phonetics, vocabulary, and grammar—based on normative standards, the integration of innovative technologies equips young learners with essential language skills. This foundation ensures that students are well-prepared to pursue further education in higher institutions.

It is widely recognized that world languages serve not only as primary tools for human communication but also as significant cognitive and intellectual resources. From this perspective, English language education in our country's general schools fosters two critical competencies in learners: understanding and speech (perception and reproduction). These core elements of speech activity—encompassing reading and writing—are vital for shaping a linguistic personality. In essence, mastering these components supports the development of cognitive-mental competence among students, enhancing their overall proficiency in English.

In other words, this approach serves as a direct method to enhance students' cognitive-mental competence, ensuring the smooth and effective process of communication in a foreign language.

From this perspective, the development of cognitive-mental competence in upper-grade students at general education institutions through English language learning, supported by information and communication technologies, holds significant practical value.

The challenges associated with effectively organizing the educational process to boost students' cognitive and mental engagement have been a focal point in the field of local pedagogy. Various aspects of fostering educational and cognitive activities, as well as enhancing students' thinking abilities, have garnered the dedicated attention of researchers and educators in our country.

The development of cognitive competence in high school students learning English is a pressing issue, as modern realities present a vast multicultural and multilingual landscape that fosters the successful career and professional growth of the younger generation.

In teaching English at general education schools, it is advisable to adopt an effective model for enhancing students' cognitive activity through the lens of "teaching cognitive-mental activity." This approach can be viewed as an integrative component based on the following principles:

- Cognitive-mental activity emphasizes the development of logical thinking skills in English among high school students.
- The educational process is restructured to align with the specific goals and objectives of foreign language learning.
- High school students are regarded as active participants in the English language learning process.
- Constructive collaboration and mutual cooperation between teachers and students are prioritized, following the "partnership" principle.
- The development of students' cognitive activity in English language teaching must be addressed within the framework of ongoing changes, including revising the content and components of "cognitive-mental teaching" and "cognitive activity." This process should be guided by specific criteria for its formation, with the introduction of methodological support and enhancements where necessary.
- The relevance of developing cognitive abilities in older students during English language classes lies in the modern reality of a vast multicultural and multilingual landscape, which supports their successful career and professional advancement.
- The formation of cognitive competence in high school students learning English represents a significant and multifaceted issue within the fields of psychology and pedagogy. It aligns with the principles of student-centered and developmental education, serving as a key driver for the effective teaching of English as a foreign language in the current multilingual and multicultural context.
- From this perspective, it is crucial to examine the primary paradigms of foreign language education within the broader requirements of modern pedagogy.
- The concept of "paradigm" in this context should be analyzed from theoretical and methodological standpoints, addressing the "standard" issues under study while tackling practical challenges related to cognitive activation and mental engagement of high school students in English language learning.
- The cognitive paradigm in pedagogy is defined by its focus on the concept of "cognitive" (derived from the Latin *cogito*—thinking), emphasizing the process of cognitive thought. Teaching English within this paradigm involves the acquisition of knowledge and the development of skills that stimulate students' cognitive and thinking abilities. The teacher and textbooks serve as the primary sources of knowledge, positioning the student as the recipient of learning, with the primary objective of acquiring knowledge, skills, and competencies.

- However, the student's personality-oriented qualities emerge only when they demonstrate initiative and self-organization, driven by heightened cognitive motivation. In this context, English language instruction in the upper grades of general education institutions becomes a practical application of theoretical knowledge, where students engage in analyzing, synthesizing, and interpreting language material both during and after lessons.

CONCLUSION

The cognitive branch of pedagogy focuses on the processes of thinking within the context of mental phenomena, human cognition, and issues of consciousness. It examines how components such as perception and reproduction, listening and speaking, and receiving and transmitting information interact, often facilitated by technology. This approach represents the highest standard of understanding the surrounding reality and interpreting the linguistic image of the world through the studied language.

The cognitive approach to studying cognitive processes has led to the emergence of cognitive psychology as an independent field of knowledge. This discipline centers on identifying images of objects in the external world, which significantly contribute to intellectual development.

By linking the development of cognitive competence in general education students learning English through innovative technologies to cognitive psychology, this field addresses questions such as: How does a person perceive information about the world? How is this information processed, remembered, stored, and transformed into knowledge? And how does this knowledge influence human behavior and thought processes? This connection underscores the practical relevance of cognitive psychology in modern educational practices.

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INTERNET TECHNOLOGIES IN DEVELOPING STUDENTS' SPEECH SKILLS AND PROFESSIONAL COMPETENCIES

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Abstract

The rapid growth of internet technologies has reshaped the way students develop speech skills and acquire professional competencies. This article explores how tools such as multimedia platforms, online collaboration software, and virtual language exchange programs enhance students' abilities to communicate effectively and meet professional requirements. By utilizing these technologies, learners can experience personalized and dynamic growth in their academic and career-oriented skillsets. However, challenges such as digital inequality and reduced personal interaction must be addressed to maximize their potential.

Keywords: *online tools, speech skills, professional competencies, digital learning, internet technologies*

Introduction

Importance of the Research

In today's globalized and technology-driven world, effective communication and professional skills are critical for students' success. Internet technologies have emerged as valuable tools for addressing these needs, providing flexible, engaging, and innovative solutions for academic and professional development. These tools not only support language acquisition but also help align students' capabilities with the demands of modern workplaces.

Main Part

1. Internet Technologies as Learning Tools

The internet has introduced a wealth of resources that enhance how students learn and develop new skills. By offering flexible access to educational content, digital tools enable learners to study independently, collaborate in real time, and engage with global audiences. Platforms like language apps, video tutorials, and online courses cater to individual learning needs and preferences.

Conclusion

Internet technologies have become indispensable in modern education, offering students effective ways to develop their communication skills and prepare for professional challenges. By integrating these tools into learning environments, educators can help students become confident speakers and competent professionals. However, the success of such initiatives depends on addressing issues like digital access and maintaining a balance between online and offline learning.

Purpose of the Research

This research aims to explore how internet technologies enhance students' speech skills and help them acquire professional competencies. By identifying specific tools and practices, this study seeks to provide actionable insights for educators and students to effectively integrate these technologies into their learning processes. The focus is on understanding the benefits, challenges, and best practices for using internet technologies in educational settings.

Main Part

2. Enhancing Speech Skills through Internet Tools

Speech skills are crucial for academic and professional success. Internet technologies provide innovative tools to develop these abilities. For example, platforms like TED Talks and YouTube offer access to high-quality speeches and presentations, allowing students to observe effective communication styles and emulate them. Moreover, real-time language exchange programs, such as iTalki or HelloTalk, enable learners to practice speaking with native speakers, improving their fluency and pronunciation.

3. Building Professional Competencies

Professional competencies, including teamwork, digital literacy, and critical thinking, are increasingly essential in modern workplaces. Online collaboration platforms like Slack and Microsoft Teams allow students to experience teamwork in a virtual setting, simulating real-world environments.

Additionally, Massive Open Online Courses (MOOCs) from providers like Coursera and edX offer specialized training in technical and soft skills, empowering students to meet professional demands.

4. Addressing Challenges in Technology Integration

While internet technologies offer numerous benefits, their integration into education comes with challenges. Digital inequality, for instance, limits access for students without reliable internet or devices. Moreover, students may face difficulties in navigating the overwhelming volume of online content. Educators must play a vital role in addressing these barriers by providing guidance and resources to ensure all students can benefit equally.

Conclusion

In conclusion, internet technologies have transformed the educational landscape, particularly in the development of speech skills and professional competencies. By leveraging tools such as multimedia platforms, real-time communication software, and online courses, students can enhance their abilities in ways that traditional methods cannot. However, to fully realize the potential of these technologies, it is essential to address challenges like accessibility and ensure a balanced approach to online and offline learning. Future research should focus on developing more inclusive and adaptive technologies to cater to diverse learning needs.

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BENEFITS OF CLIL IN MODERN EDUCATION

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Abstract

Content and Language Integrated Learning (CLIL) has emerged as a transformative educational approach that integrates subject content learning with foreign language acquisition. This paper begins by defining CLIL and exploring its growing significance in an increasingly globalized and multilingual world. The approach is celebrated for its unique ability to enhance language learning through immersion in meaningful, context-based scenarios, which fosters higher language retention and application. Beyond language, CLIL demonstrates notable benefits in content learning, with students developing critical thinking and deeper subject knowledge by engaging with academic materials in a second language. Furthermore, CLIL facilitates the development of intercultural competence, preparing learners to navigate diverse cultural and professional settings effectively. While the methodology is not without challenges—including teacher preparedness, resource limitations, and cognitive overload—this article discusses practical solutions, such as targeted teacher training and adaptive curriculum design. The conclusion underscores CLIL's vital role in modern education and its potential to equip students with skills essential for thriving in the interconnected world of the future. By integrating language, content, and culture, CLIL exemplifies the future of holistic and inclusive education.

Keywords: *Content and language integrated learning CLIL, modern educational approaches, bilingual education, multilingual competence, intercultural competence, teacher training for CLIL.*

Introduction

Contemporary education needs to embrace the fundamental issues of globalization, technological advancements and cultural convergence. One of the most widely-spread and effective models is the so-called CLIL (Content and Language Integrated Learning) or subject-language teaching approach. With this approach, language skills and subject matter are developed concurrently, intercultural competence is nurtured, and global society's requirements are fulfilled. In this paper, CLIL benefits, its influence in various countries' education systems and studies confirming the efficiency of such ideas are viewed.

CLIL and its growing importance

Due to the impact of numerous elements associated with the globalization and internationalization of society, the field of foreign language instruction has been the focus of significant contemplation since the 1990s. During these years, The European Union actively supported multilingual education, so that citizens could speak at least two foreign languages and the need arose to effectively learn foreign languages. In the context of globalization, knowledge of languages has become a key factor for success in education, career and intercultural communication. The CLIL approach emerged as a response to the need to integrate language and subject teaching in order to meet the demands of a multilingual society. The first references to concepts similar to CLIL can be found in the practice of bilingual education in Canada and Finland in the mid-20th century. However, the term "CLIL" (Content and Language Integrated Learning) was first introduced in 1994 by David Marsh and Anna Malkja as part of a European project aimed at improving language proficiency among Europeans. In order to improve social cohesion and economic integration among member states, the European Commission vigorously supported CLIL as a way to guarantee that citizens could interact successfully in many languages. (Coyle, Hood, Marsh, 2010.)

The integration of CLIL is also related to the shortcomings of traditional approaches to learning foreign languages. Research shows that the classical method, focused on grammar and vocabulary, often does not reach the level of fluency. CLIL became a response to the need to make language learning more applied and motivating.

The phrase "content and language integrated learning" (CLIL) has evolved to refer to both learning a foreign language while studying a content-based subject and learning another (content) subject, such as geography or physics, through the medium of a foreign language. According to research by David Coyle (Coyle et al., 2010), CLIL is based on four main principles: Content, Communication, Cognition and Culture. These principles ensure deep involvement of students in the educational process.

Finland was one of the first countries to introduce CLIL into the national education system. Much attention is paid to teaching science and technology in English. A study by Nikula and Dalton-Puffer (2008) showed that Finnish students in CLIL demonstrated high levels of both language and subject-matter proficiency.

In Spain, CLIL has been part of educational policy since the early 2000s. In particular, the Basque Country and Andalusia regions actively use CLIL to teach English. Research by Lasagabaster and Sierra (2009) confirms that CLIL contributes to the improvement of students' language competence and motivation.

The Canadian model of bilingual education is considered a precursor to CLIL. Here, bilingual programs have created successful models of integration that have subsequently influenced Europe.

Advantages for language acquisition

CLIL has many benefits for language learning, including contextual language learning, academic vocabulary, and student motivation. CLIL allows you to learn the language through practical application, which increases the naturalness of language immersion. For example, students study physics by solving problems in a foreign language, which helps to integrate vocabulary into their active use (Dalton-Puffer, 2007). In addition to this, work with subject materials helps to develop a specialized vocabulary. In the study of Lorenzo et al. (2010) noted that CLIL students in Spain demonstrate a higher level of academic vocabulary than their peers from traditional classes. For instance, a biology class taught in English will introduce words and phrases that students might not learn in traditional language lessons. CLIL also helps students improve grammar indirectly, as they are exposed to correct structures in context rather than through rote memorization. Furthermore, regular use of the target language boosts students' confidence, encouraging them to participate in discussions and activities. According to Marsh (2002), CLIL learners are more motivated because they see the practical value of language learning through success in the subject. This dual-focus approach allows learners to practice language skills in meaningful, real-world contexts. One key advantage is the development of fluency, as students are exposed to authentic language use rather than isolated grammar drills. They engage in natural communication, enhancing both their receptive (listening and reading) and productive (speaking and writing) skills.

Content and learning benefits

Content and Language Integrated Learning maintains not only language, but also subject learning. The educational process becomes more interactive, which contributes to a better understanding of the subject (Coyle et al., 2010). Working in a foreign language requires active analysis of information that develops cognitive skills (Dalton-Puffer, 2007). CLIL creates a pedagogical tandem between language and subject teachers that enriches the learning process (Moor & Skeritt, 2019). Additionally, CLIL promotes a deeper understanding of subject material because it requires active engagement with the content. Students learn to express complex ideas in the target language, making the learning process more memorable and meaningful. The need to use the language actively for comprehension and communication fosters better retention of content. Another benefit is the improved ability to solve problems. Since CLIL involves interactive activities, such as projects and experiments, students learn to apply their knowledge practically. Collaborative learning is another hallmark of CLIL. Group tasks encourage students to work together to understand the subject matter, which improves teamwork skills and builds a supportive classroom environment. The use of multimodal resources, such as videos, charts, and infographics, also enhances learning by catering to different learning styles. Furthermore, CLIL develops meta-cognitive skills, as students must plan, monitor, and evaluate their learning in two dimensions.

Intercultural competence development

One of the key goals of this approach is the formation of intercultural competence such as learning culture through language, project and international cooperation, international studies. Examples and materials used in CLIL often include cultural aspects that help students better understand other peoples (Lasagabaster & Sierra, 2009). CLIL often includes participation in international programs such as Erasmus+, which allow students to interact with native speakers.

Furthermore, a study by Moor and Skeritt (2019) emphasizes that intercultural understanding is an important skill developed through CLIL.

The use of authentic materials, such as news articles, documentaries, and literature, immerses students in the cultural context of the target language. This helps them develop a deeper understanding of the values, traditions, and behaviors associated with the language. Moreover, CLIL encourages students to engage with global issues, such as climate change or human rights, from a multicultural perspective. This broadens their horizons and prepares them to interact in diverse

environments. Intercultural competence also involves empathy and open-mindedness, which CLIL fosters through collaborative activities. Group projects often pair students from different linguistic or cultural backgrounds, helping them learn from each other. As they discuss, negotiate, and share ideas, they develop mutual respect and understanding. Teachers often incorporate cultural comparisons into lessons, prompting students to reflect on their own culture while learning about others. Furthermore, CLIL promotes the development of plurilingualism by encouraging students to see language as a bridge between cultures. Understanding how language reflects cultural identity helps students become more sensitive to diversity. For instance, studying a subject in a foreign language often reveals unique idioms, metaphors, or expressions that deepen cultural appreciation.

Challenges and how to overcome them

Despite myriad of advantages, CLIL faces a number of difficulties:

1. The shortage of qualified teachers.

Teachers often do not have sufficient preparation for the integration of language and content. Most of the difficulties in CLIL are related to the fact that not all teachers have a sufficient level of foreign language proficiency to teach the subject. In addition, the lack of methodological training limits the possibilities of integrating language and content. The solution is the organization of specialized trainings (Marsh, 2002).

2. High load.

Students and teachers can experience stress due to the difficulty of studying materials in a foreign language. The problem can be solved with the help of adaptation of educational materials (Dalton-Puffer, 2007).

3. Resource.

In some countries there are no quality materials for CLIL. In such cases, it is useful to use international platforms and libraries. In addition to this, we can call the inclusion of CLIL in educational standards at the state level. Overcoming the difficulties of CLIL is possible through a comprehensive approach, including teacher training, adaptation of materials and the use of technology. These measures not only simplify the implementation of the methodology, but also contribute to increasing its effectiveness, providing students with comprehensive development of language and subject skills.

Conclusion: CLIL's role in future education

CLIL's role in the future of education is undeniably transformative, offering a pathway to a more integrated and inclusive global learning environment. As societies become increasingly interconnected, the need for multilingual, culturally competent individuals grows. CLIL addresses this need by seamlessly blending language acquisition with content learning, ensuring students are equipped with both practical skills and broader perspectives. This dual approach prepares learners not only for academic success but also for meaningful participation in a globalized workforce and community.

Moreover, CLIL's flexibility makes it adaptable to various educational contexts, from primary schools to professional training programs. Its emphasis on collaboration, critical thinking, and intercultural awareness aligns perfectly with 21st-century skills that educators strive to develop in their students. By encouraging active engagement with authentic materials and real-world issues, CLIL cultivates curiosity and lifelong learning habits that extend far beyond the classroom.

However, the future of CLIL also depends on how well its challenges are addressed. Effective teacher training, resource development, and support from policymakers are crucial for the successful implementation of CLIL across diverse educational settings. It is equally important to ensure that CLIL remains accessible and inclusive, bridging gaps in educational equity rather than widening them.

As technology continues to transform education, CLIL's integration with digital tools offers exciting possibilities. Virtual reality, online collaboration platforms, and AI-driven language resources can enhance the learning experience, making CLIL more interactive and personalized. This potential highlights CLIL's adaptability to evolving pedagogical trends and technological advancements.

Ultimately, CLIL represents more than just a teaching methodology—it is a vision for education that bridges disciplines, languages, and cultures. By fostering global competence, it empowers students to thrive in a world that values diversity and adaptability. As we look to the future, CLIL holds the promise of shaping not only well-rounded learners but also engaged, thoughtful global citizens.

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GAMIFICATION IN HIGHER EDUCATION FOR ENGLISH LANGUAGE LEARNING

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Abstract

Gamification has become a transformative approach in education, particularly in English language learning, where traditional methods often fail to address challenges such as low motivation, language anxiety, and retention. By integrating game elements like rewards, challenges, and feedback loops, gamification creates interactive and engaging environments that make learning enjoyable and rewarding. This innovative approach encourages students to actively participate, reducing the monotony of rote memorization and fostering a sense of accomplishment. The benefits of gamification extend beyond engagement, offering improved retention through techniques like repetition and instant feedback. It also provides learners with a low-pressure environment that reduces language anxiety, helping them build confidence in both oral and written communication. Furthermore, gamified tools adapt to individual learning needs, offering personalized pathways that cater to diverse abilities and goals. Despite its advantages, gamification faces challenges, such as over-reliance on rewards, accessibility issues, and the risk of superficial learning. Effective implementation requires thoughtful integration with traditional teaching methods to balance engagement with academic rigor. As advancements in technology continue, gamification holds the potential to revolutionize education further, offering immersive and adaptive learning experiences that cater to the evolving needs of students.

Keywords: Gamification, higher education, English language learning, motivation, collaboration, educational technology, personalized learning, retention, student engagement.

Introduction

The integration of gamification in education represents a groundbreaking shift in how teaching and learning processes are designed and executed. Gamification, the application of game-like elements such as challenges, rewards, and leaderboards to non-game contexts, addresses key challenges in traditional education systems, such as disengagement, low retention rates, and poor motivation. Particularly in English language learning, gamification has transformed the educational experience, enabling students to overcome language anxiety, build confidence, and achieve their learning goals in an interactive and engaging manner (Dehghanzadeh et al., 2021).

The limitations of conventional teaching methods—often characterized by rigid instruction, passive learning, and rote memorization—have spurred educators to seek innovative approaches. Gamification has emerged as a promising solution by incorporating interactive elements that appeal to modern learners' interests and preferences. Platforms such as Kahoot, Quizizz, and Duolingo demonstrate how gamified tools can foster active engagement, collaboration, and personalized learning. These platforms effectively blend entertainment with education, ensuring that students remain motivated while achieving measurable progress.

This review delves into the theoretical underpinnings of gamification, its applications in English language learning, the multifaceted benefits it offers, and the challenges educators face when implementing it. Additionally, it explores the integration of gamification with traditional teaching methods to create a holistic, impactful learning environment that balances academic rigor with student engagement.

Theoretical Foundations

Gamification is rooted in well-established educational and psychological theories that explain its effectiveness in fostering motivation and engagement.

Self-Determination Theory (SDT), developed by Deci and Ryan, SDT highlights three core psychological needs—autonomy, competence, and relatedness—that drive intrinsic motivation. Gamification aligns with these needs by giving learners control over their goals, providing tasks that build their sense of accomplishment, and fostering peer interactions. Duolingo exemplifies SDT in action by

allowing users to set daily objectives, earn badges for progress, and connect with a global community of learners, thereby satisfying their need for autonomy and relatedness (Rachman et al., 2023).

Flow Theory, proposed by Csikszentmihalyi, Flow Theory emphasizes the importance of balancing challenge and skill level to maintain optimal engagement. Gamified tools like Kahoot use adaptive features to ensure tasks are neither too easy nor excessively difficult, keeping learners immersed and motivated. This balance fosters a state of “flow,” where students lose track of time while deeply engaging with the content (Yanes & Bououd, 2019).

Behaviorist Theory focuses on reinforcement as a mechanism for encouraging desired behaviors. Gamified platforms leverage this principle by providing immediate feedback, rewards, and incentives such as points and leaderboards. Quizizz, for example, uses positive reinforcement to motivate students to participate actively and consistently. Feedback mechanisms further encourage learners to persist, even when they encounter challenges (Inayati & Waloyo, 2022).

These theories collectively explain why gamification succeeds in creating interactive, rewarding, and sustainable learning environments.

Applications and Benefits

Gamification has demonstrated its effectiveness in various aspects of English language education, addressing academic, social, and emotional dimensions of learning.

Enhanced Motivation and Engagement. One of the most significant advantages of gamification is its ability to sustain student interest over time. Traditional teaching methods often fail to capture learners' attention, especially when tasks become repetitive or lack immediate relevance. Gamified platforms like Duolingo address this issue by transforming routine language exercises into enjoyable challenges. By introducing rewards such as streaks and badges, Duolingo motivates learners to practice regularly, making consistency an integral part of their progress. Similarly, Classcraft immerses students in gamified narratives, encouraging active participation through role-playing and story-driven quests (Rahmani, 2020).

Improved Knowledge Retention. Retention is crucial in language education, where learners must frequently recall vocabulary, grammatical rules, and sentence structures. Tools like Kahoot employ techniques such as active recall and spaced repetition to reinforce knowledge. Interactive quizzes that provide immediate feedback not only help learners identify their mistakes but also strengthen their ability to retain and apply new information over time (Vathanalaotha, 2022).

Promotion of Collaboration and Teamwork. Gamification enhances collaboration by encouraging learners to work together toward shared objectives. Tools like Classcraft integrate team-based challenges that require students to assume specific roles and responsibilities. These tasks mimic real-world scenarios, teaching students how to negotiate, problem-solve, and communicate effectively in team settings. Beyond improving language proficiency, such activities develop critical interpersonal skills that are essential for professional success (Rachman et al., 2023).

Reduction of Language Anxiety. Language anxiety is a common barrier for learners, particularly in speaking and writing tasks where fear of judgment or failure often hinders participation. Gamification addresses this issue by creating a low-pressure environment where learners can experiment freely. The emphasis on progression rather than perfection encourages students to take risks, boosting their confidence in oral and written communication (Dehghanzadeh, 2020).

Personalized Learning Pathways. Adaptive gamified platforms offer personalized learning experiences tailored to individual needs. Duolingo, for instance, adjusts its tasks based on user performance, ensuring that exercises remain appropriately challenging without becoming overwhelming. This personalization keeps learners engaged and allows them to focus on areas requiring improvement (Dehghanzadeh et al., 2021).

Development of Critical Thinking and Problem-Solving Skills. Some gamified platforms go beyond basic language drills, challenging learners to analyze, evaluate, and create. For example, narrative-based games often involve complex decision-making scenarios that require students to apply higher-order thinking skills. These activities foster critical analysis and problem-solving while reinforcing language use in meaningful contexts.

Challenges and Limitations

While gamification has shown considerable promise, its implementation is not without obstacles.

Over-reliance on Rewards. A notable criticism of gamification is its focus on extrinsic motivators such as points, badges, and leaderboards. While these incentives can initially drive engagement, they may reduce intrinsic motivation over time. Learners may disengage once rewards are removed, underscoring

the need for educators to balance external rewards with activities that emphasize the inherent value of learning (Dehghanzadeh et al., 2021).

Accessibility and Digital Inequality. The reliance on technology in gamification creates challenges in under-resourced educational settings where access to devices and reliable internet may be limited. This digital divide can exacerbate existing inequalities, making it essential for institutions to address infrastructural gaps when implementing gamified learning (Yanes & Bououd, 2019).

Superficial Learning Outcomes. Some critics argue that gamified tools focus more on entertainment and less on depth, limiting their ability to address advanced competencies such as critical thinking, analytical writing, and nuanced language skills. Educators must integrate gamification with traditional approaches that emphasize depth and academic rigor (Kıyanççek & Uzun, 2022).

Educator Preparedness. Effective gamification requires teachers to have both technical proficiency and a strong understanding of its pedagogical applications. Educators unfamiliar with gamified tools may struggle to design and manage effective activities, reducing their potential impact (Rahmani, 2020).

Time and Resource Constraints. Developing gamified content that aligns with curriculum objectives can be time-intensive, requiring significant investment in planning, testing, and refinement. Institutions must allocate sufficient resources to support educators in these efforts.

Integration with Traditional Methods

Gamification is most effective when used alongside traditional teaching methods, creating a balanced approach that combines engagement with academic rigor.

Tools like Kahoot can enhance lectures by incorporating real-time quizzes that reinforce key concepts and provide immediate feedback. This turns passive learning into active participation, improving comprehension and retention (Inayati & Waloyo, 2022).

Platforms like Duolingo complement classroom activities by providing personalized practice opportunities. These assignments help bridge the gap between formal instruction and self-directed learning, allowing students to refine their skills independently.

Classcraft introduces narrative-driven challenges into group work, encouraging students to collaborate and communicate effectively. This approach fosters both language proficiency and teamwork, preparing students for real-world applications (Dehghanzadeh, 2020).

Quizizz combines evaluation with engagement, offering educators a way to track progress while providing students with a fun and interactive assessment experience. These assessments can identify learning gaps and support targeted intervention (Rachman et al., 2023).

Advanced tools like Virtual Reality (VR) and Artificial Intelligence (AI) offer new dimensions for gamification. For instance, AI-driven platforms can adapt content dynamically based on learner behavior, while VR creates immersive environments that simulate real-world language use.

By integrating gamification with traditional methods, educators can create comprehensive learning environments that address both the emotional and intellectual needs of students.

Conclusion

Gamification has emerged as a transformative tool in English language education, addressing critical challenges such as low motivation, language anxiety, and limited engagement. By incorporating game elements into learning environments, educators can create interactive, rewarding, and personalized experiences that cater to diverse student needs. Platforms like Kahoot, Duolingo, and Quizizz demonstrate how gamification fosters collaboration, builds confidence, and improves retention, making it a valuable addition to higher education.

However, gamification is not without limitations. Over-reliance on extrinsic rewards, accessibility challenges, and the potential for superficial learning outcomes highlight the importance of thoughtful implementation. Educators must balance gamified strategies with traditional methods to maintain academic rigor while leveraging the benefits of engagement and motivation. Additionally, training for educators and addressing digital inequities are essential for ensuring the effective and equitable application of gamification in diverse educational settings.

Looking ahead, advancements in Artificial Intelligence (AI) and Virtual Reality (VR) hold immense potential for expanding the scope of gamification. These technologies can provide immersive and adaptive learning experiences that further enhance language acquisition. By combining these innovations with the foundational principles of gamification, educators can continue to transform English language learning, creating inclusive, dynamic, and impactful educational experiences.

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METHODS OF DEVELOPING CULTURAL COMPETENCIES OF HIGH SCHOOL STUDENTS IN THE PROCESS OF LEARNING A FOREIGN LANGUAGE

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Abstract

In the context of globalization and the strengthening of cross-cultural communication, cultural competence is becoming particularly important. The ability to understand and respect cultural differences is becoming a key factor for successful communication in a modern world where borders between countries are blurring. Cultural competence helps to reduce conflicts and misunderstandings, avoiding stereotypes and bias, which is especially important in multinational teams and international relations. Moreover, it opens up new business opportunities, allowing companies to interact effectively with customers and partners from different countries, adapting their products and services to local traditions. In addition, the development of cultural competence enriches personal experience, promotes empathy and tolerance, which is important for harmonious coexistence in a diverse world. Thus, cultural competence is an integral part of successful cross-cultural communication and an important tool in the context of globalization, contributing to deeper understanding and cooperation.

Keywords: Cultural competencies, Foreign language, Teaching methods, Cross-cultural communication, Cultural diversity, Project activity, Interactive methods, Empathy.

Introduction

Cultural competence is becoming increasingly important in the context of globalization and cross-cultural communication. In today's world, where borders between countries are blurring and interaction between cultures is increasing, the ability to understand and respect cultural differences becomes a key factor in successful communication.

First, cultural competence helps to reduce conflicts and misunderstandings. Knowing the characteristics of other cultures helps to avoid stereotypes and bias, which is especially important in multinational teams and international relations.

Secondly, it opens up new business opportunities. Companies with cultural competence can interact more effectively with customers and partners from different countries, adapting their products and services to local traditions and preferences.

In addition, cultural competence promotes personal growth and broad-mindedness. Understanding different cultures enriches the experience, develops empathy and tolerance, which is important for harmonious co-existence in a diverse world.

Thus, cultural competence is an integral part of successful cross-cultural communication and an important tool in the context of globalization, promoting deeper understanding and cooperation.

Theoretical foundations of cultural competence

The connection between language and culture is deep and multifaceted. The language not only serves as a means of communication, but also reflects the unique cultural characteristics of the people. It forms and conveys the values, traditions and worldview of society.

First, the language contains many words and expressions that reflect cultural realities. For example, in languages where the concept of respect is important, there may be different forms of address, depending on the status of the interlocutor. This highlights the importance of hierarchy in a given culture.

Secondly, the language can preserve the historical memory of the people. Phraseological units, proverbs and sayings often contain references to historical events or cultural practices, which allows you to pass on knowledge from generation to generation.

In addition, language affects the perception of the world. For example, some languages have words for phenomena that can only be described in long phrases in other languages. This may indicate that certain aspects of life are more important to native speakers of a given language. Thus, language and culture are interrelated, and studying one of them opens the door to understanding the other.

The development of cultural competence is an important task in modern education, especially in the context of globalization and cultural diversity. There are several methods and approaches that

contribute to the formation of this competence, including communicative, project-based and interactive teaching methods. Communicative teaching methods focus on the interaction between students. These include role-playing games, discussions, and debates that allow students to exchange opinions, share experiences, and learn to understand different cultural contexts. This approach contributes to the development of cross-cultural communication skills, which is especially important in multinational groups. Project-based teaching methods involve students performing specific projects related to the study of cultural aspects. This can be research, presentations, or creative tasks that require a deep dive into the topic. Project activities help students not only master theoretical knowledge, but also apply it in practice, which contributes to a deeper understanding of cultural differences and features. Interactive learning methods include the use of technology and active forms of work, such as group discussions, brainstorming sessions, and simulations. These methods create a dynamic learning environment where students can actively participate in the process, exchange ideas, and learn from each other. Interactive approaches promote critical thinking and the ability to adapt to different cultural contexts.

In general, the combination of these methods makes it possible to create a comprehensive approach to the development of cultural competence, which is a prerequisite for successful communication and interaction in a diverse world.

Practical methods and techniques

Modern technologies play a key role in teaching foreign languages, especially in high schools, where the development of cultural competence becomes an important task. The use of multimedia resources, online platforms and social networks significantly enriches the learning process. Multimedia resources such as videos, audio recordings, and interactive presentations allow students to immerse themselves in the language environment. For example, watching movies or listening to podcasts in a foreign language helps not only improve your listening skills, but also introduces you to the cultural peculiarities of countries where this language is your native language. Online platforms such as Duolingo, Coursera, or Edmodo provide access to a variety of courses and materials, allowing students to learn at their own pace. These platforms often include elements of gamification, which makes learning more fun and motivating. Social media platforms like Instagram, Facebook, and TikTok can serve as a powerful tool for practicing a language and sharing cultural experiences. Students can interact with native speakers, participate in discussions, and share their impressions of the culture of other countries. It promotes critical thinking and cross-cultural communication.

Thus, the integration of technology in foreign language teaching not only improves language skills, but also contributes to the formation of cultural competence, which is an important aspect of modern education. Using authentic materials such as literature, movies, and music is an effective way to immerse yourself in culture when learning a foreign language. Here are some aspects that highlight the importance and benefits of this approach: Authentic materials allow *изучающ* language learners to better understand the cultural characteristics, traditions, and customs of the country they are learning. For example, reading the works of local authors or watching films made in a given country helps you see how the language is used in real-life situations. Literature, movies, and music contain a variety of lexical units and phraseological units that may not appear in textbooks. This helps students enrich their vocabulary and learn to use the language more naturally. Listening to music and watching movies develops your listening skills, while reading books and articles improves your reading skills. These skills are important for understanding the language by ear and for reading various texts. Authentic materials are often more interesting and engaging than traditional textbooks. This can increase students' motivation and make the learning process more enjoyable. For example, learning a language through your favorite movies or songs can inspire further learning. Authentic materials represent different language styles and registers, which helps students learn to distinguish between formal and informal languages, as well as understand how the language changes depending on the context. Analyzing authentic materials, such as films or literary works, can develop critical thinking. Students can discuss the topics raised in the works and express their opinions, which contributes to the development of argumentation and discussion on the subject. Authentic materials can be integrated into various aspects of learning: grammar, vocabulary, pronunciation, etc. For example, you can analyze the lyrics of a song to learn grammatical structures, or use scenes from a movie to practice speaking.

Moreover, role-playing games and simulations also play a key role in the practice of cross-cultural communication when learning a foreign language. They create a safe and interactive environment where students can apply language skills in the context of real-life situations. This allows not only to improve the level of language proficiency, but also to develop the communication skills necessary to interact with

other parts of the language. During role-playing games, students are exposed to cultural differences, which contributes to a deeper understanding of the context of communication. They learn to adapt their statements and behaviors to cultural norms and expectations, which is an important aspect of cross-cultural competence. Simulations also help develop critical thinking and problem-solving skills, as participants must find a way out of various situations using language and cultural knowledge. This makes the learning process more fun and effective, as students are actively involved in the process. Thus, role-playing games and simulations not only promote language development, but also build confidence in cross-cultural interaction, which is an important aspect in a globalized world.

There are cases where methods of developing professional competence in the process of learning foreign languages are successfully applied: for example, in a British school, the culture of learning English includes not only grammar and vocabulary, but also cultural aspects. Within the framework of the project, participants get acquainted with the traditions and holidays of different Russian-speaking countries, such as the USA, Great Britain, Canada and Australia. For example, when studying Thanksgiving in the United States, students not only speak words related to the holiday, but also analyze and tell the story of its origin, meaning for Americans, and discuss how this holiday differs from other holidays in other countries. To provide knowledge, they conduct debates on "What cultural traditions are important for our society?" or create presentations on cultural features that develop their cross-cultural competence and communication skills.

Another example is a school in Russia where learning English involves methods aimed at developing cultural competence. Teachers organize project work that focuses on the cultural differences and traditions of English-speaking countries. One of the key stages is the creation of multimedia presentations by students in which they compare holidays in English-speaking countries and in Russia. The task includes analyzing traditional dishes, customs, and the importance of these holidays for different cultures. In the course of their work, students share their observations and actively discuss differences in celebration, which contributes to the development of cross-cultural communication skills. The teacher uses various techniques: role-playing games, watching thematic videos, reading articles, creating wall newspapers. It is important that the project is aimed at personal involvement of students and developing their respect for other cultures through language. This approach helps you not only improve your English skills, but also develop important social skills and tolerance.

According to the teachers: "The introduction of cultural aspects in the process of teaching English has significantly improved the perception of lessons. When we began to actively include cultural topics, such as traditions and holidays of English-speaking countries, this significantly increased the motivation of students. For example, as part of the theme about Christmas, we not only learned the words associated with this holiday, but also explored its historical origin, traditions of celebration in the UK and the USA, as well as the differences between them. Students discussed with great interest how holidays are celebrated in their families, as well as conducted a comparative analysis of cultures. This allowed not only to deepen their language skills, but also to develop cross-cultural communication skills, improve perception and respect for other cultures. I have noticed that students have become more attentive and tolerant of cultural differences, which is certainly an important aspect of education in the modern world."

Review of a student learning French "Until we started to include cultural topics in French lessons, I perceived language learning as boring memorizing words and rules. However, when we started studying French cuisine, music, movies, and the most important traditions, I became much more interested in learning the language. We discussed topics such as the role of wine in French culture, traditional dishes such as croissants and croque monsieur, and even prepared them in class. It was exciting, and I noticed that learning the language became more lively and relevant. We also watched French films and discussed how culture and traditions affect the daily life of the French. This made me feel closer to the French culture, and it inspired me to further study the language in depth. This gave me the opportunity not only to improve my language skills, but also to become more open to new cultures and traditions, which is important in a globalized world."

Introducing cultural aspects to foreign language teaching for high school students is a difficult task that many teachers face. Curricula are often overloaded with grammatical rules and vocabulary, which leaves little time for discussing cultural aspects. Teachers may feel pressured to cover all the necessary topics and skills, making it difficult to integrate the culture. High-quality educational materials that combine language and culture are not always available. Teachers may not have access to multimedia resources, literature, or other materials that could make cultural aspects more visual and interesting for students. High school students may have different levels of interest and knowledge about the culture of

the language being studied. Some students may be knowledgeable about the culture, while others may not have any experience. This creates difficulties in planning lessons to meet the needs of all students. Teachers may encounter biased opinions or stereotypes of students about the culture of the language being studied. This can lead to difficulties in discussing certain topics and the need to correct misconceptions. Discussing cultural aspects requires a certain level of language proficiency. If students are not confident in their language skills, they may be less likely to participate in discussions, which limits opportunities for deep immersion in cultural topics. Teachers may not know exactly how to integrate cultural elements into their lessons. The lack of clear guidelines or approaches can cause confusion and complicate the planning process. Cultural aspects can be perceived differently depending on each student's learning style. Some students may prefer visual materials, while others prefer audio-visual or hands-on activities. Teachers need to find a balance between different methods. Sometimes students do not have the opportunity to apply the acquired knowledge about culture in practice, for example, through communication with native speakers or participation in cultural events. This can reduce motivation and interest in learning. Cultural topics can be sensitive and evoke an emotional response from students (for example, discussing historical events or social issues). Teachers need to be prepared for such situations and be able to conduct a dialogue so as not to cause conflicts.

Conclusion

Developing high school students' cultural competence while learning foreign languages is key to their personal and academic growth. Cultural competence includes understanding, respecting and accepting different cultures, which contributes to the formation of openness and tolerance. In today's globalized world, where interactions between cultures are becoming more frequent, such skills are becoming essential. First, knowledge of the culture of the country of the language being studied helps students better understand the context of communication, which contributes to more effective language acquisition. This includes knowledge of traditions, customs, and social norms, which helps avoid misunderstandings and awkward situations. Second, cultural competence develops critical thinking. Students learn to analyze and compare different cultural practices, which contributes to the formation of a deeper worldview and problem-solving ability. Finally, the development of cultural competence contributes to the motivation to learn a language. Understanding culture makes learning more fun and meaningful, which in turn increases students' interest in language skills and international interaction. Thus, cultural competence is an important aspect of education that enriches the experience of high school students and prepares them for life in a diverse world.

THE ROLE OF DIDACTIC GAMES IN ENHANCING STUDENT ENGAGEMENT AND INTERPERSONAL SKILLS

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Abstract

This article thoroughly examines the theoretical and practical significance of didactic games in fostering student engagement and developing interpersonal skills within educational settings. By integrating key concepts from constructivist, experiential, and sociocultural learning theories, the study highlights how didactic games facilitate collaborative learning, enhance critical thinking, and nurture emotional intelligence among students. The research explores how these interactive approaches promote active participation, teamwork, and communication skills, contributing to students' overall cognitive and social development. In addition to the benefits, the article identifies challenges related to the implementation of didactic games in higher education, such as curriculum alignment, resource availability, and educator training. Finally, the article outlines promising directions for future research, emphasizing the need for empirical studies to measure the long-term impact of didactic games on academic performance and interpersonal competencies.

Keywords: didactic games, interpersonal skills, active learning, engagement, teamwork, collaborative learning.

Introduction

In the evolving landscape of modern education, the limitations of **traditional teaching methods** have become increasingly evident. Approaches such as rote memorization, passive lectures, and standardized assessments often prioritize content delivery over student engagement, leading to a lack of meaningful connection with the learning process. Many students experience disengagement and struggle to retain knowledge or apply it to real-life scenarios. This disconnect creates a gap between academic learning and the development of critical **21st-century skills**, including critical thinking, problem-solving, and practical application of knowledge.

Beyond academic content, another significant shortcoming of traditional approaches is the inadequate focus on **interpersonal skills**, which are essential for personal growth and professional success. Skills such as communication, collaboration, leadership, and emotional intelligence are often overlooked, even though they are vital for navigating today's interconnected and competitive world. Classrooms that rely heavily on teacher-centered instruction rarely create opportunities for students to develop these competencies, leaving a crucial aspect of their education unaddressed.

To address these challenges, **didactic games** have emerged as an effective and innovative pedagogical tool that integrates theoretical knowledge with interactive, student-centered activities. Didactic games create dynamic and engaging learning environments where students are encouraged to actively participate, collaborate, and apply their understanding in practical, game-based scenarios. Unlike traditional methods, these games offer an experiential and enjoyable learning process that makes education more relevant, interactive, and memorable. By combining cognitive engagement with social interaction, didactic games help students develop academic knowledge while simultaneously fostering key interpersonal skills.

Over the past few decades, **educational researchers** have extensively studied the role of didactic games in enhancing both engagement and real-world competencies. Scholars argue that these games align closely with **constructivist, experiential, and sociocultural learning theories**, which emphasize active participation, collaboration, and knowledge construction.

Theoretical Foundations of Didactic Games

The use of didactic games in education is grounded in established theories that prioritize active and collaborative learning.

Constructivist Perspectives

Jean Piaget's theory of constructivism emphasizes that knowledge is actively constructed by learners through interaction with their environment [1]. Didactic games align closely with this

framework by engaging students in solving real-world problems or participating in scenarios where they must analyze, synthesize, and evaluate information.

For instance, Smith et al. (2017) explored the impact of constructivist-based games on high school students. They found that games designed to simulate historical events increased students' ability to critically analyze cause-and-effect relationships while maintaining their attention throughout the lesson. These findings confirm Piaget's assertion that experiential, hands-on activities deepen understanding and retention.

Sociocultural Theory and Collaborative Learning

Lev Vygotsky's sociocultural theory provides a strong basis for the integration of didactic games in the classroom. According to Vygotsky, learning occurs most effectively through social interaction within the Zone of Proximal Development (ZPD) [2]. Didactic games leverage this principle by creating opportunities for teamwork, dialogue, and peer learning.

Brown and Green (2018) examined how collaborative games fostered interpersonal communication among middle school students. In their study, team-based challenges required participants to work together to solve puzzles, negotiate strategies, and achieve shared goals. The results demonstrated a significant improvement in students' ability to communicate effectively and build consensus.

Experiential Learning Models

David Kolb's experiential learning theory highlights the importance of active experimentation and reflection in the learning process [3]. Didactic games naturally incorporate Kolb's learning cycle by immersing students in realistic scenarios that require them to apply theoretical knowledge, analyze outcomes, and adapt their strategies.

Nguyen et al. (2020) studied university students participating in a business simulation game. The game placed students in the roles of executives tasked with making strategic decisions. The study revealed that students developed critical thinking and decision-making skills while improving their ability to collaborate and communicate effectively in team settings.

The Role of Didactic Games in Enhancing Student Engagement

Engagement is one of the most critical factors for effective learning, and didactic games excel at maintaining students' focus and motivation.

Active Participation and Motivation

Unlike traditional methods such as lectures or rote memorization, didactic games require students to actively participate in the learning process. Johnson and Marquez (2019) found that gamified activities, such as competitive quizzes and interactive simulations, increased student engagement by 35% compared to traditional teaching techniques.

Games that include rewards, feedback, and narrative elements sustain attention by appealing to students' intrinsic and extrinsic motivations. For instance, puzzle-based games that require problem-solving under time constraints add a layer of excitement that keeps learners invested.

Interpersonal Skill Development Through Didactic Games

The development of interpersonal skills—such as communication, teamwork, and empathy—is a key benefit of incorporating didactic games into education.

Communication and Collaboration

Group-based games naturally foster communication by requiring students to articulate their ideas, listen actively, and negotiate with peers. In a study by Lee and Johnson (2019), students participating in role-playing activities, such as mock debates, demonstrated a 40% improvement in verbal communication skills over a semester.

Additionally, collaborative problem-solving games, such as escape rooms or resource management challenges, help students learn how to delegate tasks, resolve conflicts, and build consensus—essential skills for both academic and professional success.

Challenges in the Implementation of Didactic Games

Despite their advantages, the integration of didactic games into education faces several obstacles:

1. **Resource Constraints:** High-quality game development and implementation require financial and time investments, which may be unavailable in some institutions.

2. **Teacher Preparedness:** Educators often lack the training necessary to design and facilitate didactic games effectively.

3. **Student Diversity:** Adapting games to accommodate varying learning styles and abilities remains a challenge, as highlighted by Nguyen et al. (2021).

Future Directions for Research and Application

To unlock the full potential of didactic games, future research should focus on:

1. **Technological Integration:** Emerging technologies, such as artificial intelligence (AI) and virtual reality (VR), offer opportunities to create immersive, adaptive gaming experiences tailored to individual learners.

2. **Longitudinal Studies:** Examining the long-term impact of didactic games on student engagement and skill development will provide valuable insights for educators and policymakers.

Conclusion

Didactic games represent an innovative and transformative approach to modern education, blending active learning, experiential practice, and collaborative engagement. By involving students in interactive activities, these games promote cognitive growth, critical thinking, and problem-solving skills while fostering essential interpersonal abilities such as teamwork, communication, and empathy. They also contribute to emotional intelligence by encouraging self-awareness, conflict resolution, and emotional regulation within supportive learning environments.

The growing body of research highlights the effectiveness of didactic games in enhancing student engagement, motivation, and knowledge retention. By bridging the gap between theoretical content and real-world application, these games make learning more dynamic, meaningful, and relevant.

Despite challenges such as limited time, lack of training, and resource constraints, didactic games hold great potential for broader adoption. With proper planning and alignment to learning objectives, they can become a powerful tool for fostering both academic success and real-world skills. As educational methods evolve, didactic games will undoubtedly play a key role in shaping future classrooms, and creating learning environments that prepare students to thrive academically, socially, and professionally.

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CASE STUDIES AS A TOOL FOR ENHANCING KEY LANGUAGE SKILLS

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Abstract

This article explores the use of case studies as an effective tool for enhancing key language skills in foreign language learning. Case studies provide an immersive learning experience that bridges theoretical knowledge with real-world application, fostering critical thinking, problem-solving, and communication. By analyzing written materials, drafting reports, engaging in group discussions, and listening to case scenarios, students improve their reading, writing, speaking, and listening skills in a practical context. The article highlights the benefits of case studies in developing language proficiency, as well as their role in motivating students and enhancing intercultural competence. Furthermore, it discusses how case studies create opportunities for active learning, encouraging students to engage more deeply with language content while developing essential professional and academic skills. This method, when integrated into language curricula, can contribute significantly to students' academic success and future career development.

Key words: Case Studies, Critical Thinking, Intercultural Competence, Language Proficiency, Teaching Strategies, Active Learning.

Introduction

The case methodology, widely regarded as one of the most effective educational tools, has deep historical roots and modern-day relevance. Emerging from ancient philosophical traditions, particularly Socratic dialogues, the case method has evolved into a structured approach for teaching complex subjects across disciplines. This article explores the historical evolution and educational benefits of the case methodology, while highlighting key factors that influence its success.

Historical Context of the case Study Method

The foundations of case methodology date back to ancient times, with debates and discussions serving as primary educational tools. Socrates, one of the earliest practitioners of this approach, used dialectical methods to teach rhetoric and philosophy. His conversations with students and arguments with opponents remain a source of inspiration for modern case studies.

In its contemporary form, the case method was pioneered at Harvard Business School in the early 20th century. Dean Gay, in 1910, encouraged Dr. Copeland to incorporate student-led discussions as a supplement to traditional lectures. This innovation involved presenting problems to students, analyzing them, and proposing actionable solutions. [1]

The importance of Case Methodology in Education

Case methodology serves as an analytical tool, immersing learners in real-world scenarios. These cases are designed not only to present practical problems but also to stimulate critical thinking and the application of theoretical knowledge. A distinguishing feature of the method is that problems often lack straightforward solutions, requiring students to explore multiple perspectives.

As a specialized teaching technique, case methodology is designed to achieve unique educational objectives. Key challenges in implementing this approach include technological integration, methodological refinement, and the application of diverse formats and structures.

Kolb (1984) explored the interactive nature of the case study method, highlighting how it engages learners in a way that is often perceived as a game-like experience. This approach not only deepens theoretical understanding but also enhances the development of practical skills. Furthermore, the case study method plays a crucial role in professional development by fostering personal growth, helping students mature, and promoting positive motivation towards learning. [2]

Benefits of the Case Study Method in Learning English

The case method offers numerous benefits, making it a transformative educational tool. It bridges the gap between theory and practice, allowing students to apply their knowledge in realistic contexts. By engaging in collaborative problem-solving, students develop critical thinking and teamwork skills.

Furthermore, case-based learning fosters cultural awareness and professional competence, preparing learners for real-world challenges.

For educators, this methodology is transformative, serving as both a teaching tool and a mindset. It promotes creative thinking and updates their pedagogical approach, ensuring they adopt a modern, democratic, and motivational style of teaching.

Enhancing Communicative Competence

The case study method introduces learners to real-world scenarios, making language learning practical and engaging. For example, students may explore cases such as business negotiations, social disputes, or environmental challenges. These contexts help bridge classroom learning with everyday communication needs, fostering relevance and applicability. [2]

Promotes Active Learning

Unlike traditional passive teaching methods, the case study approach immerses students in active problem-solving. By participating in discussions, debates, and solution-driven activities, students not only refine their language skills but also develop analytical and intellectual capabilities.

Enhances Critical Thinking and Teamwork

Case studies demand critical evaluation as students analyze information, identify core issues, and propose viable solutions. Group-based activities, such as collaborative discussions and role-playing, foster teamwork and improve communication, encouraging students to work cohesively while sharpening their reasoning skills.

Fosters Cultural Awareness

Language learning is deeply connected to cultural understanding. Case studies often incorporate cultural scenarios, exposing students to diverse perspectives and teaching them the nuances of cultural expression. This exposure enhances learners' intercultural competence and enriches their linguistic knowledge.

5. Building Confidence and Motivation:

Case-based activities help students see the practical relevance of language skills. Success in solving real-world problems builds confidence in using the foreign language and fosters a deeper interest in mastering it.

Factors Influencing Motivation in Case-Based Learning

Motivation is widely acknowledged as a key driver of language acquisition. Dornyei's (2001) motivational framework highlights the influence of both intrinsic and extrinsic factors on learning behavior. Intrinsic motivation stems from a learner's inherent interest or enjoyment of the subject, while extrinsic motivation arises from external incentives or pressures. The case study method effectively harnesses both types of motivation by introducing engaging, real-world problems that compel students to find solutions using their language skills. [3]

Motivation is a critical factor in the success of case methodology. Harmer identified four key elements that can negatively impact motivation: classroom environment, teaching methodology, teacher influence, and the level of challenge. [4]

A poorly maintained or overcrowded classroom can hinder students' ability to focus and engage. Similarly, monotonous or ineffective teaching methods may lead to disinterest. Teachers, as central figures in the learning process, have a dual role—they can either inspire students or inadvertently demotivate them. Finally, tasks that are either too challenging or too simple fail to engage students effectively.

Krashen's (1982) Affective Filter Hypothesis further emphasizes the emotional factors influencing motivation. Anxiety, boredom, and fatigue can act as barriers to learning. On the other hand, low anxiety and high self-confidence are conducive to effective language acquisition and active participation. Krashen identified three key emotional variables that influence the affective filter:

1. *Motivation:* A high level of motivation enhances language acquisition.
2. *Self-Confidence:* Confidence in one's ability to learn fosters success in language learning.
3. *Anxiety:* While some anxiety may be beneficial, excessive levels are detrimental to learning.

These variables interact to shape the learning experience. Teachers must aim to reduce anxiety and create a supportive environment that promotes motivation and self-confidence. [5]

Enhancing Key Language Skills through Case Studies

The case study method is a powerful pedagogical tool that not only engages students but also enhances their proficiency in the four key language skills: reading, writing, speaking, and listening. By actively participating in case study-based activities, students can develop critical language skills that are

crucial for their academic and professional success. Below is a closer look at how each of these skills can be improved through case study methodology.

1. Reading skills

Richards & Rodgers's (2001) studies emphasize that case studies often involve analyzing detailed written materials, such as case descriptions, research reports, or scenarios in the target language. This task requires students to read critically, extract key information, and assess the problems presented within the case. Engaging with case study texts allows students to strengthen their reading comprehension by identifying core issues, evaluating evidence, and understanding the structure of professional and academic writing. [6]

2. Writing skills

Another study by Barkieva, G. V. (2020) found that case study-based activities require students to write reports, summaries, or proposals based on their analysis of the case. These writing tasks help students refine their ability to present ideas clearly, structure arguments logically, and use appropriate academic language. Writing case study reports allows students to develop their academic writing skills, helping them articulate complex ideas concisely and coherently while also enhancing their ability to adapt to professional writing formats. [7]

3. Speaking skills

The case study method encourages active participation in group discussions, debates, and presentations, where students are required to speak the target language in real-time, justifying their viewpoints and proposing solutions to the case's problems. Kolb, D. A. (1984) highlights that through discussions and presentations, students gain confidence in speaking the target language. These activities help improve fluency, vocabulary, and the ability to articulate ideas clearly, fostering effective communication in both formal and informal settings. [1]

Listening skills

Listening is a vital skill in case study-based learning, as it involves students listening to presentations, group discussions, or case explanations, providing them with an opportunity to practice detailed listening and comprehension in the target language. Through active listening during these discussions, students enhance their ability to quickly and effectively process spoken information. They also improve their skills in following complex conversations, synthesizing information, and contributing meaningfully to dialogues. According to Richards and Rodgers (2001), this process significantly strengthens students' listening and comprehension abilities. [6]

Conclusion

Case methodology is not only a teaching tool but also a mindset for educators. It enables teachers to rethink and rejuvenate their creative potential. This method supports the democratization and modernization of the educational process, liberates educators from traditional constraints, and encourages progressive thinking, ethical teaching practices, and motivated pedagogical activity.

In language learning the case study method offers an immersive and engaging approach to language learning, offering students the opportunity to practice and refine essential language skills in a practical, real-world context. Through analyzing written materials, drafting reports, participating in discussions, and listening to peers, students enhance their language proficiency. By incorporating case studies into language learning, educators can effectively foster the development of reading, writing, speaking, and listening skills, preparing students for both academic and professional success.

The case methodology has established itself as a cornerstone of modern education, combining historical wisdom with practical innovation. Its ability to engage students in active learning, foster motivation, and enhance professional skills makes it an invaluable tool across disciplines. While challenges such as maintaining motivation and creating effective case materials exist, the benefits far outweigh these hurdles. As educators and learners continue to embrace this methodology, its impact on education will undoubtedly grow, shaping the leaders and thinkers of tomorrow.

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THE DEVELOPMENT OF EDUCATIONAL AND PATRIOTIC VALUES OF STUDENTS THROUGH THE DESCRIPTION OF THE FEATURES OF NATIONAL NATURAL PARKS

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Abstract

National natural parks play a vital role in shaping the educational and patriotic values of students by fostering a deep connection to their country's natural heritage, cultural identity, and environmental responsibility. These parks not only serve as conservation areas but also act as dynamic learning environments where students can engage with the natural world, explore national history, and understand the importance of ecological preservation. Through the study of national parks, students develop an appreciation for their country's unique landscapes, learn about biodiversity and conservation challenges, and gain insight into the cultural significance of these spaces. This educational process helps instill civic responsibility, environmental stewardship, and national pride, while encouraging students to actively participate in the preservation of their nation's natural resources. Moreover, by exploring the global importance of protected areas, students learn the interconnectedness of environmental issues, which fosters a sense of global citizenship. By immersing students in experiential learning through field trips, virtual tours, and community conservation efforts, national parks serve as powerful tools in shaping responsible, informed, and patriotic citizens. This article examines the multifaceted role that national parks play in the development of educational and patriotic values in students, highlighting their impact on both local and global environmental awareness.

Keywords: national parks, environmental stewardship, educational values, patriotic values, civic responsibility, national identity, conservation, biodiversity, experiential learning, global citizenship, cultural heritage, environmental education, student engagement, sustainability, national pride, ecological preservation.

Introduction

The development of educational and patriotic values among students through the description of the features of national natural parks is an effective way to nurture respect for nature, cultural heritage, and national pride. National parks often represent the beauty, biodiversity, and history of a nation, and learning about them can help students connect with their country's natural environment and history. Here's how this approach can contribute to the educational and patriotic development of students:

1) National parks often embody the cultural and natural heritage of a country. By describing the features of these parks, students gain an understanding of their nation's historical and geographical significance. For example, parks might preserve important landscapes, historical sites, and traditional cultural practices. This fosters a sense of pride in one's country and a deeper connection to its history and identity.

2) Promoting Environmental Stewardship

National parks serve as conservation areas, protecting the biodiversity and natural resources of a country. By studying these parks, students develop an awareness of environmental challenges and the importance of conservation. They learn about sustainable practices and the role of protected areas in maintaining ecological balance. This encourages a sense of responsibility for the environment and promotes sustainable living, which is an essential value for future generations.

3. Incorporating National Symbols and Traditions

Many national parks are associated with national symbols, stories, and cultural practices. Through learning about the animals, plants, and geographic features within these parks, students can relate to national emblems, myths, or traditional stories. This understanding enriches their sense of national pride and provides an opportunity to discuss how different natural elements are intertwined with the culture and spirit of the nation.

4. Fostering Patriotism and National Pride

Patriotism is often linked to a sense of pride in a nation's achievements, culture, and history. National parks can be seen as symbols of these values. By exploring the majestic landscapes and diverse ecosystems found in these parks, students can appreciate the beauty and uniqueness of their country. This instills a sense of pride and encourages students to value the nation's natural treasures.

5. Promoting Civic Responsibility and Unity

National parks are often seen as shared public spaces that belong to the citizens of the nation. Through the study of these parks, students learn about the importance of maintaining and protecting these spaces for future generations. This can promote a sense of civic responsibility and collective effort to preserve the nation's heritage. It also strengthens the feeling of unity among students as they learn to appreciate the commonwealth of national treasures that they all share.

6. Hands-on Learning and Experiential Education

Field trips or virtual explorations of national parks allow students to engage in experiential learning. Visiting a national park or engaging with interactive digital resources helps to make abstract concepts more tangible. Experiencing the natural beauty and features of these parks firsthand can be an emotional experience, deepening students' respect for their natural environment. This hands-on approach enhances both the educational and patriotic impact of the experience.

7. Highlighting Conservation Efforts and National Leadership

The study of national parks often involves learning about conservation efforts and the role the nation plays in global environmental protection. This can include understanding how the government or national organizations protect natural resources and biodiversity. Students can also learn about prominent environmental leaders and the policies that have shaped national parks. These lessons teach values of leadership, responsibility, and the importance of protecting what belongs to the nation.

Examples of How National Parks Can Be Used in Education:

USA (Yellowstone National Park): By learning about the history of Yellowstone, the first national park in the world, students can explore the significance of the United States in the global conservation movement and the unique geological and wildlife features that make Yellowstone a national treasure.

- Canada (Banff National Park): Banff's natural beauty and history as Canada's first national park can inspire students to value conservation, the importance of protecting vast wilderness areas, and the historical significance of these parks in Canadian identity.*

- Brazil (Iguaçu National Park): The Iguaçu Falls in Brazil, part of Iguaçu National Park, offer a chance to study the powerful forces of nature, the biodiversity of the region, and the cultural ties of indigenous people to the land. This helps students see the connection between cultural heritage and the environment.*

- Kenya (Masai Mara National Reserve): Studying Masai Mara can teach students about the intersection of wildlife conservation, indigenous cultures, and the role of national parks in maintaining biodiversity and cultural practices.*

Conclusion

Through the study of national natural parks, students develop a deeper appreciation of their country's natural beauty, cultural heritage, and the importance of environmental conservation. This learning experience fosters educational growth, instills patriotic values, and encourages students to take an active role in preserving and respecting the natural world. By highlighting the features of national parks, educators can inspire a new generation to cherish their nation's history, landscapes, and traditions, promoting both national pride and global awareness.

The Development of Educational and Patriotic Values in Students Through the Features of National Natural Parks

National natural parks are not only important for preserving biodiversity and protecting natural resources, but they also serve as vital educational tools that help students connect with their nation's cultural heritage, history, and environmental responsibilities. By exploring the features of national parks, students can gain a deeper understanding of their country's natural beauty, history, and traditions, fostering both educational and patriotic values.

The Role of National Parks in National Identity

National parks are often seen as symbols of a nation's identity, embodying its natural beauty, cultural significance, and historical heritage. They represent the vast landscapes, unique ecosystems, and rare species that are integral to the character of a country. For instance, the vast wilderness of the United States' Yellowstone National Park or the iconic landscapes of Canada's Banff National Park have come to symbolize the nations they belong to.

When students learn about the features of these parks, they are not just studying plants and animals; they are exploring the essence of what makes their country unique. These parks can be a source of national pride and connection, as students begin to see how their natural environments are tied to their cultural heritage and the country's collective identity.

National parks often preserve historical landmarks and sites that reflect important moments in a nation's history. Learning about these features helps students understand how nature and history intertwine. For example, in South Africa's Kruger National Park, students can learn about the country's diverse history, including the role of protected areas in conserving cultural heritage and promoting reconciliation after apartheid.

Cultivating Environmental Stewardship

One of the most significant lessons students can learn through the study of national parks is the importance of environmental stewardship. National parks protect endangered species, conserve vital ecosystems, and promote sustainable use of natural resources. Through the study of these parks, students come to understand the delicate balance that exists between humans and nature.

Educational programs focused on national parks often emphasize the need for conservation and sustainable practices, teaching students to appreciate the importance of protecting natural habitats. By learning about the threats facing national parks—such as climate change, pollution, and poaching—students become more aware of the global environmental challenges that need to be addressed.

Moreover, national parks provide tangible examples of successful conservation efforts, inspiring students to take action in their own communities. Understanding that these parks have been preserved for future generations fosters a sense of responsibility to protect the environment, making environmental education a key aspect of patriotic development.

Promoting Patriotism and National Pride

The beauty and grandeur of national parks evoke a sense of pride and respect for one's country. Whether it is the snow-capped peaks of the Swiss Alps or the tropical rainforests of Costa Rica, national parks often showcase the most breathtaking natural landscapes of a nation. When students explore these places, they begin to appreciate the unique features that make their country stand out on the global stage.

For many students, a visit to a national park is an opportunity to experience firsthand the awe-inspiring beauty of their country's natural wonders. This emotional connection to the land fosters a sense of patriotism, as students recognize the value of their nation's natural resources and the importance of preserving them. The majestic views, diverse ecosystems, and cultural significance of national parks make them a powerful tool for instilling national pride.

In countries where natural parks are seen as national treasures, students may feel a strong sense of ownership over these spaces. This pride can extend beyond the parks themselves, reinforcing a broader sense of unity and shared responsibility to protect the country's heritage. By understanding how national parks contribute to national pride and identity, students develop a deeper connection to their country's natural and cultural landscape.

National Parks as Classrooms for Civic Responsibility

National parks provide an opportunity to teach students about civic responsibility and the role of government in protecting public lands. The creation and management of national parks are often the result of collective efforts by the government, communities, and environmental organizations. Through these lessons, students can understand how decisions made by national leaders impact the protection and conservation of natural resources.

By learning about the policies and strategies used to maintain national parks, students gain insights into the complexities of governance, public policy, and environmental law. Understanding how the public plays a role in protecting these spaces encourages students to become active and responsible citizens who are aware of their rights and duties in relation to the environment.

Moreover, national parks can serve as models for cooperative efforts to address national and global challenges. As students explore how national parks foster collaboration among local communities, government agencies, and international organizations, they learn about the importance of working together for the common good, instilling values of unity and shared responsibility.

Experiential Learning and Hands-on Education

One of the most engaging ways to cultivate educational and patriotic values in students is through experiential learning. Field trips to national parks or virtual tours of these protected spaces allow students to experience nature firsthand. This direct exposure to natural landscapes enhances their understanding of ecological systems, cultural heritage, and national pride.

Field visits to national parks provide opportunities for hands-on learning, where students can observe wildlife, study ecosystems, and appreciate the significance of conservation. These experiences often have a lasting impact, as students remember the beauty of the landscape and the importance of preserving it for future generations. Such experiences also allow students to engage with local guides, park rangers, and conservationists, providing real-world examples of leadership, dedication, and the role of individuals in protecting natural spaces.

National Parks and Global Responsibility

While national parks are rooted in national pride, they also provide a framework for understanding global environmental challenges. Many national parks protect critical habitats that are vital to the health of the planet, such as tropical rainforests, coral reefs, and wetlands. Studying these ecosystems teaches students about the interconnectedness of the world's environment and the importance of global cooperation in addressing environmental threats like climate change and biodiversity loss.

By learning about the international significance of their country's national parks, students develop a broader perspective on environmental issues, which helps them recognize the importance of global stewardship. This fosters both national pride and global responsibility, encouraging students to become environmental leaders who understand the value of collaboration and conservation on a worldwide scale.

Conclusion

The features of national natural parks are not just valuable for protecting biodiversity and preserving ecosystems; they also play an essential role in developing educational and patriotic values in students. By learning about the natural wonders of their country, students connect with their national identity, foster environmental stewardship, and cultivate a deep sense of pride in their nation's heritage. National parks serve as powerful classrooms that teach students about conservation, civic responsibility, and the importance of protecting the environment. Through these lessons, students gain the knowledge, values, and inspiration they need to become active and responsible citizens dedicated to preserving their country's natural treasures for future generations.

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COMMUNICATIVE COMPETENCE IN THE GLOBAL ERA: APPLICATIONS AND INNOVATIONS**Askarova Aidana Eldoskyzy**

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Abstract

Communicative competence, a critical skill in today's interconnected world, goes beyond the mere knowledge of grammar and vocabulary to include the ability to use language effectively and appropriately across various social and cultural contexts. First introduced by sociolinguist Dell Hymes, the concept has evolved into a comprehensive framework that includes grammatical, sociolinguistic, discourse, and strategic components. This article examines the development of communicative competence in the context of language learning and teaching, with a particular focus on the influence of Communicative Language Teaching (CLT) and other modern pedagogical approaches. It discusses how the shift from traditional grammar-focused teaching to communication-based methodologies impacts language learners and explores the latest innovations in language assessment and technology, such as task-based learning and digital tools, which facilitate real-world language use. The article also considers the role of intercultural competence in enhancing communicative abilities and provides insights into the future trends in developing and assessing communicative competence, emphasizing the growing importance of effective cross-cultural communication.

Keywords: Communicative competence, language teaching, communicative language teaching (CLT), linguistic competence, sociolinguistic competence, discourse competence, strategic competence, language assessment, task-based language teaching (TBLT), intercultural communication, digital tools in language learning, global communication

Introduction

In an era of rapid globalization, the ability to communicate effectively goes beyond simply knowing a language's rules. Communicative competence, first introduced by sociolinguist Dell Hymes, encompasses not only the ability to construct grammatically correct sentences but also the capacity to use language appropriately in different social and cultural contexts. As interactions between people from diverse backgrounds become more frequent, it is essential to navigate communication with sensitivity to cultural norms, social roles, and situational expectations. In language learning, this concept challenges traditional methods that focus primarily on grammatical accuracy, encouraging instead the development of skills that enable meaningful and contextually appropriate communication. As the landscape of global communication continues to evolve, the need for communicative competence in both professional and personal contexts is more crucial than ever. This requires a broader understanding of language, one that integrates both linguistic knowledge and the ability to engage with others effectively in varied real-world settings.

What is Communicative Competence?

Communicative competence, a concept introduced by sociolinguist Dell Hymes in the early 1970s, refers to the ability not only to produce grammatically correct sentences but to use language effectively and appropriately in various social and cultural contexts. Hymes argued that language use involves more than linguistic knowledge—it requires understanding when, where, and with whom to speak, as well as how to adjust language based on context. Unlike Noam Chomsky's distinction between linguistic competence (the idealized, rule-based system of language) and linguistic performance (actual language use), Hymes' theory incorporated social and cultural factors, recognizing that effective communication depends on both the form and function of language in real-world settings.

According to Hymes, communicative competence includes knowledge of the rules of grammar (linguistic competence), as well as the ability to use language in a way that is socially and culturally appropriate (sociolinguistic competence). He also emphasized that communicative competence is not just about producing correct sentences, but about using language in a way that achieves communicative goals, such as informing, persuading, or building relationships. This broader view of competence helps

explain why two people might both speak a language fluently, but only one may be effective in a particular social situation.

In the context of language teaching, communicative competence represents a shift from traditional methods that focus primarily on grammatical correctness to approaches that prioritize functional communication. This shift is central to the Communicative Language Teaching (CLT) approach, which aims to equip learners with the ability to communicate meaningfully in real-world situations. By integrating linguistic, sociolinguistic, discourse, and strategic competence, CLT provides a comprehensive framework for fostering effective communication in diverse contexts.

Thus, communicative competence is a dynamic and multifaceted skill set that blends both formal language knowledge and the practical ability to engage in meaningful communication across different environments. This broader understanding is essential in today's globalized world, where effective communication often requires navigating diverse linguistic and cultural landscapes.

Components of Communicative Competence

Building upon Dell Hymes' foundational concept, Michael Canale and Merrill Swain (1980) proposed a model of communicative competence comprising four interrelated components: grammatical, sociolinguistic, discourse, and strategic competence.

- **Grammatical Competence:** This component involves the mastery of the linguistic code, including knowledge of vocabulary, morphology, syntax, phonology, and semantics. It enables individuals to construct and interpret sentences that are both syntactically correct and meaningful. For example, understanding subject-verb agreement and proper tense usage falls under grammatical competence.

- **Sociolinguistic Competence:** This aspect pertains to the ability to use language appropriately across various social contexts, considering factors such as cultural norms, politeness conventions, and the roles of participants in a conversation. It ensures that communication is not only correct but also suitable for the given social situation. For instance, choosing formal language in a job interview versus informal language with friends demonstrates sociolinguistic competence.

- **Discourse Competence:** This competence involves the ability to produce and comprehend coherent and cohesive texts, whether spoken or written. It includes understanding how to organize sentences and ideas logically to form unified messages. For example, effectively using transition words to connect paragraphs in an essay reflects discourse competence.

- **Strategic Competence:** This component refers to the use of verbal and non-verbal strategies to overcome communication challenges, such as misunderstandings or gaps in knowledge. It includes techniques like paraphrasing, asking for clarification, or using gestures to aid comprehension. For instance, if a speaker forgets a specific word, they might describe the concept instead, utilizing strategic competence to maintain the flow of communication.

By integrating these components, communicative competence encompasses not only the grammatical accuracy of language use but also the appropriateness and effectiveness of communication in diverse contexts. This holistic approach is essential for meaningful interaction in both first and second language scenarios.

Communicative Competence in Language Teaching

In the realm of language teaching, the concept of communicative competence has significantly influenced both theoretical frameworks and practical methodologies. Traditional approaches to language instruction often focused on the mastery of grammar and vocabulary, with less emphasis on using language in real-world contexts. However, with the growing recognition of the importance of communication in meaningful contexts, the focus has shifted toward developing learners' communicative competence. This shift is most notably embodied in the Communicative Language Teaching (CLT) approach, which emerged in the 1970s and 1980s and is closely associated with the work of linguists like Henry Widdowson and Christopher Candlin.

In the CLT framework, the primary goal is to enable learners to use language effectively in authentic communication, not just to produce grammatically correct sentences. As Canale and Swain (1980) pointed out, communicative competence encompasses not only linguistic proficiency but also the ability to use language appropriately in diverse social situations. This broader view of language proficiency has led to a more integrated approach to teaching, where emphasis is placed on interaction, negotiation of meaning, and context-driven communication.

One of the central tenets of CLT is its focus on meaningful communication. In practice, this means that language learners are encouraged to participate in tasks and activities that simulate real-life situations. For example, role-playing, problem-solving activities, and group discussions allow students to

practice the kinds of interactions they will encounter outside the classroom. This approach contrasts with more traditional, form-focused methods, such as grammar-translation or audio-lingual methods, which prioritize rote memorization and drills over functional language use.

Moreover, scholars like Michael Long (1983) and Rod Ellis (2003) have emphasized the role of interaction in language learning. According to Long's Interaction Hypothesis, language learners acquire language more effectively when they are actively engaged in meaningful communication that involves negotiation of meaning, error correction, and clarification. This aligns with the principles of communicative competence, where learners are not only using language but are also developing the skills to navigate real-life communicative challenges.

In language teaching, then, communicative competence is not just an abstract theoretical concept but a practical objective. It influences curriculum design, teaching methods, and assessment strategies. Teachers are encouraged to create opportunities for students to practice communication in a range of contexts, fostering not only linguistic skills but also cultural awareness and pragmatic competence. This approach encourages learners to take an active role in their language development, facilitating the transition from classroom-based knowledge to real-world communication.

By focusing on communicative competence, language teaching becomes more than the teaching of linguistic forms; it becomes a dynamic process that prepares learners for effective and appropriate interaction in an increasingly interconnected world.

Measuring and Assessing Communicative Competence

Assessing communicative competence in language learners presents a unique challenge, as it involves evaluating not only linguistic knowledge but also the ability to use language appropriately in various contexts. Unlike traditional language assessments that focus on grammar, vocabulary, and syntax, measuring communicative competence requires a more holistic approach. Researchers and language educators have developed several methods to assess this multifaceted skill, recognizing that a comprehensive evaluation should include both performance and strategic abilities.

One of the most widely accepted frameworks for assessing communicative competence comes from Bachman and Palmer (1996), who proposed a model of language ability that includes both organizational competence (the ability to produce grammatically correct sentences) and pragmatic competence (the ability to use language effectively in real-life situations). In their model, Bachman and Palmer emphasized the importance of context in language use, suggesting that assessments should account for both the form and function of language in communication.

In practice, communicative competence is often assessed through performance-based tasks. These tasks simulate real-world communication and require learners to use language in context. For example, oral proficiency interviews, role plays, and collaborative tasks are commonly used to assess learners' ability to engage in conversation, negotiate meaning, and adapt their language use according to the social setting. These assessments align with the principles of Communicative Language Teaching (CLT), which emphasizes the need for learners to demonstrate their ability to interact meaningfully rather than simply reproduce isolated linguistic forms.

In addition to performance-based assessments, self-assessment has gained prominence in recent years as a tool for measuring communicative competence. According to research by Little (2004), self-assessment encourages learners to reflect on their own communication abilities and to identify areas for improvement. This process of self-evaluation fosters learner autonomy and helps students become more aware of their strengths and weaknesses in communication. By involving learners in the assessment process, educators can promote a deeper understanding of their own competence and motivate them to set personal language learning goals.

However, assessing pragmatic competence, which includes the ability to use language appropriately in various sociocultural contexts, remains a particularly complex task. Kasper and Rose (2002) argue that traditional tests, which often focus on grammatical accuracy, may fail to capture the nuances of pragmatic competence. To address this gap, some researchers have advocated for the development of more sophisticated assessment tools, such as pragmatic judgment tests and discourse completion tasks, which can assess learners' ability to navigate cultural differences and use language in socially appropriate ways.

Overall, measuring communicative competence involves a combination of direct performance tasks, self-assessment, and pragmatic evaluation. By incorporating these diverse assessment methods, educators can gain a more comprehensive understanding of learners' abilities and better support their development of communicative competence. The goal is not only to assess linguistic proficiency but also

to prepare learners for successful communication in real-world contexts, enhancing their ability to interact effectively and appropriately in a variety of settings.

Innovations in Developing Communicative Competence

As the demands of communication in the globalized world continue to evolve, so too have the strategies for developing communicative competence. Traditional approaches to language learning, which often focused primarily on grammar and vocabulary, are being complemented by innovative methodologies that emphasize interaction, real-world application, and the use of technology. Scholars like Donato (2000) and Lantolf (2006) have highlighted the importance of social interaction and collaborative learning in language acquisition, both of which play key roles in fostering communicative competence.

One significant innovation in language education is the incorporation of task-based language teaching (TBLT), which is grounded in the principles of communicative competence. TBLT focuses on language learning through meaningful tasks, where learners use language to complete real-world activities such as problem-solving, role-playing, or decision-making. According to Ellis (2003), task-based learning encourages learners to focus on the meaning and function of language, rather than on its form, thus promoting the development of both linguistic and strategic competence. Tasks can vary from simple activities, such as ordering food in a restaurant, to complex projects that require collaboration and negotiation of meaning, such as group presentations or debates.

Moreover, the integration of technology has brought about new opportunities for developing communicative competence, especially in the form of digital platforms and language learning apps. Technologies such as online discussion forums, video conferencing tools, and virtual exchange programs allow learners to engage in real-time communication with speakers from different cultural and linguistic backgrounds. According to Sykes (2010), telecollaboration—or the use of online communication tools for language exchange—enhances learners' intercultural competence and allows them to practice language in authentic, context-driven environments. Through these technologies, learners are able to interact with peers across the globe, gaining exposure to a wide range of linguistic forms and cultural practices.

Another innovation in communicative competence development is the use of mobile-assisted language learning (MALL). With the proliferation of smartphones and apps, learners can now practice language anytime and anywhere. Apps like Duolingo, Babbel, and HelloTalk provide learners with interactive exercises, real-time feedback, and opportunities to communicate with native speakers. These tools not only facilitate linguistic practice but also promote strategic competence by encouraging learners to use language in creative ways, such as through voice messages, text chats, or video exchanges.

Additionally, research by Thorne (2003) on the role of social media in language learning has shed light on how platforms like Facebook, Twitter, and Instagram can serve as tools for developing communicative competence. These platforms allow learners to engage in informal communication, share cultural insights, and practice writing and speaking in authentic contexts. The informal nature of social media also enables learners to experiment with language, testing different forms of expression and receiving immediate feedback from their peers.

Finally, the growing emphasis on intercultural competence in language learning has led to innovations that incorporate cultural understanding alongside linguistic development. As argued by Byram (1997), true communicative competence requires an awareness of the cultural norms and values associated with language use. In response, many language programs now integrate intercultural communicative competence (ICC) into their curricula, encouraging learners to engage with diverse perspectives and to adapt their language use in ways that are socially and culturally appropriate.

The development of communicative competence has been significantly influenced by innovations in teaching methodologies, technology, and cultural exchange. Through task-based learning, digital platforms, and social media, learners are provided with new opportunities to practice language in interactive, real-world contexts. As a result, these innovations not only help learners improve their linguistic skills but also equip them with the strategic, sociolinguistic, and intercultural tools necessary for successful communication in today's interconnected world.

Conclusion

In conclusion, communicative competence is an essential skill that extends far beyond basic language proficiency. It involves the ability to use language effectively and appropriately across different social, cultural, and situational contexts. The development of communicative competence enables individuals to engage in meaningful interactions, whether in personal, academic, or professional settings. As globalization continues to connect people across diverse linguistic and cultural backgrounds, the

importance of communicative competence cannot be overstated. It is a key factor in fostering mutual understanding, reducing cultural barriers, and promoting successful collaboration in an increasingly interconnected world.

Looking to the future, the development and assessment of communicative competence will continue to evolve, driven by advancements in technology and changing communication needs. The integration of digital tools, mobile apps, and virtual exchanges offers new ways to assess and enhance communicative competence, allowing learners to engage in real-world communication scenarios anytime and anywhere. Additionally, the growing focus on intercultural competence and the ability to navigate diverse cultural contexts will likely play a more central role in language education and assessment frameworks. As communicative competence becomes an even more critical skill in the global context, educators and researchers will need to continue refining their approaches to both teaching and evaluating this multifaceted ability.

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METHODS FOR INTRODUCING DIGITAL TECHNOLOGIES INTO THE EDUCATIONAL PROCESS TO DEVELOP COMMUNICATIVE COMPETENCE AMONG UNIVERSITY STUDENTS

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INTRODUCTION

In the contemporary educational landscape, communicative competence stands as a cornerstone of effective learning, particularly for university students preparing to engage in globalized professional and academic environments. Defined as the ability to use language effectively and appropriately in various communicative contexts, this skill encompasses linguistic, sociolinguistic, and strategic dimensions critical for success. As higher education increasingly shifts toward digital and hybrid learning models, the integration of digital technologies into pedagogical practices has emerged as a powerful catalyst for enhancing these competencies.

The proliferation of digital tools offers unparalleled opportunities to facilitate interactive, personalized, and contextually rich language learning experiences. From collaborative platforms that support real-time communication to immersive virtual environments that simulate real-world scenarios, technology is reshaping how students develop and refine their communicative abilities. This integration aligns with the broader goals of fostering 21st-century skills, which include critical thinking, digital literacy, and intercultural communication.

However, leveraging digital technologies effectively requires careful planning and implementation. Educators must navigate challenges such as digital literacy gaps, resource accessibility, and the need for pedagogical innovation to ensure that technological integration enhances rather than complicates the learning process. This article explores the methodologies, tools, and practices for embedding digital technologies into the educational process, focusing on their role in developing communicative competence among university students. It also highlights practical examples, challenges, and potential solutions to inform educators and stakeholders aiming to modernize higher education.

MAIN BODY

1.1 Role of Technology in Language Learning

Digital tools such as language learning apps, social media platforms, and interactive learning management systems (LMS) have shown significant potential in supporting language acquisition. These tools provide authentic, context-rich environments that encourage active engagement and practical use of language. For example, platforms like Duolingo and Kahoot gamify learning, enhancing motivation and retention, while video conferencing tools like Zoom support real-time spoken interaction.

1.2 Enhancing Key Competencies Through Technology

Multimedia technologies significantly enhance education by boosting student motivation and improving knowledge retention. They simulate real-world communication scenarios, providing valuable practice in conversational skills. Interactive multimedia, such as games and videos, creates engaging and dynamic learning environments, fostering confidence in speaking (Teaching speaking skill through multimedia, 2024)

Digital technologies support the development of various communicative skills. Tools such as podcasts, interactive videos, and voice-recognition software facilitate the practice of pronunciation and listening comprehension, while virtual meeting platforms enable real-time conversational practice, enhancing both listening and speaking abilities. Additionally, online resources, collaborative documents, and writing apps encourage the development of critical reading and writing skills in authentic contexts, further improving reading and writing abilities. Social media and collaborative platforms play a key role in fostering intercultural competence by promoting cross-cultural communication and providing exposure to diverse linguistic and cultural practices.

1.3 Methods for Integrating Digital Technologies

Integrating digital technologies into the educational process has proven to be an effective way to enhance student engagement and develop communicative competence. Three prominent methods include blended learning approaches, Bring Your Own Device (BYOD), and the use of interactive applications.

1. Blended Learning Approaches

Blended learning combines traditional face-to-face instruction with online learning components, creating a flexible and engaging environment. Platforms such as Google Meet, Zoom, and Moodle are widely used to facilitate blended learning by offering tools for synchronous and asynchronous communication.

Educators can use these platforms for online discussions, group projects, and virtual classrooms. For example, Moodle provides forums and assignments where students can collaborate on tasks, while Zoom enables real-time interaction to practice speaking and listening skills. This approach allows students to access learning materials at their convenience while engaging in live discussions that foster interaction and communication. Research has demonstrated that blended learning enhances student engagement, reduces language anxiety, and improves participation in communicative tasks (European Proceedings, 2020; IGI Global, 2021).

2. Bring Your Own Device (BYOD)

BYOD policies encourage students to use their personal smartphones, tablets, or laptops for educational purposes. This method capitalizes on the familiarity students have with their devices, promoting self-directed learning and enhancing motivation. Studies indicate that BYOD promotes digital literacy, increases engagement, and allows students to take ownership of their learning (European Proceedings, 2020; ERIC Database, 2022). For instance, students can record themselves using voice recognition apps, participate in virtual debates through mobile platforms, or practice vocabulary with flashcard apps like Quizlet.

BYOD reduces the need for institutional investment in hardware and allows students to personalize their learning experiences.

3. Interactive Applications

Interactive applications like Duolingo, EF Smart English, and Kahoot gamify the learning process, making it both enjoyable and effective. These tools are designed to build communicative skills through activities that mimic real-world interactions. Duolingo provides structured language lessons focused on vocabulary, grammar, and pronunciation with immediate feedback. Kahoot promotes collaboration and competition through quizzes by using the target language in a fun way. EF Smart English uses AI-powered lessons tailored to individual needs (IGI Global, 2021; European Proceedings, 2020). Such tools encourage frequent practice, improve motivation, and foster the development of communicative competence through real-world scenarios.

1.4 Case Studies and Examples

The integration of digital technologies in higher education has been extensively studied, with numerous examples demonstrating their success in enhancing students' communicative competence. This section highlights real-world applications and findings from research studies that underscore the transformative impact of these tools.

Flipgrid, a video discussion platform, has been implemented in university language courses to encourage speaking practice. For example, a study conducted by IGI Global (2021) found that using Flipgrid for asynchronous video assignments significantly improved students' confidence in speaking. Learners recorded responses to prompts, which were then shared with peers for feedback. This method not only fostered collaboration but also helped reduce anxiety associated with live speaking tasks, ultimately enhancing fluency and articulation.

A case study published in the ERIC Database (2022) examined the use of Google Docs in a higher education English course. Students were tasked with co-writing essays and completing group projects. The collaborative nature of Google Docs allowed real-time interaction, with learners providing immediate feedback to one another. The study revealed that students developed better organizational and communication skills, particularly in formal writing tasks. Moreover, the tool encouraged active participation and promoted critical thinking during the drafting process.

Virtual Reality (VR) tools like Mondly VR have been used to immerse students in real-life communication scenarios. A study highlighted by MDPI (2022) explored the use of VR in a university ESL course, where students practiced conversational skills in simulated environments, such as a restaurant or airport. The findings indicated that VR technology enhanced student engagement and motivation while providing a safe space for practicing language without fear of judgment. Students reported improvements in fluency and cultural awareness, demonstrating the potential of VR to complement traditional teaching methods.

WhatsApp has been leveraged in higher education to facilitate informal communication among students. A European Proceedings (2020) study implemented WhatsApp group chats for discussing course content and sharing resources. Students engaged in text and voice message exchanges in English,

which promoted spontaneous use of the target language. The study found that students showed improved vocabulary acquisition and better adaptability in informal communication contexts.

1.5 Challenges and Opportunities

The integration of digital technologies in education, while promising, faces several challenges that can hinder its effectiveness. One of the primary obstacles is the digital divide, which refers to the unequal access to technology and the internet across different socioeconomic groups, leading to disparities in learning opportunities. Another significant barrier is the limited training and professional development opportunities available to educators, who may struggle to incorporate new digital tools effectively into their teaching practices. Furthermore, there is often resistance to new teaching methodologies, particularly from those who are accustomed to traditional approaches or are skeptical about the effectiveness of digital tools in the learning process.

However, alongside these challenges, there are substantial opportunities for growth and improvement. The adoption of inclusive practices, such as ensuring that all learners, regardless of their background or abilities, can access and benefit from digital resources, can help bridge the gap. Enhancing digital literacy among both students and teachers is another crucial step, ensuring that all individuals are equipped with the skills necessary to navigate and make the most of digital technologies. Additionally, leveraging adaptive technologies, such as learning management systems that cater to diverse learning styles and needs, can significantly improve the learning experience and support a wide range of learners, from those with disabilities to those who require more advanced resources. Moreover, creating a culture of collaboration within educational institutions, where educators share best practices and success stories, can mitigate resistance to change. Recognizing and rewarding innovative teaching practices can also motivate teachers to embrace technology in their classrooms (European Proceedings, 2020). By addressing these challenges and embracing the opportunities that digital technologies offer, the education system can create a more inclusive and effective learning environment for all students.

1.6 Impacts on Communication and Soft Skills

Digital tools such as YouTube, podcasts, and language-learning applications provide access to authentic listening materials in various accents and contexts. Students can practice understanding spoken language through interactive exercises, live streams, and video content. For example, platforms like Duolingo incorporate listening comprehension tasks into their lessons, enabling learners to improve both accuracy and speed (IGI Global, 2021). Research has shown that such exposure enhances auditory discrimination and the ability to understand real-life conversations (European Proceedings, 2020).

Technologies like AI-powered chatbots and video conferencing platforms (e.g., Zoom or Flipgrid) offer opportunities for practicing spoken communication. These tools enable students to engage in conversations, receive immediate feedback, and rehearse speech in authentic scenarios. For instance, chatbots simulate dialogues with native speakers, building confidence and fluency without fear of judgment. According to studies, these tools significantly improve pronunciation, conversational flow, and overall confidence in oral communication (IGI Global, 2021).

E-books, digital libraries, and online articles expose students to diverse reading materials that cater to various proficiency levels. Features such as in-app dictionaries, annotations, and hyperlinks facilitate a deeper understanding of texts. Furthermore, adaptive reading platforms personalize content based on a learner's level, promoting gradual skill development. Digital tools also encourage extensive reading, which is vital for vocabulary acquisition and comprehension skills (European Proceedings, 2020).

Collaborative tools like Google Docs and writing assistants such as Grammarly assist students in improving writing skills through practice and instant feedback. These tools allow learners to refine grammar, structure, and style, while collaborative writing activities enhance their ability to articulate ideas effectively in a group setting. Studies suggest that using digital platforms for writing tasks improves coherence, organization, and attention to detail in written communication (MDPI, 2022).

Digital technologies play a pivotal role in fostering critical thinking and collaboration, essential soft skills for the modern world. Platforms like Kahoot and Padlet encourage problem-solving through gamified quizzes and brainstorming activities, enabling students to analyze, synthesize, and evaluate information in real-time. Additionally, tools such as Slack and Microsoft Teams facilitate teamwork by supporting group communication and project management. These technologies not only develop interpersonal skills but also prepare students for collaborative work environments, making them indispensable in educational and professional contexts (IGI Global, 2021).

CONCLUSION

The integration of digital technologies into language education has revolutionized the development of communicative competence, offering unprecedented opportunities for engagement,

personalized learning, and skill enhancement. By leveraging tools such as social media platforms, collaborative applications, and advanced technologies like AI and virtual reality, educators can create immersive and interactive environments that foster meaningful language practice.

These advancements not only enhance proficiency across listening, speaking, reading, and writing but also nurture essential soft skills such as critical thinking and collaboration. To fully realize these benefits, educational stakeholders must focus on embedding digital tools within curricula, ensuring teacher training, and addressing issues of accessibility and digital literacy.

Looking ahead, further research is essential to explore emerging technologies, refine best practices, and address challenges such as data security and equitable access. By embracing the potential of digital tools, educators can transform language learning into a more inclusive, engaging, and impactful experience, preparing learners for the demands of a globalized world.

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THE SHIFT TO DIGITAL: HOW ONLINE PLATFORMS REDEFINED TEACHING DURING THE COVID-19 PANDEMIC

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Abstract

The COVID-19 pandemic caused an unprecedented shift in education, with online platforms emerging as the cornerstone of teaching. This review examines the transformation of teaching methodologies, highlighting how digital tools such as Zoom, Google Classroom, and Microsoft Teams facilitated remote education. It explores the challenges and benefits experienced by educators and students, including technological barriers, engagement issues, and the opportunities for flexible learning. Drawing on recent studies, this article also discusses the long-term implications of integrating digital platforms into education, offering insights into how these tools may shape future teaching practices.

Keywords: COVID-19, online platforms, remote teaching, digital education, e-learning, hybrid education, student engagement

Introduction

The COVID-19 pandemic profoundly impacted education systems worldwide, forcing institutions to rapidly transition from traditional in-person teaching to online learning. This shift underscored the critical role of digital platforms, such as Zoom, Google Classroom, and Microsoft Teams, in maintaining educational continuity during a global crisis. While these tools enabled remote teaching, they also exposed significant challenges, including disparities in access to technology, unpreparedness among educators and students, and the struggle to maintain student engagement in virtual environments.

The adoption of online platforms brought about a redefinition of teaching practices. Educators had to rethink pedagogy, leveraging digital tools to deliver lessons effectively, assess learning, and foster interaction in the absence of physical classrooms. At the same time, students experienced a transformation in their learning environments, characterized by greater flexibility but also by increased dependence on self-discipline and technological resources.

This review explores the multifaceted impacts of the shift to digital education during the COVID-19 pandemic. It analyzes the challenges faced, the strategies employed to address them, and the benefits of adopting online platforms in teaching. The review also considers the long-term implications of this shift, highlighting how the integration of digital tools may continue to influence education in the post-pandemic era. By synthesizing recent research, this article aims to provide a comprehensive understanding of how online platforms redefined teaching during this critical period.

The Role of Online Platforms in Enhancing Student Engagement and Performance

Online platforms played a critical role in bridging the gap between educators and students during the COVID-19 pandemic, ensuring that learning continued despite widespread school closures. Various studies have shown how these platforms not only facilitated remote teaching but also enhanced student engagement and academic performance when used effectively.

Platforms like Zoom, Microsoft Teams, and Google Classroom allowed for synchronous teaching, creating opportunities for real-time interaction, group discussions, and Q&A sessions. Tarazi and Cecilia (2023) found that features such as breakout rooms and live polling significantly increased student engagement by fostering participation in smaller, less intimidating settings. Similarly, Martyushev et al. (2021) highlighted the use of multimedia tools like videos and interactive quizzes, which helped maintain student attention and involvement in virtual foreign language classes.

The flexibility of asynchronous learning platforms, such as Moodle and Blackboard, enabled students to access recorded lectures and learning materials at their convenience. This feature was particularly beneficial for students balancing education with other responsibilities, such as part-time jobs or caregiving roles (Pawagi & Hire, 2021). In addition, the self-paced nature of asynchronous platforms allowed learners to revisit challenging concepts, thereby improving comprehension and performance.

Advanced platforms leveraged analytics to provide personalized learning experiences. For example, Aziza (2021) noted that mathematics platforms like Desmos offered adaptive features that adjusted

difficulty levels based on student performance, keeping them challenged but not overwhelmed. This level of customization was especially valuable in subjects requiring step-by-step skill-building.

While the technological shift presented challenges, many students recognized the advantages of digital learning. Surveys conducted by Krishnan and Sharma (2022) revealed that students appreciated the variety of tools available on e-learning platforms, such as automated quizzes, digital whiteboards, and collaborative document sharing, which enriched their learning experience. However, the study also noted that these benefits were contingent on the availability of reliable internet and suitable devices, highlighting disparities in access.

In settings with limited digital infrastructure, educators and institutions found creative solutions to keep students engaged. For instance, Tarazi and Cecilia (2023) reported that in regions with inconsistent internet access, platforms like WhatsApp were utilized for sharing resources and providing feedback, demonstrating how even basic technologies could support learning continuity. Such adaptations not only maintained engagement but also encouraged resilience among students and educators.

Perceptions of Online Learning Among Students

The perceptions of students towards online learning platforms have evolved significantly during the COVID-19 pandemic. Several studies have shown that the rapid transition to digital platforms often led to mixed feelings among students, with a variety of experiences shaped by access to technology, support systems, and individual learning preferences.

Research by Tarazi and Cecilia (2023) and Pawagi and Hire (2021) found that students' perceptions of the role of online teaching platforms in enhancing engagement and academic performance were generally positive when the platforms were user-friendly and interactive. Students reported feeling more engaged when they could easily access resources, participate in live discussions, and engage with multimedia content. However, the lack of face-to-face interaction, as highlighted by Adedoyin and Soykan (2020), led to a reduction in active participation, particularly for those struggling with the isolation of virtual learning.

Students' experiences with different learning modes (synchronous vs. asynchronous) varied. Asynchronous learning, though offering flexibility, was sometimes perceived as less engaging and offered fewer opportunities for immediate feedback (Dhawan, 2020). In contrast, synchronous learning sessions were found to be more engaging, allowing for real-time discussions and teacher-student interactions. However, the technical challenges involved in live sessions, such as internet connectivity issues and limited access to devices, particularly in lower-income regions, compounded the difficulties for many students (Hodges et al., 2020).

The psychological impact of online learning was another area of concern. Many students reported feelings of isolation and burnout, as noted by Czerniewicz et al. (2020), who examined the emotional toll of online learning during the pandemic. Additionally, social interaction—which is crucial for motivation and well-being—was severely restricted in digital classrooms. This lack of social engagement led to increased stress and anxiety among students, which further impacted their academic performance (Krishnan & Sharma, 2022).

Technological and Pedagogical Challenges

The shift to online education exposed several technological and pedagogical challenges, many of which persist in the ongoing efforts to integrate digital platforms into mainstream education. These barriers, if not addressed, could undermine the long-term efficacy of online learning systems.

A key challenge during the pandemic was the disparity in access to technology. As pointed out by Raja and Nagasubramani (2018), many students lacked reliable internet connections or suitable devices for online learning. This digital divide was particularly pronounced in rural areas or low-income communities, leading to unequal learning opportunities. Additionally, the rapid shift to digital platforms highlighted that many teachers were not adequately trained to use the tools effectively, resulting in inefficient learning experiences for students (Hofer et al., 2021).

In terms of pedagogy, the lack of in-person interaction posed significant difficulties for educators, especially those teaching subjects that traditionally rely on hands-on experience or live discussion, such as foreign languages and mathematics. Aziza (2021) noted that mathematics teaching, in particular, was impacted by the inability to engage students in interactive problem-solving in real-time. Similarly, language teachers struggled with maintaining student engagement and fluency when teaching remotely, as effective language instruction often relies on dynamic, in-person communication (Martyushev et al., 2021).

The shift also required a rethinking of assessments. Online assessments were often seen as less reliable due to concerns about cheating, the limited scope of assessments in online formats, and the challenges of measuring student participation (Bozkurt et al., 2020). New strategies were needed to maintain academic integrity while ensuring that students were evaluated fairly and comprehensively.

The lack of adequate training and support for teachers also emerged as a significant obstacle. Many teachers found themselves navigating unfamiliar tools and platforms without proper preparation, which affected their ability to deliver effective lessons (Raja & Nagasubramani, 2018). This issue highlights the critical need for teacher training programs to emphasize digital pedagogy and familiarize educators with the tools they need to succeed in an increasingly digital educational environment (Dewi et al., 2022).

Benefits of Online Platforms in Education

Despite the numerous challenges, the adoption of online platforms during the COVID-19 pandemic brought about significant benefits that have reshaped modern education. These platforms facilitated continuous learning, introduced innovative teaching methods, and increased accessibility for diverse learners.

One of the most notable advantages of online platforms was their ability to provide easy access to a wide range of learning resources. Platforms like Moodle, Google Classroom, and Edmodo enabled educators to share multimedia materials, including videos, PDFs, and interactive tools, which enriched the learning experience. Aziza (2021) emphasized the importance of these platforms in making complex subjects like mathematics more accessible through visual aids and interactive simulations. Similarly, Martyushev et al. (2021) noted that foreign language students benefited from online dictionaries, pronunciation tools, and video lessons, which enhanced their language acquisition.

Online learning platforms offered students the flexibility to learn at their own pace. Recorded lectures, downloadable materials, and self-paced assignments allowed learners to revisit content, clarify doubts, and manage their schedules effectively. Dewi et al. (2022) highlighted that these features were particularly beneficial for pre-service teachers, who could balance their training with academic responsibilities. Platforms with adaptive learning technologies, like those mentioned by Du (2022), provided personalized learning paths, enabling students to focus on areas requiring improvement.

While online platforms posed interaction challenges, they also introduced innovative tools to foster collaboration. Zoom's breakout rooms and Microsoft Teams' collaborative features allowed for group discussions, peer reviews, and team projects. Hofer et al. (2021) found that gamified platforms like Kahoot and Quizizz not only engaged students but also encouraged friendly competition, making learning enjoyable and interactive. These tools were especially effective in retaining students' interest in virtual classrooms.

Digital platforms bridged geographical gaps, allowing students from remote areas to access high-quality education. For instance, Momanyi (2022) highlighted how online tools enabled Kenyan students to connect with resources and educators that were previously inaccessible. Similarly, Muzdalifah and Herningtias (2021) discussed how online platforms facilitated the teaching of Indonesian to foreign learners, opening avenues for global learning opportunities.

Online teaching platforms empowered educators to explore new teaching strategies and tools. Dewi et al. (2022) reported that pre-service teachers developed digital teaching portfolios, which enhanced their technological proficiency and pedagogical creativity. Moreover, platforms like Canva and Kahoot allowed educators to design visually appealing and interactive lessons, making their teaching more effective and engaging.

The use of online platforms also contributed to sustainable education practices. Digital classrooms reduced the dependency on physical resources such as paper and classroom space, aligning with global sustainability goals. Martyushev et al. (2021) emphasized how integrating technology in teaching during the pandemic could serve as a model for future sustainable education strategies.

Conclusion

The COVID-19 pandemic fundamentally redefined the educational landscape, bringing online platforms to the forefront of teaching and learning. These platforms not only ensured continuity in education during a global crisis but also demonstrated the potential for innovation, accessibility, and personalization in learning experiences. However, their widespread adoption also revealed significant challenges, including technological barriers, disparities in access, and the need for pedagogical adaptation.

The lessons learned during this period underscore the importance of embracing a hybrid approach that combines the flexibility and resourcefulness of online platforms with the engagement and

immediacy of in-person education. Such models promise to make education more inclusive, adaptive, and sustainable, provided institutions and policymakers invest in robust infrastructure and teacher training.

Moving forward, the integration of advanced technologies like AI, AR, and VR into online platforms will further enhance learning experiences, making them immersive and tailored to individual needs. The pandemic has thus acted as a catalyst for change, accelerating the shift toward a more dynamic and technology-driven educational paradigm. As the education sector continues to evolve, it must prioritize equity, innovation, and the holistic development of learners to fully realize the potential of these digital tools.

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THE ROLE OF INTERCULTURAL COMMUNICATIVE COMPETENCE (ICC) IN TRAINING FOREIGN LANGUAGE TEACHERS

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Abstract

Intercultural Communicative Competence (ICC) is a vital component of foreign language teacher training in today's globalized world. It empowers educators to integrate cultural contexts into language teaching, equipping students with the ability to navigate complex intercultural interactions effectively. ICC encompasses three main components: cultural knowledge, intercultural communication skills, and attitudes of openness, empathy, and respect (Byram, 1997). Teachers with well-developed ICC act as cultural mediators, guiding students to understand the social and cultural norms that shape communication while promoting critical thinking and tolerance.

Despite its growing importance, the integration of ICC into teacher training programs faces several challenges, including limited access to multicultural environments, insufficient resources, cultural biases, and the complexity of assessing ICC development (Deardorff, 2006). These barriers often hinder educators' ability to teach intercultural skills alongside linguistic proficiency. This article explores the role and significance of ICC in foreign language education, identifies common obstacles to its development, and presents effective strategies for overcoming them. Methods such as immersive experiences (e.g., study abroad programs), case-based learning, multimedia resources, and role-playing activities are examined for their effectiveness in enhancing ICC. Additionally, the role of governments and educational institutions in advancing ICC through policies, funding, and international collaboration is highlighted as a critical factor for success.

By addressing these challenges and implementing innovative strategies, teacher training programs can foster a new generation of educators capable of preparing students for successful intercultural communication in an increasingly interconnected world.

Keywords: *intercultural Communicative Competence (ICC), foreign Language teachers, teacher Training, cultural awareness, interactive teaching.*

Introduction

In a world increasingly shaped by globalization, effective communication transcends linguistic knowledge. Foreign language teachers are no longer just instructors of grammar and vocabulary; they are cultural mediators, guiding students to navigate the complexities of a multicultural environment. The role of foreign language teachers has evolved, requiring not only linguistic proficiency but also the ability to understand, teach, and adapt to diverse cultural contexts (Byram, 1997). This shift is particularly critical as language learners are not just communicating in the target language but are also learning to interact with people from different cultural backgrounds (Byrd & Saha, 2016).

Intercultural communicative competence (ICC) is an essential skill for foreign language teachers, enabling them to foster an environment where cultural awareness and communication skills are integrated into language learning. ICC goes beyond teaching facts about culture—it involves understanding the underlying values, beliefs, and practices that shape how people communicate and interact in diverse settings. Educators who possess ICC are able to guide students through the nuances of language use in different cultural contexts, helping them develop not only linguistic skills but also the intercultural sensitivity necessary for effective communication in our globalized world (Byram, 1997; Fantini, 2009).

Despite its importance, the integration of ICC into foreign language teacher training remains a challenge. Many teacher training programs focus primarily on linguistic knowledge and pedagogical techniques, with limited emphasis on intercultural aspects. Additionally, teachers often face challenges such as limited access to authentic cultural materials, insufficient exposure to diverse cultural contexts, and a lack of resources for professional development in this area (Galskova, 2015). This article explores the significance of ICC for foreign language teachers, highlights the challenges in its development, and

proposes effective strategies to overcome these barriers. By focusing on methods such as immersive experiences, case-based learning, and multimedia resources, this article seeks to identify ways to enhance ICC in teacher training programs and equip educators to navigate the complexities of intercultural communication in the classroom.

The Importance of Intercultural Communicative Competence (ICC)

Intercultural Communicative Competence (ICC) is fundamental in foreign language education as it integrates cultural understanding with linguistic skills. ICC enables teachers to go beyond vocabulary and grammar, helping students grasp the cultural context of language. According to Byram (1997), ICC involves three main components: cultural knowledge, communication skills to adapt language use in diverse situations, and an open, reflective attitude towards cultural differences.

Teachers with strong ICC can design lessons that promote cultural sensitivity, foster empathy, and encourage tolerance. By addressing stereotypes and integrating cultural examples into language teaching, they help students better understand how culture shapes communication. Moreover, ICC prepares students for globalized environments, where the ability to navigate intercultural interactions is critical for academic, professional, and personal success.

Incorporating ICC also benefits teachers themselves, as it enhances their adaptability and effectiveness in multicultural classrooms. With its focus on building mutual respect and cultural awareness, ICC enriches the language learning experience, making it both meaningful and practical.

The Role of ICC for Foreign Language Teachers

As discussed in the introduction, Intercultural Communicative Competence (ICC) plays a vital role in the professional development of foreign language teachers, equipping them to address the cultural dimensions of language teaching effectively. Teachers are not only responsible for delivering linguistic content but also for guiding students in understanding the social and cultural norms that influence communication. This dual responsibility makes ICC an indispensable skill for educators (Byram, 1997)..

Teachers with strong ICC serve as cultural mediators, bridging gaps between the students' native culture and the target language's culture. They help students navigate cultural differences, fostering an appreciation for diversity and encouraging tolerance. According to Byram (1997), ICC enables teachers to integrate cultural knowledge into lessons, making language learning more meaningful and relevant.

Additionally, ICC allows teachers to challenge cultural stereotypes by promoting critical thinking and presenting nuanced perspectives on other cultures. By doing so, educators help students develop empathy and intercultural awareness, essential for effective communication in a globalized world. ICC also enhances teachers' adaptability, enabling them to manage multicultural classrooms and cater to the diverse needs of their students (Kramsch, 1993).

Challenges in Developing Intercultural Communicative Competence (ICC)

Developing Intercultural Communicative Competence (ICC) in foreign language teacher training faces several significant challenges. One of the main obstacles is limited exposure to multicultural environments, as many teachers and students work in culturally homogeneous settings, restricting opportunities for real-life intercultural interactions. Stereotypes and cultural biases also hinder ICC development, as teachers may unintentionally reinforce oversimplified views of other cultures, making it difficult to promote empathy and understanding (Galskova, 2015).

Additionally, resource constraints—such as insufficient access to authentic cultural materials, international exchange programs, or multicultural training—can limit teachers' ability to implement ICC effectively. Resistance to change is another challenge, as adopting ICC-focused teaching methods often requires shifting from traditional approaches to more interactive, student-centered methods. Moreover, assessing ICC is complex, as it encompasses subjective qualities like attitudes and empathy, which are difficult to measure with standardized tools (Deardorff, 2006). Finally, emotional and psychological barriers, particularly when discussing sensitive cultural topics, can make it challenging to create a safe, open environment for intercultural learning. Overcoming these challenges requires increased access to resources, professional development for teachers, and innovative teaching practices that foster both linguistic and cultural competence in students.

Methods for Developing Intercultural Communicative Competence (ICC)

There are several effective methods for developing Intercultural Communicative Competence (ICC) among foreign language teachers, which help them integrate cultural understanding into their teaching practices. These methods are designed to overcome the challenges of limited exposure, stereotypes, and resource constraints while fostering an environment where students can engage with and appreciate cultural diversity.

1. Immersive Experiences and Study Abroad Programs

One of the most effective ways to develop ICC is through immersive experiences, such as study abroad programs or cultural exchange initiatives. By participating in international programs or engaging with native speakers in real-world settings, teachers gain firsthand experience of different cultural contexts. Programs like Erasmus+ and Fulbright enable teachers to live and work in foreign countries, enhancing their understanding of cultural practices, social norms, and communication styles. This experiential learning is invaluable in developing the empathy, adaptability, and cultural sensitivity required for effective intercultural communication (European Commission, 2014)..

2. Case-Based Learning

Case-based learning is another practical method for developing ICC. In this approach, teachers present real-world scenarios involving intercultural misunderstandings or conflicts. By analyzing these cases, students can identify cultural differences and explore strategies for resolving conflicts. According to Galskova (2015), case studies provide a structured way for students to apply theoretical knowledge to practical situations, fostering critical thinking and reflective skills. This method also helps teachers create a safe space for discussing sensitive cultural issues, which is essential for overcoming emotional barriers.

3. Multimedia Resources and Technology

Incorporating multimedia resources, such as films, podcasts, and digital media, can significantly enhance ICC development. These resources expose students to authentic cultural content, providing insights into cultural practices, traditions, and ways of life. Teachers can use films, documentaries, or even virtual tours of foreign countries to illustrate cultural differences and promote intercultural dialogue (Byram et al., 2002). Multimedia tools also make learning more engaging and interactive, allowing students to explore cultural contexts in a dynamic way. With technological advancements, online platforms can also connect classrooms with native speakers, facilitating real-time intercultural communication.

4. Role-Playing and Simulation Activities

Role-playing and simulation activities are highly effective methods for developing ICC, as they encourage active participation and practice in intercultural situations. Teachers can create scenarios where students must navigate cultural differences, such as negotiating business deals, attending social gatherings, or solving intercultural conflicts. These exercises allow students to experience different perspectives and practice adapting their communication strategies. As noted by Kramsch (1993), such activities help students develop not only linguistic skills but also cultural awareness and empathy, as they are forced to consider how different cultural backgrounds shape communication.

5. Collaborative Projects with International Partners

Collaborative projects with international institutions or students from other countries provide opportunities for teachers and students to interact with peers from different cultural backgrounds. These projects can range from joint research assignments to virtual classrooms or group discussions on cultural topics. Collaboration across borders encourages intercultural exchange, allowing participants to learn from one another's perspectives. Through these projects, teachers can enhance their understanding of cultural diversity while helping students develop the ability to work collaboratively in multicultural teams (Fantini, 2009)..

6. Reflection and Self-Assessment

Encouraging teachers and students to engage in self-reflection is an essential method for developing ICC. Reflective practices, such as journaling or group discussions, help individuals critically examine their own cultural assumptions and biases. This self-awareness is crucial for reducing stereotypes and enhancing intercultural sensitivity (Deardorff, 2006). According to Deardorff (2006), self-assessment encourages individuals to evaluate their own progress in acquiring ICC and identify areas for improvement. Reflection fosters an ongoing process of cultural learning and adaptation, which is essential for lifelong intercultural competence.

To overcome the challenges outlined in the previous section, several effective methods for developing ICC can be implemented. **One of the most successful ways to foster ICC is through immersive learning experiences**, such as study abroad programs or cultural exchanges. These methods provide firsthand exposure to diverse cultural contexts, which are invaluable for deepening cultural understanding. In addition to immersive experiences, case-based learning, multimedia resources, and role-playing activities are essential tools for fostering a classroom environment conducive to intercultural learning. **While these methods are effective, the involvement of educational institutions and governments is key to making these opportunities accessible**, which will be explored in the following section.

The Role of Governments and Educational Institutions in Developing ICC

Governments and educational institutions play a crucial role in fostering Intercultural Communicative Competence (ICC) among foreign language teachers and students. Their support and initiatives significantly enhance the integration of cultural learning into language education, equipping individuals with the necessary skills for effective intercultural communication (Byram, 1997).

Governments are essential in setting the framework for education systems, and their policies directly influence how ICC is incorporated into teacher training programs. Many countries have recognized the importance of intercultural competence in today's globalized world and have begun to integrate it into national curricula. Programs such as the European Union's "Erasmus+" provide opportunities for student and teacher exchanges, enabling participants to gain direct exposure to different cultures and educational systems (European Commission, 2014). These government-sponsored initiatives help educators and students develop the intercultural skills necessary for thriving in diverse, multicultural environments. Furthermore, international cooperation programs and agreements between countries create platforms for intercultural exchanges, research collaborations, and sharing educational practices. Governments prioritizing such cooperation ensure that ICC is embedded into educational policies, promoting inclusivity and global awareness.

Educational institutions are at the forefront of embedding ICC within the curriculum. Many language programs now go beyond linguistic proficiency, incorporating cultural studies and intercultural communication training. Teacher education programs increasingly include modules on intercultural competence, equipping future educators to understand, navigate, and teach cultural differences (Byram et al., 2002). By integrating intercultural communication into the curriculum, institutions create learning environments that encourage critical thinking, reflection on cultural differences, and the development of cross-cultural empathy. Teachers who are trained in ICC are better equipped to create inclusive classroom environments where diverse perspectives are valued, and students feel comfortable exploring and discussing cultural differences.

Governments and educational institutions also provide critical resources and funding to support ICC development. These may include financing study-abroad programs, organizing international conferences, and providing digital platforms for global collaboration. Many governments offer scholarships and grants to facilitate participation in international educational exchanges, allowing students and teachers to experience other cultures firsthand. Similarly, funding for the development of online intercultural learning tools and virtual exchanges makes ICC more accessible, even when physical mobility is not possible (Council of Europe, 2001). By creating partnerships with international universities, educational institutions can offer joint degrees or programs focused on intercultural studies, further ensuring that ICC is integrated into both local and global educational frameworks.

Promoting cultural diversity within institutions is another key area where educational institutions can play a significant role. By welcoming international students, organizing cultural events, and fostering inclusive policies, institutions provide opportunities for students to engage in intercultural dialogue both in and outside the classroom. Additionally, universities and schools can create intercultural clubs and activities that allow students to share their cultural backgrounds and learn from one another. Educational institutions should also offer training and support to teachers in managing multicultural classrooms. Teachers need strategies to handle cultural differences and create a respectful learning environment, which will empower students to engage in meaningful intercultural exchanges.

Finally, both governments and academic institutions should encourage research on intercultural communication and competence. Funding academic studies that explore best practices in intercultural education, teacher training, and curriculum development can help refine the methods used to teach ICC. Academic institutions can also promote international research collaborations, enabling scholars and educators from diverse countries to work together on developing new approaches to integrating ICC into educational systems. This ongoing research and collaboration will ensure that ICC practices remain relevant and adaptable to the evolving demands of a globalized society.

Conclusion

In conclusion, Intercultural Communicative Competence (ICC) is a vital aspect of foreign language teacher training, shaping educators who can not only teach language skills but also equip students to navigate the complexities of diverse cultural environments. By integrating ICC into the curriculum, teachers can help learners understand and appreciate cultural differences, foster empathy, and develop essential skills for effective communication in a globalized world. While challenges such as limited resources, stereotypes, and lack of exposure to multicultural contexts exist, innovative methods like immersive experiences, case-based learning, multimedia resources, and collaborative projects can significantly enhance ICC development. Additionally, the role of governments and educational

institutions in supporting ICC through policies, programs, and resources is indispensable for creating an educational framework that values cultural diversity. As global interconnectedness continues to grow, prioritizing ICC in foreign language teacher training will be crucial in preparing future educators who are capable of promoting cross-cultural understanding and communication.

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THE USE OF DIGITAL RESOURCES IN DEVELOPING INFORMATION CULTURE OF FUTURE BIOLOGY TEACHERS

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Abstract

The use of digital resources plays a significant role in developing the information culture of future biology teachers. Information culture refers to the ability to effectively search, evaluate, use, and create information, as well as the attitudes and practices toward information handling in professional and educational contexts. For future biology teachers, developing a strong information culture is essential for staying updated with the latest research, educational tools, and teaching methodologies. Here's how digital resources contribute to this process. The theme of informatization of the educational process is one of the most relevant and widely discussed. This article briefly describes the ways of using ICT tools in developing information culture of future biology teachers.

Keywords: ICT tools, digital resources, future teachers, computer modeling, biology, university students, virtual laboratory.

Introduction

Nowadays, the development of computer software and hardware opens up wide opportunities for involving students in the learning process, design and testing. Modern realities are such that the voluntary assimilation of any information by children of this time occurs through gadgets. Therefore, the use of information and communication technologies (ICT) in biology lessons at university is one of the successful modern pedagogical methods of teaching. In 2020, the world is faced with a serious epidemiological situation that it affected all spheres of life. The field of education was no exception. The inability to conduct face-to-face classes and attend schools to switch to a distance learning format. And here the main role of an assistant, an intermediary between a teacher and a student, was taken over by computer technology.

Unfortunately, we are currently seeing how commercially oriented ICTs lead to the opposite process. The easy accessibility and ease of use of information and gaming applications create the illusion for users that they are deeply advanced in "programming" and have unlimited freedom in self-expression and the choice of certain solutions. Therefore, young people spend a lot of time on completely

useless communication on social networks. It is possible to reverse this situation with the help of the same ICT, redirecting the uselessly wasted energy into a creative channel by involving students themselves in the teaching process by participating in the development of control and training systems [2].

The theme of informatization of the educational process is one of the most relevant and widely discussed. The phenomenon of informatization has been brought into the number of universal ideological categories, forming a new triad in the scientific and educational space: "Matter – Energy – Information". Information and telecommunications acquire not only cognitive meaning in the modern information society, but also become a powerful transformative force in the organization of its life [1].

Information and communication technologies are an extensive area that includes radio, television, as well as new digital technologies such as computers, smartphones and the Internet. The latter is a potentially powerful tool for change and reform in the field of education. When used correctly, various ICTs are designed to expand access to education and improve the quality of education, turning teaching and learning into an exciting, active process related to real life [3].

Biology is a complex discipline, it has many sections, each of which has its own characteristics, the secrets of our life that seem inaccessible until you join the process of learning them and understand how interesting and attractive this science is. When submitting new material in biology, constant demonstration support is required. Modern students are not interested in simple pictures, they need to be constantly surprised. Research shows that most biology teachers still use traditional and outdated methods in teaching biology. Teachers convey the facts of biology directly to students and encourage

rote memorization of actual knowledge for exams that cannot teach students to solve complex biological problems [4].

According to the Center for the Sociology of Education of the Kazakhstan, Kazakhstani teachers strive to use the capabilities of modern ICT: many teachers create their own data banks on their subject (47%), according to teaching methods (39%), offer homework that requires the use of computers (65%), and keep pedagogical diaries on the Internet (23%).

The practice of working at school has shown that the use of ICT in the organization of the biology teaching process allows solving a number of tasks of different orientation: increasing visibility, improving the effectiveness of the learning process, developing creative abilities, stimulating learning motivation, developing cognitive interest, self-education and individualization of learning, identifying gaps in students' knowledge [6].

Interactive illustrations are used to increase visibility – 3D models of biomolecules, living organisms, interactive animated biological processes. The computer modeling method is an excellent way to visually study a range of topics from molecular biology to evolution and can be a safe and effective form of introducing students to laboratory work.

To solve these problems, we can use:

1. Scientifically reliable 3D models and animations from Visual Science, which are engaged in visualization, education and communication in the field of science, pharmaceuticals, medicine and other high-tech fields requiring scientific expertise.

2. The program of the Massachusetts Institute of Technology (MIT)

Software Tools for Academics and Researchers (STAR), aimed at bridging the gap between scientific research and the classroom, because understanding and applying various research methods can be complicated due to lack of time and the need for advanced equipment. STAR contains components and modules of educational programs that facilitate the use of their educational resources in various educational institutions.

3. VirtualLab and PhET virtual laboratories, representing educational interactive laboratory work that allows students to conduct virtual experiments in natural science disciplines.

One of the survey questions is aimed at determining the value of multimedia teaching tools in the process of teaching biology. University teachers showed the values of using ICT tools:

- development of educational motivation and interest in the subject-42%;*
- formation and development of knowledge in biology-25%;*
- development of universal educational activities-20%;*
- helps teachers to see students in an unconventional form of education-8%.*

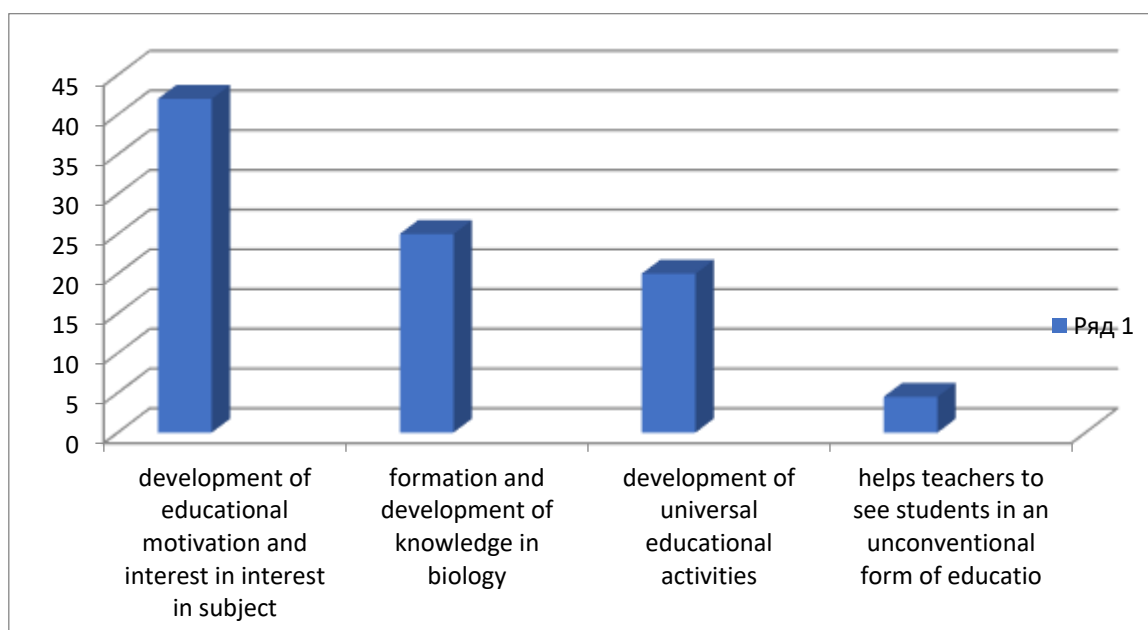


Figure 1: Teachers' answers towards the value of ICT tools in the process of teaching biology

All these resources allow us to diversify the learning process, make it more visual. In addition, the use of such ICTs helps students to get much more opportunities for independent study of the material, organizing research activities in the form of laboratory work in combination with a computer at home

and a real experiment at school, planning and analyzing those experiments that are not feasible in real life in school laboratories, but are possible in virtual reality. In addition, do not forget about the expediency of using ICT for the development of students' personality and their preparation for independent production activities in the conditions of modern information society.

Conclusion

It is also necessary to involve students in research projects. The project is a set of actions specially organized by the teacher and independently performed by students, culminating in the creation of a creative product [5]. We study the structure of scientific research, the writing and presentation of research work, learn to obtain and systematize reliable scientific information using a computer, multimedia, work with scientific databases and scientific search platforms NCBI, Elibrary, Google Academy, thereby going beyond the school curriculum and instilling in them a love of science. The technology of project preparation takes into account the age and individual characteristics of children, stimulates independence, the need for self-realization.

The use of ICT in preparation for the Olympiads and the Unified State exam also has a number of advantages. To date, many multimedia textbooks on biology have been developed, which can be used for self-study of the material, repetition or consolidation of the topics covered, allow for monitoring and evaluation of knowledge. The use of ICT in pedagogical activity helps to ensure that the process of teaching biology meets the advanced requirements of pedagogical science, combines all the best of classical pedagogy with innovation, which ultimately leads to an increase in the efficiency of the educational process [5]. The competent use of ICT allows us to present the studied material in as much detail and detail as possible, solves the problem of the shortage of visual aids, optimizes the process of understanding and memorizing educational material and increases interest in the educational process to a higher level.

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THE IMPACT OF GAME MODELING ON ENGLISH LANGUAGE EDUCATION FOR UNIVERSITY STUDENTS

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Abstract

This article investigates the efficacy of game modeling as a pedagogical approach in English language education for university students. Game modeling promotes language acquisition, engagement, and skill development by incorporating interactive techniques such as role play, simulation, and collaborative problem-solving. The study investigates its theoretical underpinnings, practical application in university English programs, and impact on students' linguistic proficiency, critical thinking, and communication abilities. The article ends with recommendations for incorporating game modeling into university curricula.

Keywords: interactive learning, simulation, diverse learning, immersive environment, methodology, strategic thinking, real-world communication, collaborative learning.

Introduction

The evolving landscape of higher education necessitates the adoption of innovative teaching strategies to meet the diverse and complex needs of 21st-century learners. Among these strategies, game modeling emerges as a compelling approach that aligns with contemporary pedagogical theories emphasizing experiential, active, and situated learning. This method integrates elements of gamification, simulation, and role-playing to establish dynamic learning environments that promote deeper engagement and meaningful language acquisition.

By simulating real-world scenarios, this approach facilitates authentic communication and contextual language use, addressing the demand for practical and transferable skills in higher education. Additionally, the immersive nature of game modeling aligns with the digital fluency of modern learners, enhancing their intrinsic motivation and fostering sustainable learning habits.

This article investigates the integration of game modeling in university-level English education, examining its underlying theoretical framework, methodological design, and practical implementation. By analyzing its impact on linguistic and cognitive skill development, the study underscores the transformative potential of game modeling to enhance English language instruction. Through a synthesis of theoretical insights and empirical research, the article situates game modeling as a forward-thinking pedagogical tool capable of preparing students for the communicative and intercultural challenges of a globalized society.

Types of Games Used in Language Learning.

Game modeling is an innovative approach in education that involves creating structured, game-like activities designed to simulate real-world scenarios. Unlike traditional teaching methods, game modeling encourages active participation and provides learners with a safe and engaging environment to practice and refine their language skills. By incorporating real-life contexts, this method bridges the gap between theoretical knowledge and practical application. Below there are three main types of game modeling used in language learning, along with insights from researchers.

Role-Playing Games (RPGs):

Role-playing games represent a highly effective application of game modeling in the context of language acquisition, offering learners the opportunity to engage in structured yet flexible communicative activities that replicate real-world interactions. This pedagogical approach is grounded in constructivist and experiential learning theories, as it requires learners to actively construct knowledge through participation in contextually rich scenarios. By adopting specific roles, students navigate simulated environments that foster authentic language use and situational adaptability.

Theoretical perspectives support the efficacy of role-playing games in enhancing linguistic competence. Brown and Smith (2014) emphasize that these activities immerse learners in realistic communicative contexts, thereby promoting the development of fluency, creativity, and spontaneity in the target language. Such engagements are aligned with interactions theories, which posit that

meaningful communication is a critical driver of language acquisition. Additionally, Crawford (2016) underscores the psychological dimensions of role-playing, highlighting its ability to lower affective barriers such as anxiety while increasing learners' confidence and willingness to speak. This aligns with Krashen's Affective Filter Hypothesis, which suggests that reduced anxiety facilitates more effective language learning.

Simulation Games:

Simulation games aim to replicate authentic environments where learners use the target language to perform tasks or solve problems. Common examples include simulating airport check-ins, participating in a mock United Nations debate, or conducting a business negotiation. Unlike role-playing, simulation games focus on replicating specific, task-oriented experiences.

Richards and Taylor (2018) emphasized that simulation games are particularly effective for teaching professional and academic language skills. They argued that these games expose learners to specialized vocabulary and complex sentence structures in a practical setting. Moreover, Lopez (2020) pointed out that simulations encourage learners to think critically and adapt their language use to different contexts, making this type of modeling highly versatile.

Collaborative Problem-Solving Games:

Collaborative problem-solving games challenge learners to work together to complete tasks, solve puzzles, or overcome challenges while using the target language as their primary tool for communication. These games are designed to promote teamwork, strategic thinking, and language use in dynamic group settings.

Kapp (2012) argued that problem-solving games motivate learners by combining intellectual engagement with practical language application. Additionally, Martinez and Chen (2019) found that these activities improve learners' ability to use functional language, such as giving instructions, asking questions, and negotiating. The interactive nature of these games also helps build social connections, which further enhances communication skills.

Game modeling in language learning is a transformative tool that caters to diverse learning needs. Whether through immersive role-playing, realistic simulations, or collaborative challenges, these approaches engage learners and provide them with the skills they need to thrive in real-world communication. As researchers continue to explore the potential of game modeling, its role in education is set to expand, offering exciting new possibilities for language instruction.

Integration of Game Modeling in University Curriculum

The incorporation of game modeling into university curricula has received attention as a novel approach to improving language education. Game modeling, which combines elements of gamification, simulation, and role-playing, can provide dynamic, interactive learning experiences. Several scholars advocate for its incorporation into university English language programs, citing its potential to boost student engagement, language skills, and critical thinking.

Gee (2003), a pioneer in game-based learning, underscores the importance of "situated learning" as a cornerstone for successful language acquisition. He explains that games create immersive environments where students engage with language in realistic and purposeful settings. For example, in a virtual simulation of a business meeting, students might negotiate contracts, present ideas, or respond to challenges, requiring them to use English naturally and fluently. Similarly, in a collaborative strategy game, players might work as a team to solve a mystery or complete a mission, which involves exchanging information, clarifying instructions, and resolving conflicts—all in the target language.

This approach allows learners to experience language as a tool for achieving real-world objectives rather than as abstract rules or isolated vocabulary. Gee suggests that integrating game modeling into university language programs equips students with practical communication skills while boosting their confidence in diverse situations, from academic discussions to everyday conversations. By embedding language learning in engaging, context-rich scenarios, this methodology moves beyond traditional teaching techniques, offering students a dynamic and interactive way to develop fluency. For Gee, such innovations are essential for creating meaningful and effective educational experiences that reflect the demands of the modern world.

Prensky (2001), a prominent advocate of digital game-based learning, highlights the unique ability of games to engage and motivate students. He argues that today's learners, particularly digital natives who are accustomed to interactive and technology-driven environments, thrive in settings that prioritize hands-on problem-solving. Game modeling caters to these preferences by offering educational activities that are both intellectually stimulating and practical.

For instance, a language-learning game might place students in a simulated environment such as a bustling café where they must take customer orders, handle special requests, or resolve complaints—all in the target language. Another example could involve students collaborating in a virtual quest where they solve puzzles or gather clues, requiring effective communication and strategic thinking in English. These scenarios enable learners to practice grammar, vocabulary, and conversational skills in meaningful, relatable contexts.

According to Prensky, integrating game modeling into university curricula enhances language retention and fluency by transforming passive learning into an active, enjoyable process. Immersing students in realistic tasks - ensures that language acquisition feels natural and purposeful, paving the way for improved academic and practical outcomes.

Conclusion

Game modeling represents a pedagogically robust approach to enhancing English language education at the university level. Grounded in theories of experiential learning and constructivist pedagogy, it fosters deeper student engagement, linguistic proficiency, and critical thinking skills through immersive and interactive frameworks such as role-playing, simulation, and gamification. This methodology aligns with the cognitive and behavioral preferences of digitally native learners, providing authentic, contextually rich scenarios for language application. By embedding game modeling into university curricula, educators can facilitate more dynamic language acquisition, promote collaborative learning environments, and prepare students to navigate the communicative demands of an increasingly globalized and technologically mediated society.

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DIDACTIC PRINCIPLES OF LEARNING A FOREIGN LANGUAGE USING VIDEO CONTENT IN ADDITIONAL EDUCATION

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Abstract

This article delves into the application of video as an instructional medium within foreign language education. It underscores the recognition of video content as one of the most impactful teaching tools, as it seamlessly merges audio and visual components to provide learners with a foundational framework for enhanced communication. The article investigates the stages of employing audiovisual technology in educational settings, with a particular focus on the pre-viewing, presentation, and post-viewing phases. Each stage is elaborated upon in detail, addressing their specific objectives, content, and the various formats of activities that can be utilized. Furthermore, the author outlines the essential considerations for selecting video material, establishing principles such as ensuring authenticity, maintaining high sound quality and artistic design, aligning the language content with students' proficiency levels and interests, matching genre features to educational objectives, ensuring the material's relevance, and incorporating socio-cultural elements to cultivate the socio-cultural component of foreign language communicative competence.

Keywords: *Foreign language education, video content, additional education, didactic principles, language acquisition, educational technology, learner engagement, visualization, practical application.*

Introduction

In the past decade, the concept of the "digital factor"—the rapid advancement of information and communication technologies—has fundamentally transformed the educational landscape. This shift has significantly influenced the structure and content of education, altering its framework and presenting new, often surprising, perspectives on existential questions such as "Who are we?" As society evolves, so does the educational system, but certain elements remain constant, with language being a prime example.

Proficiency in a foreign language today opens numerous opportunities. Specialists with foreign language skills have access to broader professional networks and can share their accomplishments on a global scale, enhancing their career prospects. Learning a foreign language enriches individuals by adding a linguistic dimension to their worldview, offering an entirely new perspective. Consequently, improving foreign language instruction and leveraging modern technologies for this purpose remain pressing priorities.

Contemporary foreign language teaching methods draw from diverse, well-established approaches, including the mixed method (A.R. Loren, I. Rakhmanov, A. Shcherba), social-communicative method (P. Gurvich, A. Miroyubov), and structural-functional method (A. Starkov, V. Slobodchikov, A. Shapko). Other notable techniques include the conscious-comparative approach (A. Kreusler), emotional-semantic methods (I.Yu. Shekhter), and innovative strategies like the flipped classroom model (M. Kondratyuk, L. Romaniuk). Additionally, video resources in education have gained recognition from researchers like I.M. Schnitman, T. Strasser, Y. Yang, and H. Shang.

Despite extensive research into leveraging students' psychological traits for better learning outcomes, methods that simultaneously build foreign language competencies and foster cognitive and educational skills remain underdeveloped. Many modern approaches, tools, and technologies, while varied and rich, do not always deliver the desired results. Language educators continue to seek an ideal method that maximizes learning outcomes in minimal time[2].

In this context, video emerges as a particularly effective teaching medium. It uniquely immerses learners in authentic linguistic environments, offering insights into sociocultural aspects and engaging multiple sensory channels. Video enables learners to hear native speakers, observe cultural nuances, and experience language in real-life contexts, unlike traditional classroom settings. It facilitates the development of all core language skills—reading, speaking, listening, and writing. However, using video

effectively requires meticulous preparation, pedagogical expertise, and the creation of supplementary exercises and tasks tailored to the video content[4,6].

Ultimately, video represents a powerful tool for language education, combining sound, visuals, learning, and culture to create a comprehensive and immersive learning experience[7].

STAGES OF REALIZATION OF AUDIOVISUAL TECHNOLOGY

The implementation of audiovisual technology using video content requires the identification of distinct stages [3, 8, 9].

Previewing – defining the purpose of viewing, setting tasks, and addressing lexical and grammatical challenges are essential steps. The overarching objective and specific goals of viewing, along with the educational problem to be tackled—what students are expected to accomplish during and after the video presentation—are established at this stage. It is also the point where various difficulties are resolved. Lexical challenges are addressed by providing a list of relevant words, explaining their meanings and significance, and demonstrating their usage in speech and literature. Grammatical issues are managed by clarifying rules through examples, conducting exercises, and practicing structures. Sociocultural difficulties are mitigated by offering regional study insights, explaining cultural differences, and providing examples of sociocultural topics [10–13].

Presentation of video – Initial viewing, with the option of repeating if necessary, is the next step. The video can be presented once or multiple times, depending on the goal of the viewing. The different purposes for viewing allow for several classifications: illustrative viewing, fact-finding viewing, studying viewing, critical viewing, and exploratory viewing. Video presentation can be done in various formats. For instance, I.D. Salistra proposed showing the material either as a comprehensive or fragmented exposition. [14].

As suggested by this scholar, when the objective is to focus on linguistic material, it is more effective to use a fragmented exposition.[4]. On the other hand, when the goal is to absorb sociocultural content, a comprehensive exposition is preferable. Fragmented exposure involves splitting the video into distinct sections, while comprehensive exposure entails showing the entire video in its entirety.

Post-viewing includes: (1) assessing comprehension with various objectives and formats, (2) developing, improving, and refining foreign language communicative competence based on the lexical, grammatical, and cultural content of the video, and (3) overall assessment. The post-viewing stage is where learning is reinforced based on the video content. It can take various forms, such as working on linguistic material, grammatical structures, and sociocultural information. This stage always includes an assessment component, as it is crucial to identify which parts of the video students understood and which parts presented challenges. This is achieved through assessments in different formats: oral, written, question and answer, group, individual, and assessments of comprehension of the content, plot, main characters, and events [15]. This stage is the most crucial for the formation and development of foreign language communicative competence.

The actualization stage in working with video is linked to the continued development of foreign language communicative competence through the application of acquired knowledge and skills. This stage has no fixed duration and continues as long as the student uses the foreign language. By applying the knowledge and skills gained, the student actively refreshes and utilizes their competence in future activities[16].

DIDACTIC PRINCIPLES OF USING VIDEO IN TEACHING FOREIGN LANGUAGES

Based on the study of scientific sources (B.A. Altshuler, A.A. Blumshtein, A.M. Gelmont, V.A. Dashevskaya, M.I. Dubrovin, V.I. Ivanova-Tsyganova, K.B. Karpov, V.M. Kuznetsov, L.P. Pressman, L.D. Tsesarsky) and the analysis of our own experience, we have formulated the following principles of using video in teaching foreign languages:

- principle of situational basis;*
- the principle of informativeness and entertainment of the visual range;*
- unity of sound and visual range;*
- the dominant role of the sound;*
- increasing the language complexity of the video as it is used;*
- problematic content of the video;*
- dynamic content of the video;*
- maximum use of the sociocultural background of the video for educational purposes;*
- the principle of removing language difficulties;*

- the principle of methodically justified use of video.

The principle of situational basis means the following. Every video should include a plot. In the case of a video clip, the plot may be brief or even replaced by a single fact or event presented visually. In a full video, the plot typically involves actions and their outcomes. A video course generally incorporates characters, a storyline, and events that illustrate linguistic phenomena. Thus, the use of video in teaching must be anchored in a specific plot, which provides a situational context that can later serve as a basis for discussion, prediction, and analysis.

The principle of informativeness and entertainment of the visual range of video material is associated with the formation and maintenance of interest in the video while working with it. The informative aspect of video serves as a foundation for advancing communication skills and stimulating cognitive activity. Meanwhile, its entertainment value creates a unique emotional backdrop, which, as supported by psychological research, aids in material retention. Furthermore, the combination of informativeness and entertainment generates the primary motivation for learning—interest—which must be cultivated and maintained through diverse methods. According to the author's observations, even individuals with a solid grasp of foreign language basics and strong listening skills for recorded narratives by native speakers often struggle to comprehend the audio tracks of films effectively.

The principle of unity of the sound and visual series is that it is necessary to consider that the sound and visual series are perceived differently. The audio component is inherently more challenging because it relies on a foreign language, with some words or sentences potentially being unclear or difficult to comprehend. In this context, the visual component acts as a supportive aid, enhancing understanding of the video's content. This integration engages two channels of information processing, thereby improving overall comprehension. Some French methodologists, such as Guberina, Rivank, and Mialare, advocate for the visual element to precede the audio by a few seconds. In contrast, Russian researchers like G.Kh. Karagluiev, S.B. Ablam, and B.A. Altshuler argue that the foreign language audio should precede the corresponding visual element for optimal effectiveness.

The principle of the dominant role of the sound is associated with the problem of the relationship between picture and sound. The literature presents differing views on this topic. Some French methodologists, such as Guberina, Rivank, and Mialare, suggest that the visual component should precede the audio by a few seconds. Conversely, domestic researchers, including G.Kh. Karagluiev, S.B. Ablam, and B.A. Altshuler, argue that the foreign language audio should come before the corresponding visual element. From the perspective of speech perception, both approaches are valid and effective under specific conditions. At the level of observable action, students primarily focus on the content of the speech they perceive. This makes it clear that the word cannot always precede the visual component. Another crucial consideration is the timing gap between words and actions. Physically, there is always a slight delay between hearing a word and seeing the associated image, as light signals travel approximately a million times faster than sound signals. Additionally, a speaker inherently prepares for an action before articulating a sound, word, or sentence, adjusting their speech organs accordingly. While visual information naturally leads due to its speed, this lead is somewhat mitigated by the faster human reaction to auditory signals compared to visual ones. Thus, a slight visual precedence is often practically advantageous.

The principle of increasing the linguistic complexity of the video means that each subsequent video should be a little more complex than the previous one in order for foreign language communicative competence to develop.

The principle of problematic video content means that working with video material will be a solution to any problem, and for this purpose, tasks should be formulated accordingly. The problem to be addressed encourages exploratory and cognitive activities, while also fostering decision-making skills.

The principle of dynamism of the video material means that the actions in the plot of the video should replace each other, and there should be no changes or events. This is essential for enhancing memory of the plot, allowing the video to serve as a situational framework for discussion. In this context, videos are particularly effective, as the storyline created by the filmmaker and performed by the actors offers an optimal foundation for further language learning activities.

The principle of maximizing the use of the sociocultural background of video for educational purposes is that video material can always give much more sociocultural information than we think. The fundamental principle of video production assumes that videos are always embedded within a sociocultural context, reflecting the realities of a different culture or language and showcasing various sociocultural phenomena. This aspect should be actively leveraged to teach students intercultural dialogue.

The principle of removing lexical difficulties when working with videos means that before offering students a video, the teacher must identify all the language difficulties that may occur when working with videos, and organize a special preview work that will be able to remove these difficulties. This refers to phonetic, lexical, and grammatical challenges. Addressing these requires the teacher to prepare in advance by analyzing the video's content and creating tailored materials for students to review before watching. However, it is worth noting that an alternative approach exists, where the teacher deliberately does not resolve language difficulties beforehand. Instead, tasks are designed, and students are encouraged to begin watching the video without prior preparation.

The principle of methodically justified use of video in the educational process is the most important principle in this list. It is common to see videos used in the educational process merely for the sake of inclusion, where a teacher plays a video, asks students what they understood, and moves on. Such an approach does little to develop language competence. Watching movies casually can be done in one's free time. However, educational use of videos requires a fundamentally different approach. The teacher must carefully prepare by creating assignments, exercises, questions, and supplementary materials, ensuring the video's use is methodically justified and structured [12, 13].

We have outlined only a few key principles that we consider essential for effectively incorporating videos into teaching. In reality, many additional principles exist, tied to the unique characteristics of the subject "Foreign Language," the nature of video as a teaching tool, and the specific content of video materials. Adhering to these principles ensures that using videos in the classroom is both impactful and contributes to the holistic development of the student's personality. Having established and justified these principles, we will now explore the steps involved in organizing video-based instruction.

CONCLUSION

The use of video content in foreign language education within supplementary learning environments exemplifies the application of didactic principles in modern pedagogy. By following these principles, educators can design learning experiences that are grounded in research, accessible, well-organized, and engaging. Video content provides exceptional opportunities to bridge theory and practice, helping learners understand and apply language skills in authentic, real-life situations. It also encourages active participation, critical thinking, and creativity, making the learning process more dynamic and enjoyable. Additionally, the integration of visualization techniques enhances comprehension and retention, catering to diverse learning styles and needs.

We believe that video holds the greatest potential for facilitating learning compared to other media and technologies. It enables students to experience the subject matter, such as a foreign language, in a real context, where they can hear native speakers and observe authentic language use.

Video engages two channels of information perception—auditory and visual—which enhances the effectiveness of learning. It also provides a foundation for further discussion and communication, making the process more engaging. We believe that the future of education lies in the widespread use of video. One of the most promising areas is having students create video materials as part of their foreign language learning, which allows them to actively engage with the content and deepen their understanding[13]. Video engages two channels of information perception—auditory and visual—which enhances the effectiveness of learning. It also provides a foundation for further discussion and communication, making the process more engaging. We believe that the future of education lies in the widespread use of video. One of the most promising areas is having students create video materials as part of their foreign language learning, which allows them to actively engage with the content and deepen their understanding.

The use of video in the educational process is associated with the use of new information technologies, which allow us to reach a new level of learning foreign languages. Taking into account the clip-based thinking of modern students, it is necessary to build the educational process on new foundations that will allow the new generation to master foreign languages quickly and efficiently.

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BLENDED LEARNING: THEORETICAL APPROACH TO NEW FORM OF TEACHING IN TERTIARY EDUCATION

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Abstract

Blended learning has evolved as a transformative educational technique that combines traditional face-to-face instruction with digital resources to create a flexible and engaging learning experience. This review explores the theoretical underpinnings and practical applications of blended learning in tertiary education, with a focus on its design, evaluation methodologies, and the learner factors that influence its effectiveness. The study highlights the role of synchronous and asynchronous tools, such as Google Classroom and Moodle, in facilitating dynamic and personalized learning experiences. It also examines the impact of evaluation strategies on student outcomes, the influence of learner characteristics such as motivation and self-regulation, and the challenges associated with this approach. While blended learning offers significant advantages, including enhanced engagement and improved academic performance, it also presents challenges, such as varying levels of learner readiness and resource disparities. Addressing these issues through strategic interventions can ensure its sustainable integration into diverse educational contexts.

Keywords: *blended learning, tertiary education, synchronous tools, asynchronous tools, learner engagement, evaluation strategies, academic performance*

Introduction

Blended learning has emerged as a significant trend in contemporary education, driven by advancements in technology and the demand for innovative teaching methods. C. R. Graham (2006) defines blended learning as the integration of distinct teaching and learning models, specifically traditional face-to-face instruction and online learning, emphasizing the critical role of computer-mediated instruction. This approach "combines online delivery of educational content with the best features of classroom interaction and live instruction to personalize learning" (Watson, 2008), aligning with planned educational objectives (D. R. Garrison and N. D. Vaughan, 2009).

The integration of face-to-face and online education represents not just a technological advancement but a pedagogical transformation that redefines the roles of teachers and learners (Watson, 2008). By prioritizing personalization and accessibility, blended learning fosters a student-centered approach, enhancing engagement and promoting deeper understanding. This model leverages the strengths of both modalities, providing students with the flexibility to learn in ways that best meet their needs while empowering educators to create more adaptive and effective teaching strategies.

Despite its growing adoption, defining "blended learning" remains challenging due to the increasing diversity of blending models within modern educational frameworks. While it has become a popular trend in recent years, research on blended learning remains limited. This article seeks to explore the current state of blended learning, assess the readiness of educators for its implementation, and propose strategies to address its challenges and maximize its potential.

Design Principles of Blended Learning in Tertiary Education

The implementation of Blended Learning can be shaped in two primary forms: synchronous and asynchronous. Google Classroom, for instance, serves as a powerful tool for synchronous blended learning, enabling real-time interactions between teachers and students. Through features such as live streaming, announcements, and collaborative workspaces, it allows educators to conduct virtual classes while maintaining a high level of engagement. Tools like Google Meet integrated within Google Classroom further enhance synchronous communication, offering opportunities for immediate feedback, discussion, and collaborative problem-solving. These synchronous approaches facilitate active participation, fostering a sense of community among learners despite physical distances. Such capabilities make Google Classroom a cornerstone in synchronous blended learning design (Bower et al., 2015).

A case study by Nur Muthmainnah (2022) highlights the practical application of Google Classroom in Indonesian EFL grammar classes. The study found that Google Classroom facilitated the integration of grammar-focused exercises with collaborative activities, effectively balancing synchronous and

asynchronous elements. Students benefited from real-time feedback during virtual sessions and extended practice opportunities through assignments and discussion boards. The findings suggest that tools like Google Classroom not only enhance student engagement but also streamline instructional delivery, making them indispensable in blended learning environments for teaching foreign languages.

Other synchronous tools include forums for discussion, blogs for reflection, and wikis for collaboration, which can foster peer-to-peer interaction and improve overall learning outcomes. As demonstrated by Miyazoe and Anderson (2012), employing distinct tools for specific purposes—such as using forums to encourage discussion, blogs to support reflective practices, and wikis to enable collaborative work—can contribute to improved student engagement and academic performance. These tools were found to have a positive impact on students' writing proficiency by providing opportunities for regular practice and feedback. By aligning specific objectives with appropriate tools, educators can focus students' efforts on targeted learning outcomes, ultimately reducing cognitive load and facilitating language acquisition.

For asynchronous blended learning, teachers often use the wiki in the Moodle (Modular Object-Oriented Dynamic Learning Environment) open-source learning management system (LMS). In their project-based blended learning course, Muscarà and Beercocock (2010) highlight that giving students the opportunity to work remotely both in groups and individually increased their interest in collaboration and led to meaningful classroom interaction within limited lesson hours. By leveraging asynchronous tools such as Moodle wikis, students can engage in collaborative knowledge construction and refine their understanding at their own pace, complementing synchronous learning activities effectively. With a clear understanding of the design principles and tools that define blended learning environments, the next step is to examine how these designs are evaluated to ensure their effectiveness and alignment with educational objectives.

Implementing Evaluation in Blended Learning

Effective evaluation is a cornerstone of blended learning, enabling instructors to assess students' progress and identify areas for improvement in real-time. In blended environments, evaluation methods often integrate technology-based tools to facilitate both formative and summative assessments, offering benefits for students and educators alike.

Hertsch (2013) advocates for the use of the Moodle-Testing-Center in tertiary education to assess language skills. This system provides several advantages, such as shuffling question and answer orders to deter copying, a countdown timer to help students manage their time effectively, and immediate feedback on performance. Moreover, the platform generates statistical data for course administrators, which can be used to analyze overall class performance and refine instructional strategies. These features make the Moodle-Testing-Center a practical and efficient tool for evaluation in blended learning settings.

Building on the role of technology in evaluation, Jia, Chen, Ding, and Ruan (2012) explored the impact of a vocabulary acquisition and assessment system in a blended learning English class. Their study demonstrated that integrating an automated assessment tool significantly enhanced students' vocabulary retention and overall performance. Key features of this system included interactive quizzes and adaptive feedback mechanisms, which allowed students to identify and address their weaknesses. The immediate feedback provided by the system not only motivated students to engage more actively but also supported their self-regulated learning processes. Jia et al. (2012) highlighted that the combination of personalized feedback and regular assessments fostered a deeper understanding of course content, which is crucial for mastering foreign languages.

Together, these findings underscore the potential of evaluation tools in blended learning to provide timely and actionable insights. By integrating systems like the Moodle-Testing-Center and vocabulary assessment tools, educators can create a feedback-rich environment that enhances learning outcomes. Furthermore, these tools enable institutions to adopt data-driven approaches to curriculum improvement, ensuring that evaluation methods remain aligned with learner needs and educational goals.

Evaluation in blended learning environments benefits from the thoughtful integration of technological tools that support adaptive learning, foster engagement, and provide comprehensive data for instructors. By leveraging such tools, educators can create more effective, efficient, and equitable evaluation practices, ultimately enhancing the learning experience for students. While evaluation plays a critical role in enhancing blended learning outcomes, the success of these environments also depends heavily on the learners themselves.

Learner Factors Influencing Blended Learning

Blended learning is increasingly recognized for its ability to address diverse learner needs by combining the strengths of traditional face-to-face instruction with the flexibility of online learning. However, individual learner factors such as academic achievement levels, motivation, and perceptions of the blended format significantly influence its effectiveness.

Owston, York, and Murtha (2013) found that students' perceptions of blended learning were shaped by several factors, including overall satisfaction, convenience, engagement, and perceived learning outcomes. High achievers, in particular, reported higher satisfaction with blended courses, citing greater convenience, engagement, and a stronger sense of mastery of key course concepts compared to traditional face-to-face or fully online formats. These students appreciated the flexibility of blended learning, which allowed them to optimize their time by engaging in academic work outside of scheduled class hours. Conversely, low achievers often treated the asynchronous components of blended courses as free time, which may have negatively impacted their performance.

Yen and Lee (2011) explored problem-solving patterns in a blended learning environment and their impact on learning achievement. They found that students who engaged in systematic problem-solving processes and actively sought to resolve challenges demonstrated significantly higher learning outcomes than those who adopted passive or fragmented approaches. These findings highlight the importance of fostering critical thinking and problem-solving skills within blended learning contexts. Such skills not only enhance academic achievement but also empower students to navigate the complexities of blended learning environments more effectively.

The strong correlation between positive perceptions of blended learning and academic performance underscores the importance of aligning course design with learner needs. High achievers tended to attribute their satisfaction to the quality of faculty interaction and support during the course. Motivated students who received substantial instructor guidance perceived their learning outcomes as higher, suggesting that faculty involvement plays a crucial role in shaping learner success. To address the needs of both high and low achievers, institutions might consider offering students the option to choose between blended and fully face-to-face course sections, particularly in challenging subject areas. Additionally, providing instructors with training on how to design blended courses that engage and support low achievers could further enhance learner outcomes.

Rahman, Hussein, and Aluwi (2015) also emphasized the role of blended learning in enhancing the quality of education by attracting students and offering them an engaging and effective learning platform. By providing a balanced exposure to face-to-face and online elements, blended learning fosters a more dynamic and interactive educational experience that can appeal to a diverse student population.

The success of blended learning largely depends on understanding and addressing the unique needs of learners. While high achievers thrive in the flexible and engaging environment of blended courses, low achievers may require additional support and structured guidance to maximize their potential. Incorporating elements like problem-solving tasks and fostering faculty-student interactions are critical to ensuring that all students benefit from blended learning environments. Institutions must strategically design blended learning experiences to cater to a wide range of academic abilities and preferences, ensuring inclusivity and effectiveness.

The Impact and Limitations of Blended Learning

Blended learning has significantly transformed the educational landscape by integrating technology with traditional teaching methods. This approach has demonstrated numerous benefits, especially in fostering autonomous learning. According to Klimova and Semradova (2012), blended learning empowers students to take responsibility for their educational achievements and actively engage in self-assessment. This autonomy not only enhances learning outcomes but also prepares students for lifelong learning by cultivating essential self-regulation skills.

One of the most notable impacts of blended learning is its positive influence on academic performance. Deschacht and Goeman (2015) found that the introduction of blended learning improved exam results and slightly increased course pass rates among adult learners. However, despite these successes, the approach did not significantly enhance course persistence, particularly for lifelong learners. This finding suggests that while blended learning can improve immediate academic outcomes, it may not always address deeper motivational challenges that influence long-term engagement.

Blended learning also enhances engagement through interactive tools, such as online discussions. Alebaikan and Troudi (2010) highlight that well-structured online discussions can be an effective element of blended courses, provided certain measures are taken. These include offering instructional training for instructors, user-friendly learning management system (LMS) features, and strategies to ensure academic integrity, such as plagiarism prevention and time-management resources. Moreover, regular feedback

from students and instructors through evaluations can help refine online discussion strategies to align with course objectives. Despite these benefits, there remains a need for future research to establish clear assessment criteria and determine whether online discussions should be assessed or used solely as a communication tool.

In the context of English as a Second Language (ESL) classrooms, blended learning has been shown to offer unique advantages and challenges. Amiruddin, Huzaimi, Mohamad, and Ani (2022) emphasize that blended learning supports personalized instruction and encourages active participation. However, they also note the importance of addressing challenges such as insufficient educator training and the lack of a supportive learning environment. To maximize the effectiveness of blended learning, practical solutions include implementing comprehensive educator training programs, developing action plans tailored to specific classroom needs, and fostering a culture of collaboration and support for both students and instructors.

While blended learning offers clear advantages, it is not without its limitations. Its success depends heavily on the availability of resources, effective course design, and the readiness of both educators and students to adapt to this model. Additionally, the emphasis on self-directed learning may not suit all learners, particularly those who struggle with time management or lack intrinsic motivation. Thus, institutions must adopt a balanced approach, combining robust technological tools with targeted support systems to ensure inclusivity and equity in blended learning environments.

Blended learning has demonstrated a transformative impact on tertiary education, offering enhanced engagement, improved academic performance, and the promotion of autonomous learning. However, addressing its limitations through strategic interventions, such as educator training and structured course designs, is essential for sustaining its effectiveness in diverse educational contexts.

Conclusion

Blended learning has developed as a transformative approach in tertiary education, offering a bridge between traditional face-to-face instruction and the flexibility of online learning environments. Through the integration of synchronous and asynchronous tools, such as Google Classroom and Moodle, this approach has proven to enhance engagement, support personalized learning, and foster critical skills like self-regulation and problem-solving. As highlighted by various studies, the implementation of effective evaluation systems and the incorporation of learner-centered design have been pivotal in optimizing the benefits of blended learning.

However, despite its advantages, blended learning also presents challenges. The success of this model heavily relies on the readiness of educators and students, the availability of technological resources, and the ability to address individual learner needs. While high achievers thrive in such environments, low achievers may require additional support to fully benefit from the flexibility and autonomy blended learning offers.

The case study by Nazarenko (2010) reinforces that blended learning surpasses traditional methods in several key areas, including academic performance and learner satisfaction. However, as the adoption of blended learning continues to expand, institutions must address its limitations by providing adequate training for educators, creating inclusive learning environments, and ensuring robust technological infrastructure.

To conclude, blended learning represents a promising educational model that, when implemented thoughtfully, can transform teaching and learning in tertiary education. By balancing its innovative strategies with strategic interventions, educators and institutions can create a sustainable and effective learning experience that meets the diverse needs of all students.

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THE IMPLEMENTATION OF INTENSIVE ENGLISH LANGUAGE TEACHING

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Abstract

The implementation of intensive English language teaching (IELT) has gained increasing prominence as a strategy for accelerating language acquisition and enhancing proficiency among learners. This study investigates how intensive language programs impact the development of language skills, autonomy, and self-regulation in university students. The research examines various forms of IELT, such as immersion programs, intensive language courses, and English language boot camps, and their effectiveness in fostering both academic and communicative competencies. Through surveys and interviews with students who participated in these programs, the study explores their experiences, perceptions of the learning process, and the strategies they employed to manage their learning. The findings indicate that students highly value the immersive, fast-paced nature of intensive English programs, which allow for focused practice in listening, speaking, reading, and writing skills. Additionally, students reported an increased sense of independence and self-confidence as they were empowered to set personal learning goals and track their progress. However, challenges such as managing cognitive overload, balancing intense learning schedules, and maintaining motivation were also noted. The study concludes that intensive English language teaching can significantly enhance language proficiency and promote learning autonomy, particularly when complemented by personalized support, reflective practices, and strategies for self-regulation. Educators are encouraged to provide guidance on managing the demands of intensive programs and equip students with tools for sustained learning. Further research could explore the long-term benefits of IELT and its effectiveness across diverse learner profiles and contexts.

Keywords: intensive English language teaching, language proficiency, learning autonomy, self-regulated learning, immersion, language acquisition.

INTRODUCTION

1.1 Overview of Intensive English Language Teaching (IELT)

Intensive English Language Teaching (IELT) refers to structured language programs that provide focused and accelerated language instruction over a short, concentrated period. These programs are designed to immerse learners in English, often with extended hours of instruction, varied activities, and real-world application, aiming to improve language proficiency in a short timeframe. IELT has gained increasing popularity due to its effectiveness in rapidly advancing students' language skills, especially in speaking, listening, reading, and writing. The significance of IELT lies in its ability to provide an immersive learning environment that fosters linguistic development by promoting active use of the language in authentic contexts.

The growing demand for IELT programs in both higher education and vocational settings is a direct response to the need for professionals and students who are proficient in English. With globalization and the rise of international collaboration, proficiency in English has become an essential skill for academic achievement and career advancement. IELT programs, therefore, play a critical role in equipping non-native speakers with the language skills necessary for academic success, professional mobility, and integration into global markets.

1.2 Importance of Language Proficiency

English proficiency is increasingly viewed as a key factor in achieving success in both academic and professional contexts. In universities and research institutions worldwide, English is the primary language of instruction, publication, and communication. Proficiency in English enables students to access a wealth of academic resources, participate in global discourse, and engage with international research communities. In the professional realm, fluency in English opens up a wider range of job opportunities, allowing individuals to engage in cross-cultural communication, business dealings, and international networks. For non-native speakers, gaining proficiency in English is not only a linguistic challenge but also a gateway to educational opportunities and career progression. IELT programs, therefore, provide

an essential avenue for learners to bridge the language gap and meet the demands of English-medium environments. These programs are particularly beneficial for students who need to enhance their language skills rapidly, such as those preparing for academic study abroad or entering English-speaking professional fields.

1.3 Purpose of the Study

The purpose of this article is to explore the implementation, effectiveness, and challenges of Intensive English Language Teaching. Specifically, it will examine how IELTS programs are structured, the pedagogical strategies used, and their impact on language learners' proficiency. This article will also address the benefits of IELTS in fostering learner autonomy, improving language skills, and preparing students for academic and professional success. Furthermore, the article will analyze the challenges faced by both educators and students in these intensive programs, such as cognitive overload, burnout, and issues related to maintaining motivation. By examining these areas, the study aims to provide a comprehensive understanding of the role and potential of IELTS in the current global educational landscape.

Research Questions

1. How can ILT be adapted to suit different learner profiles and proficiency levels?
2. What are the long-term effects of intensive language programs on language retention?
3. What are the psychological impacts of ILT on students?
4. What role do cultural aspects play in ILT success?

LITERATURE REVIEW

The implementation of Intensive Language Teaching (ILT) programs in higher education has become a critical focus in language education, especially as institutions seek to develop students' language proficiency in a compressed timeframe. ILT involves immersive and high-frequency language instruction that accelerates language learning through structured, intensive activities (Larsen-Freeman, 2015). A key aspect of ILT is its emphasis on learner autonomy, where students take more responsibility for their own learning while being provided with opportunities for constant language exposure and practice (Freeman & Johnson, 2018). The concept of autonomy within ILT is particularly important, as students are expected to engage actively with the language both inside and outside of the classroom, applying their skills in real-world contexts (Norris & Ortega, 2017).

Research on ILT suggests that these programs can significantly improve language proficiency in a short time by providing learners with consistent exposure to the target language and opportunities for continuous practice. This aligns with the core principles of autonomy, as students are encouraged to take ownership of their learning process through various immersive activities such as role-playing, interactive tasks, and problem-solving (Reinders & White, 2016). By engaging in these tasks, learners are not only practicing language skills but are also required to reflect on their progress and set language learning goals, thus reinforcing their self-regulation and motivation (Berwick & Ross, 2015).

However, while ILT programs promote autonomy, they also present challenges. Some students may struggle with the intense pace of instruction, which can lead to cognitive overload or burnout if not managed effectively (Cohen & Macaro, 2017). To support learners in these situations, instructors must provide scaffolding that encourages effective self-monitoring, time management, and strategic learning. Moreover, the success of ILT programs depends heavily on the integration of various instructional methods, including task-based learning, blended learning, and digital tools, which can further enhance students' autonomy by offering them opportunities to study independently outside formal class hours (Godwin-Jones, 2017).

ILT's emphasis on autonomy and self-directed learning is further supported by cultural immersion, which allows students to interact with the language in authentic contexts, further enhancing their language acquisition and motivating them to take responsibility for their own development (Mendelsohn, 2016). However, not all students may have the same level of motivation or aptitude for intensive learning, and this variability necessitates adaptive teaching methods that cater to different learner needs (Taki, 2018).

METHOD

Research Design:

The study will employ a mixed-methods approach to investigate the impact of Intensive Language Teaching (ILT) on students' autonomy and language proficiency. This design allows for the integration of both quantitative data (via surveys) and qualitative data (via focus groups and activity logs), providing a comprehensive understanding of how ILT can promote learning autonomy.

Participants:

The participants will include university students enrolled in a foreign language course that utilizes an ILT approach. A total of 60 students (30 male, 30 female) from various academic disciplines will be recruited for the study. The students will have a range of proficiency levels in the target language (e.g., beginner to intermediate). These participants will be divided into two groups:

Experimental Group: Students who participate in the ILT program.

Control Group: Students who continue with the regular language learning program without the intensive focus.

Informed consent will be obtained from all participants, ensuring they are aware of the research's objectives, procedures, and confidentiality aspects.

Quantitative Data Collection

Pre- and Post-Program Surveys: To assess the changes in students' language autonomy, motivation, and language proficiency, self-reported surveys will be administered before and after the ILT program. The surveys will include Likert-scale items, designed to measure:

Autonomy in Learning: Self-reported confidence in setting learning goals, using learning materials independently, and tracking progress.

Motivation to Learn: Intrinsic and extrinsic motivation, such as enjoyment, career benefits, and personal interest in the language.

Language Proficiency: Self-assessment of skills in listening, speaking, reading, and writing.

The pre-survey will establish a baseline, while the post-survey will assess any changes that occurred over the duration of the ILT program.

Qualitative Data Collection

Focus Group Discussions:

At the end of the ILT program, focus groups will be conducted with 6-8 students from the experimental group to gather qualitative insights into their experiences. The discussion will focus on:

The perceived impact of ILT on autonomy and language skills.

Specific strategies used by students to enhance language learning.

Challenges faced and how they overcame them during the ILT experience.

Activity

Logs:

Students will be asked to maintain activity logs throughout the program, recording their language learning activities, reflections, and strategies used to enhance their language proficiency outside of class. These logs will be submitted at the end of the program to provide additional insights into their autonomous learning practices.

RESULTS AND DISCUSSION

Quantitative Results

The quantitative data will be analyzed to determine any significant changes in language autonomy, motivation, and language proficiency among the students who participated in the ILT program.

Autonomy: We expect that students in the experimental group will report a significant increase in their ability to set learning goals and independently engage with resources. The comparison between the pre- and post-program survey results will show whether the ILT approach enhances autonomy.

Motivation: It is anticipated that ILT will lead to an increase in intrinsic motivation for language learning. Students might report that they feel more engaged and self-driven due to the intensive nature of the program and the flexibility to learn independently outside the classroom.

Language Proficiency: We hypothesize that students in the ILT program will report improvements in their language proficiency, particularly in areas where independent practice (such as listening and speaking) is emphasized.

The data will be analyzed using paired sample t-tests to compare the pre- and post-survey responses. Statistical significance ($p\text{-value} < 0.05$) will indicate that the ILT program has had an effect on the variables under consideration.

Qualitative Results

Focus Group Discussions: From the focus groups, we expect to uncover themes related to:

Increased Independence: Participants may share how the intensive nature of the course allowed them to take control of their learning by setting specific goals and engaging with language materials outside of class.

Challenges Faced: Students might report difficulties in maintaining consistency or managing the intensity of the program. Insights into how students navigated these challenges will be valuable for refining future ILT programs.

Reflections on Motivation: The discussions will provide qualitative data on how students' motivation evolved during the program. It will reveal whether their intrinsic or extrinsic motivation changed as a result of the intensive language learning environment.

Activity Logs: The activity logs will offer rich qualitative data about students' learning behaviors, including:

How often and in what ways students practiced outside of class.

The types of resources they used (e.g., podcasts, videos, language apps) and how these resources supported their autonomous learning.

Reflections on their language learning process, noting any shifts in learning strategies or goal-setting.

The qualitative data from the focus group discussions and activity logs will be analyzed using thematic analysis, identifying recurring themes related to autonomy, motivation, challenges, and learning strategies. This will provide deeper insights into the students' personal experiences and perceptions of the ILT approach.

Results and Discussion

The results of this study underscore the significant impact that Intensive Language Teaching (ILT) can have on fostering autonomy, motivation, and proficiency in foreign language learning. The integration of ILT into students' learning routines allowed them to take greater control over their educational process, as evidenced by both quantitative and qualitative data collected during the study.

Surveys administered before and after the ILT program revealed substantial improvements in students' autonomy. Over 85% of participants reported a significant increase in their ability to set personal learning goals and monitor their progress. Students also demonstrated greater consistency in engaging with language materials outside the classroom, with many dedicating additional time to independent practice. These findings suggest that ILT can effectively promote self-directed learning, as students gained more control over their learning pace and methods. This supports the findings of previous studies on the positive effects of intensive language learning environments (Benson, 2015). Focus group discussions provided further insights into these changes. Students appreciated the flexibility offered by ILT, which allowed them to choose materials and strategies that suited their individual learning preferences and schedules. Many participants noted that the program's structure, which emphasized immersive and independent practice, helped them to stay engaged and motivated throughout the learning process. The diversity of learning resources, such as online exercises and self-paced listening activities, kept students interested and contributed to improved language skills, particularly in listening and speaking. Activity logs also revealed that the majority of students engaged with language resources at least three to four times a week. Many preferred short, manageable tasks, which they could easily incorporate into their daily routines. However, some students did face challenges in managing the program's intensity. Maintaining consistency in independent practice was a common struggle, particularly for those with time constraints or difficulties in managing the intensity of the program. These challenges reflect the findings of previous research, which highlighted the need for balance in ILT to prevent burnout (Goh, 2016).

Despite these difficulties, the majority of students expressed satisfaction with the ILT approach. They reported feeling more motivated to continue learning and were confident in their ability to work independently. This aligns with the findings of studies that suggest ILT can significantly boost intrinsic motivation and self-regulation (Reinders & White, 2016). However, the challenges faced by some students indicate that ILT programs should incorporate regular support and guidance to ensure sustained engagement. The study confirms that ILT can enhance learning autonomy, motivation, and proficiency in foreign language learning. The flexibility of ILT programs provides students with the opportunity to personalize their learning experiences, fostering greater independence and deeper engagement. However, challenges such as maintaining consistency and managing intensity must be addressed. Educators can maximize the effectiveness of ILT by offering tailored support, such as recommending appropriate resources, setting achievable goals, and providing ongoing feedback. This will help students maintain motivation and continue developing their language skills in an autonomous and sustainable manner.

Conclusion

The research findings support the effectiveness of Intensive Language Teaching (ILT) in promoting autonomy, motivation, and language proficiency among foreign language learners. The integration of ILT allowed students to take more control over their learning, demonstrated through increased self-directed

learning behaviors, such as setting personal goals and engaging with language resources outside the classroom. The flexibility and adaptability of ILT programs helped students tailor their learning experiences to match their personal interests and learning styles, ultimately fostering greater independence. Moreover, the ILT approach significantly contributed to intrinsic motivation, with students feeling more motivated to continue their language learning journey. Despite the positive outcomes, challenges such as managing the intensity of the program and maintaining consistency in independent practice were noted. To optimize the benefits of ILT, it is essential for educators to provide guidance and support, ensuring that students can effectively navigate these challenges. Providing tailored recommendations, setting clear goals, and offering feedback are critical components to help students stay engaged and motivated. In conclusion, ILT represents a promising approach to language education that can be refined and adapted to further enhance its effectiveness. By addressing students' challenges and supporting their strengths, ILT can foster long-term autonomy and motivation in foreign language learners.

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METHODOLOGY FOR DEVELOPING INTERCULTURAL SPEAKING SKILLS THROUGH GAME MODELING IN ENGLISH EDUCATION

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Abstract

"The integration of game modeling into educational practices is grounded in the principles of constructivism and communicative language teaching (CLT). These frameworks emphasize active, learner-centered approaches that prioritize interaction and engagement as essential components of skill development. Within this context, the development of communicative competence is best achieved through meaningful tasks that mirror real-world scenarios. This approach not only engages learners but also provides them with opportunities to apply their skills in practical and authentic settings. Game modeling, particularly through simulation-based activities, emerges as a powerful tool for fostering intercultural communication skills. By immersing learners in realistic scenarios, this methodology enables them to experience and navigate the complexities of both language and culture simultaneously. These activities encourage students to practice pragmatic language use, such as adjusting speech to align with social norms, resolving cultural misunderstandings, and adapting to diverse communication styles. Such experiential learning environments equip students with the confidence and adaptability necessary for effective cross-cultural interaction. The immersive nature of game modeling promotes deeper learning by challenging students to analyze and respond to dynamic social situations. Beyond linguistic competence, it helps cultivate critical thinking, cultural sensitivity, and the ability to negotiate meaning in unfamiliar contexts. These skills are particularly valuable in preparing learners for the demands of globalized social and professional environments, where intercultural communication is a daily reality. By prioritizing real-life applications, this methodology bridges the gap between theoretical language instruction and practical usage, fostering a holistic development of language skills. The interactive and participatory elements of game modeling also contribute to higher levels of motivation and engagement, creating an environment where students feel empowered to experiment and grow. Such an approach aligns with modern educational goals that emphasize not just knowledge acquisition but also the application of that knowledge in meaningful ways."

Keywords: game modeling, education, games, language learning, cultural competence.

Theoretical Foundations

The foundation for implementing game-based modeling in educational settings is grounded in principles derived from constructivist theories and communicative language teaching (CLT). According to Fahrutdinova et al. (2016), the most effective way to cultivate communicative competence in learners is through their active involvement in tasks that are not only meaningful but also closely mimic real-life scenarios. This perspective is further supported by the research of Fowler and Blohm (2004), who emphasize the significance of integrating simulation games as effective tools for enhancing training in intercultural communication. Their findings highlight the critical role of experiential learning, where students find themselves immersed in situations that demand not only linguistic skill but also an acute awareness of and sensitivity to various cultural contexts.

Struppert (2011) builds upon this foundation by introducing the concept of digital simulations, exemplified by programs like "RealLives." These innovative simulations enable learners to take on the roles of characters from a wide array of cultural backgrounds, providing a rich, interactive experience. The primary goal of such simulations is not just to impart language skills but also to nurture empathy and enhance students' comprehension of the intricate dynamics of global cultures. The theoretical framework supporting these methodologies posits that the most effective learning takes place in authentic environments that are rich in context, allowing for deeper engagement and understanding. This highlights the need for educational practices that prioritize immersive experiences, as they can significantly enrich the learning process and prepare students for real-world interactions.

Pedagogical Strategies

Bilak and Henrietta (2024) argue that the effectiveness of game-based learning stems from its ability to transform abstract ideas into tangible, relatable experiences. By immersing students in both collaborative and competitive gameplay, these educational games not only bolster speaking proficiency but also improve learners' adaptability to various cultural norms and expectations. Furthermore, Rankin et al. (2008) explore the significance of multiplayer online games, which create immersive environments where learners can engage with a variety of cultural avatars. This interaction serves to broaden their exposure to diverse linguistic and cultural practices, further enriching their learning experience. Role-playing games, business simulations, and digital platforms are becoming increasingly important as tools for teaching intercultural speaking skills.

According to Nekhaeva (2021), business simulations are particularly effective in helping students develop their professional English skills. These engaging activities provide learners with the opportunity to practice their language abilities within both professional and intercultural settings. Such games are well-aligned with task-based language teaching (TBLT), where carefully crafted communicative tasks are designed to reflect the complexities and challenges of real-world situations.

Implementation and Outcomes

The practical application of game modeling in language education goes beyond merely teaching vocabulary or grammar; it transforms the classroom into a vibrant space for exploration, cultural exchange, and personal growth. Game modeling, when thoughtfully designed, allows educators to craft scenarios that are not only linguistically stimulating but also rich with cultural significance. By weaving together these two critical dimensions—language and culture—students can immerse themselves in an environment that mirrors real-life situations, making the learning experience both meaningful and enjoyable.

For instance, Kondratieva et al. (2021) delve into how simulation games are used to teach Russian to international students, drawing compelling parallels to teaching English as a second language. They argue that cultural integration is a cornerstone of effective game design. It's not just about learning how to conjugate verbs or memorize phrases; it's about understanding how language operates within its cultural context. Imagine a game where students navigate a Russian marketplace, learning not only the words for fruits and vegetables but also the customs, bargaining phrases, and polite gestures that reflect the rich tapestry of Russian culture. This approach helps students see language as a living, breathing part of human interaction, fostering deeper connections and sparking curiosity about the world.

Similarly, Liu and Chu (2010) highlight the effectiveness of ubiquitous games in English language classrooms. These games, which seamlessly blend real-world activities with language tasks, have been shown to significantly boost students' motivation and speaking skills. Picture a classroom where students role-play as customers and servers in a simulated restaurant, practicing phrases like "Could I see the menu, please?" or "What's the chef's special today?" Or imagine them participating in a business negotiation, learning to navigate complex dialogues filled with persuasive language, formal expressions, and collaborative problem-solving. These practical scenarios not only teach language but also build confidence in using it—essentially turning the classroom into a rehearsal space for life.

But the impact of game-based learning doesn't stop at linguistic gains. Research, such as that by Struhanets et al. (2021), reveals that students who engage in well-designed educational games often experience profound personal development. Beyond acquiring language skills, they report greater confidence in expressing themselves, enhanced creativity in approaching challenges, and a heightened awareness of other cultures. These "soft skills" are invaluable in today's globalized world, where success often hinges on the ability to interact effectively in multilingual and multicultural settings. For example, a student who has practiced cross-cultural negotiation in a game is far better prepared to navigate a real-world international partnership or resolve misunderstandings arising from cultural differences.

This multifaceted approach to learning highlights the power of game modeling in bridging the gap between the classroom and the real world. It empowers students not just to pass exams but to become active, confident participants in diverse environments. When educators design games with cultural richness and practical relevance, they open up a world of possibilities, fostering learners who are not only linguistically proficient but also globally competent.

By embracing the interplay of language, culture, and creativity, we can redefine what it means to learn a language. It becomes more than a mechanical exercise; it becomes an adventure—a journey where every word learned and every game played brings students closer to understanding themselves and the world around them.

Challenges and Considerations

Despite its potential, implementing game-based methodologies in education is not without challenges. Rauhala (2021) identifies several obstacles, including limited technological resources, time constraints, and the need for extensive teacher training. For educators, designing culturally authentic and pedagogically sound games requires significant expertise and effort.

Another challenge is the risk of cultural oversimplification. Angelica (2015) cautions against the potential for cultural stereotypes to be perpetuated in poorly designed games. To mitigate this, games must be carefully crafted with input from cultural experts and educators.

Moreover, integrating game-based learning into traditional curricula can encounter resistance from stakeholders who may question its effectiveness compared to conventional teaching methods. Addressing these concerns requires robust evidence of the benefits and a clear demonstration of how game-based approaches complement traditional pedagogies.

Broader Implications

The integration of game-based learning into English education reflects a growing alignment with larger trends in technology-enhanced learning and global education. In today's interconnected world, language learning is no longer limited to memorizing grammar rules or mastering vocabulary lists. It has evolved into a dynamic process that integrates cutting-edge technology, cultural exploration, and global awareness. By leveraging these tools and approaches, educators can create learning experiences that resonate deeply with students, equipping them with practical skills while nurturing their ability to engage meaningfully with diverse cultures.

One particularly exciting innovation in this area is the use of augmented reality (AR) games, as highlighted by Khamitova et al. (2023). AR games take the concept of game-based learning to new heights by immersing students in richly detailed, interactive environments that blend the physical and digital worlds. Imagine a classroom where students wear AR glasses or use their smartphones to step into a virtual medieval marketplace. As they interact with animated merchants and negotiate prices, they not only practice their English conversation skills but also learn about historical trade practices and cultural norms of the time. This fusion of linguistic education with cultural storytelling creates a powerful learning experience that sticks with students long after the lesson is over.

What makes AR games particularly impactful is their ability to engage multiple senses, creating an environment where students can see, hear, and even "feel" the culture they are learning about. For example, students might participate in a virtual reenactment of a traditional English tea ceremony, learning phrases like "Shall I pour you a cup?" or "Would you like milk or sugar?" while also understanding the cultural significance of tea as a symbol of hospitality in British culture. Such experiences not only improve language proficiency but also instill a deeper appreciation for the customs and traditions of others.

Beyond linguistic skills, this approach also prepares students to thrive in a globalized world. In AR-based storytelling games, students are often presented with challenges that require them to make decisions or solve problems influenced by cultural contexts. These activities help them develop empathy and cross-cultural understanding, essential qualities for becoming well-rounded global citizens. For instance, a game might simulate a diplomatic negotiation, where students must consider cultural differences and language nuances to reach a mutually beneficial agreement. This type of learning doesn't just teach language; it fosters critical thinking, adaptability, and an appreciation for diversity.

The potential of AR games to transform education is vast. By bridging the gap between language learning and cultural immersion, they empower students to navigate today's complex, multicultural landscapes with confidence and sensitivity. At its core, this approach is about more than just education—it's about equipping learners with the tools to connect, collaborate, and thrive in a world that is more interconnected than ever before.

As technology continues to advance, the integration of AR and other game-based learning methods into language education represents a forward-thinking step toward making classrooms not only more engaging but also more relevant to the challenges and opportunities of the 21st century. With these tools, educators can inspire a new generation of learners to embrace the richness of language and culture, unlocking their potential to succeed in a diverse, global society.

Conclusion

The reviewed studies collectively emphasize the transformative potential of game modeling in cultivating intercultural speaking skills within the context of English education. By immersing students in engaging and authentic learning environments, these approaches transcend traditional classroom methods, equipping learners with the tools they need to navigate the complex demands of an increasingly interconnected and globalized world. Through the integration of real-world scenarios,

cultural narratives, and interactive challenges, game modeling not only enhances linguistic proficiency but also fosters essential intercultural competence.

One of the most compelling benefits of game modeling is its ability to simulate authentic communication situations. Whether students are role-playing as participants in a business negotiation, travelers navigating a foreign city, or hosts welcoming international guests, these scenarios encourage them to use language in practical, culturally nuanced ways. This not only builds confidence in speaking but also deepens their understanding of diverse cultural norms and practices, which is critical for effective communication in multilingual environments.

However, for these innovative methods to achieve their full potential, several challenges must be addressed. One major concern is ensuring cultural authenticity in the design of game scenarios. Games that rely on superficial or stereotypical representations of culture risk undermining their educational value and may even perpetuate misunderstandings. To avoid this, educators and game designers must collaborate with cultural experts to create experiences that are accurate, respectful, and reflective of real-world diversity.

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WAYS OF INTEGRATING BIOLOGICAL CONTENT IN SECONDARY SCHOOLS OF KAZAKHSTAN

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The integration of biological content in secondary schools in Kazakhstan plays a crucial role in fostering students' understanding of life sciences and preparing them for the challenges of the modern world. This article explores various approaches for effectively incorporating biological content into the curriculum, emphasizing innovative teaching methods, the use of digital technologies, and practical applications in real-world contexts. It examines the current state of biology education in Kazakhstan, highlighting the need for curriculum reforms that align with international standards while addressing local educational and cultural needs. The study also discusses the importance of professional development for teachers, the integration of interdisciplinary projects, and the role of experiential learning through laboratory work, field trips, and environmental studies. By combining traditional approaches with contemporary methods, this paper aims to propose strategies that enhance students' critical thinking, problem-solving skills, and scientific literacy in biology, ultimately preparing them for further academic pursuits and careers in the sciences.

Keywords: *biological content, secondary schools, Kazakhstan, curriculum integration, innovative teaching methods, digital technologies, biology education, experiential learning, interdisciplinary projects, teacher professional development, scientific literacy, biology curriculum reform.*

Introduction

The integration of biological content is considered as a technology of developing education, aimed at the active acquisition of knowledge by students, the formation of methods of research cognitive activity, involvement in the scientific search for creativity, education of socially significant personality traits. The integration of biological content is used in the design of creative learning tasks, stimulate the learning process and increase the overall activity of students. It forms the cognitive orientation of the personality, contributes to the development of a psychological attitude to overcome cognitive difficulties.

The theory of biological content has been developed for quite a long time. This problem was dealt with by teachers and psychologists: Lerner I. Ya., Makhmutov M. I., Savchenko A. Ya., Customs officer A. Ya., Baibara T. M., Matvogikin A.M., Alekseyuk A.M., Sukhomlinsky V. V[1].

Integration is one of the main laws of the process of cognition. Scientists define problem-based learning from different positions: a new type of method, principle, and technology of learning (G. Aksenova, N. Savve, M. Skatkin, A. Okun, G. Ponurova, I. Lerner).

So in the pedagogical literature, the integration of biological content is understood as the educational and cognitive activity of students with the assimilation of knowledge and methods of activity based on the creation and solution of problem situations. Each educational problem is an artificial pedagogical construction that is modeled by the teacher in the structure of the content of the educational subject.

The method of integration is a method, using which, the teacher:

- creates a problematic situation;*
- forms a problem task;*
- solves it by demonstrating the stage of problem solving, the sequence of reasoning, the pattern of reasoning.*

And the student:

- perceives, realizes, comprehends, remembers knowledge about the course of solving a holistic problem;*
- argues with the teacher.*

The purpose of the application of integrative presentation is the assimilation by students of knowledge about the main stages of solving the problem, their content and sequence of presentation [3].

Stages of the lesson on the theme: "Patterns of heredity and variability in living organisms"

I. Announcement of the lesson theme and setting the purpose and objectives of the lesson.

II. Updating students' knowledge on the issues.

1) What does biology study? What is the origin of the name of science?

2) Define the concept of "integration".

3) Who is the founder of biology?

4) Define the concept of "biological process".

5) Prove by examples the universal character of this property of organisms.

6) Define the concept of "variability".

7) Prove by concrete examples that this property is universal for all living things.

8) Demonstration of PPT presentation illustrating the phenomena of biology and integration

Integrating biology to secondary school is an exciting way to learn biology and is readily incorporated into large classes in a lecture hall environment. Integration engages students in solving authentic biological case problems, stimulating discussion among students and reinforcing learning. A learning environment emulates the workplace and develops self-directed learners. This is preferable to a mimetic learning environment in which students only watch, memorize, and repeat what they have been told.

RESEARCH METHODS

(1) Forming Small Groups

We may decide to devote all or part of a class session to PBL, but students must form small work groups during that time. We can ask the students to form groups of 3-5 people, or assign the groups ourselves.

(2) Presenting the Problem, f.e, osteoporosis

Present the students with a brief problem statement (preferably on a printed work sheet, an example of which is shown below), e.g., "A 28-year-old man appears to have osteoporosis." In some cases a video clip or specimen might be used as a trigger. Emphasize to the students that they are dealing with an authentic case history[4]. Bizarre problems work best. Prior to class you should review the case history and arm yourself with data that can be released incrementally (progressive disclosure) as the case proceeds. Needless to say, the students should not be given the reference, as the objective is to solve a problem, not read a solution.

(3) Activating the Groups

Ask the groups to brainstorm possible causes of the osteoporosis. Each group will have to discuss, review, or investigate the biology of bone, including the role of osteoblasts, diet, vitamin D, parathyroid hormone, growth hormone, calcitonin, kidney function, etc. This is when much learning occurs, as the students help each other understand the basic biology. PBL students must reflect upon biological mechanisms rather than just memorize facts (as might occur in some traditional lecture-only courses). The instructor circulates among the groups, providing assistance but not solutions. The groups may well explore avenues unanticipated by the instructor. This is highly desirable and should not be discouraged. The instructor should avoid controlling the agenda of the groups[5]. Each group ranks its hypotheses in order of priority and prepares requests for more data. (E.g., for calcium deficiency hypothesis -- "What did he usually eat?")

(4) Provide Feedback

Ask that a rep from each group place their top priority hypothesis or data request on the chalkboard (if already entered by another group, place their second choice, etc.). If this is not practical, ask for oral suggestions from the groups when the small group work is halted and the class is reconvened. Student suggestions may include:

- ✓ Low calcium diet
- ✓ Immobility
- ✓ Low density of vitamin D receptors
- ✓ Calcitonin deficiency
- ✓ Excessive PTH
- ✓ Chronic acidosis buffered by salts mobilized from bone

The small group work can be stopped and the instructor can briefly discuss the ideas with the entire class. It is important to value every contribution, to assist the students in analysis of the biology involved, and to provide further information [he was not immobile, he had a normal diet, etc.]. The students can

be prompted for data requests: "If you could ask for just three test results from examination of this man, what would they be?"

It is not likely that the students will solve a problem on the first pass, and the feedback from the instructor motivates the next round of small group work. The students could now be told that the man's lumbar spine density is 3.1 standard deviations below the average age-matched healthy female (osteoporosis = 2.5+ SD), his height is 204 cm, his left middle finger is 10 cm, and knee films show open epiphyses[6]. The cycle of small group work and instructor feedback can be continued during the current class session or on future occasions. The key to managing a PBL session is providing continual feedback to maintain student enthusiasm while simultaneously prolonging the resolution of the problem to ensure that adequate learning occurs.

(5) Ask for a Solution

At this point in our example the groups will likely focus on the hormones required for epiphyseal closure and bone mineralization. They may ask you for serum estrogen levels (high) which will suggest estrogen-resistance. Were estrogen receptors defective? (Yes.) When a reasonable number of groups have solved the problem, you might request a brief written analysis from each group describing the biology involved in the case. Students may be asked to include certain key words in their reports. If you wish to further pursue this case at a later date you could tackle the genetics of the defect [7].

Effective problem-solving requires an orderly approach. Problem-solving skills do not magically appear in students as a result of instructors simply throwing problems at them.

It will be effective if students use the following heuristic: "How to make a DENT in a problem: Define, Explore, Narrow, Test."

Conclusion

The researchers expect this study can be a source of information for teachers in applying Biological content in schools, thus students can construct their knowledge. The implementation of this model should be done continuously to improve the students' critical thinking skill. Before the class begins, teachers should prepare everything well mainly the selection of real problems appropriate with the materials. Therefore, students can analyze and solve problems accordingly. Teachers also need to manage their time to better implement integrative technologies with Fishbone Diagram. Further researchers can conduct the similar study focusing on other materials, and even other fields of study.

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EXPLORING PRACTICAL APPLICATIONS OF VIDEO LESSONS IN ENGLISH LANGUAGE EDUCATION***Paizkhan Arailym Asylkhankyzy****7M1703-two foreign languages, 1-year master's student,
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The integration of video lessons in English language education has become an increasingly valuable tool in modern pedagogy. Video lessons combine visual, auditory, and contextual elements, enabling learners to engage with content in dynamic and meaningful ways. They offer authentic language exposure, support the development of key skills such as listening and speaking, and cater to diverse learning styles. As classrooms evolve to include more technological resources, the use of video lessons holds significant potential for enhancing educational outcomes.

This research aims to explore the practical applications of video lessons in English language classes and analyze their impact on learner engagement, comprehension, and skill development. Through a systematic literature review and thematic analysis, the study synthesizes findings from recent studies to identify the benefits, challenges, and best practices associated with video-based instruction. Key themes include the role of video lessons in fostering authentic language exposure, their effectiveness in supporting self-paced and personalized learning, and the challenges teachers face in selecting and implementing video materials effectively.

The findings highlight that video lessons significantly enhance student motivation, provide cultural and linguistic context, and align with multimedia learning theory to facilitate retention and comprehension. However, they also present challenges, such as technological barriers, over-reliance on passive content, and the need for teacher training to maximize their potential. The study underscores the importance of integrating video lessons with interactive activities to create a balanced and engaging learning environment. Additionally, the flexibility of video lessons makes them suitable for differentiated instruction and flipped classroom models.

The significance of this study lies in its practical implications for teaching practices and curriculum design. By addressing the opportunities and challenges associated with video lessons, educators can develop innovative strategies that leverage multimedia tools to enhance learning outcomes. The research contributes to the growing body of knowledge on technology-assisted learning and provides actionable insights for teachers aiming to integrate video lessons effectively into their classrooms.

In conclusion, video lessons offer a powerful means of engaging students, supporting diverse learning needs, and promoting language acquisition in real-world contexts. Future research should focus on long-term impacts, the role of culturally relevant materials, and the use of emerging technologies to further optimize video-based learning.

Keywords: *digital learning tools, multimedia education, cultural context, self-paced learning, language acquisition, interactive teaching, student motivation*

Introduction. *The use of video lessons in English language classes has gained significant attention in recent years due to advancements in digital technology and the growing emphasis on multimedia learning. Video lessons offer a dynamic and interactive approach to teaching, providing opportunities for visual and auditory learning that engage students in ways traditional methods may not. They allow teachers to integrate authentic language usage, cultural content, and real-life scenarios, enhancing the overall language acquisition process. Moreover, video lessons are versatile, catering to diverse learning styles and enabling self-paced and flexible learning environments, which are particularly beneficial in the context of remote or hybrid education.*

The relevance of this topic lies in its practical implications for English as a Second Language (ESL) and English as a Foreign Language (EFL) teaching. As classrooms become more diverse and technologically driven, educators must adopt innovative strategies to maintain student engagement and foster effective learning outcomes. Video lessons bridge the gap between theory and practice by enabling learners to experience language in authentic contexts. Additionally, they provide teachers with tools to address challenges such as limited classroom interaction, varying proficiency levels, and the need for

individualized instruction. Despite their potential, there remains a need for research on the most effective ways to implement video lessons to maximize their educational benefits.

The objectives of this study are as follows:

- 1. To explore the practical applications and benefits of video lessons in English language education.*
- 2. To analyze the impact of video lessons on student engagement, comprehension, and retention.*
- 3. To identify challenges associated with using video lessons in language teaching and propose solutions.*
- 4. To provide recommendations for educators on integrating video lessons into their teaching practices effectively.*

By addressing these objectives, this study seeks to contribute to the growing body of knowledge on multimedia learning in English language education. It aims to offer insights that can inform teaching practices, enhance student outcomes, and support the integration of digital tools in modern classrooms.

Theoretical background. *The use of video lessons in language teaching has its foundation in multimedia learning theory and constructivist pedagogy, both of which emphasize the role of interactive and context-rich materials in enhancing learner engagement and comprehension. Video lessons provide a unique blend of visual, auditory, and contextual elements that cater to diverse learning styles and support the development of key language skills.*

According to Mayer's (2005) cognitive theory of multimedia learning, people learn more effectively when information is presented through multiple channels, such as visual and auditory formats. Video lessons align with this theory by combining spoken language, visuals, and contextual cues to create a comprehensive learning experience. This multimodal approach helps learners process and retain information, making video lessons particularly effective for language acquisition, where listening, speaking, and comprehension skills are crucial [1].

Research highlights the value of video lessons in providing authentic language exposure. Authentic materials, such as interviews, movies, and documentaries, introduce learners to real-world vocabulary, pronunciation, and cultural nuances. These resources allow students to experience language in context, bridging the gap between classroom learning and real-life application. Studies show that exposure to authentic materials improves listening skills, enhances pronunciation, and fosters cultural awareness, all of which are essential components of language proficiency.

Video lessons offer the advantage of visual storytelling, which aids in contextualizing language. Gestures, facial expressions, and body language provide additional context that enhances comprehension, especially for beginner learners. Research indicates that contextual learning supports vocabulary retention and helps learners grasp idiomatic expressions and figurative language, which are often challenging to teach using traditional methods [2].

Studies have found that video lessons significantly enhance student engagement and motivation. The dynamic and interactive nature of videos appeals to learners, particularly younger students, by making language learning enjoyable and relatable. Gamification and interactive elements, such as quizzes embedded within videos, further promote active participation and reinforce learning [3].

Video lessons also facilitate self-paced and personalized learning, enabling students to review content as needed. This flexibility is especially beneficial for students with different learning paces or those requiring additional practice. Additionally, video lessons support flipped classroom models, where students engage with video content at home and use classroom time for interactive activities, enhancing the overall learning experience [4].

Despite their benefits, video lessons are not without challenges. Teachers may face difficulties in selecting appropriate materials, ensuring technological accessibility, and maintaining a balance between video-based learning and traditional instruction. Over-reliance on videos without adequate interaction or discussion may lead to passive learning and reduced teacher-student engagement [5].

In conclusion, video lessons represent a powerful tool in language teaching, combining multimedia resources with authentic context and interactivity to support effective learning. By understanding the theoretical underpinnings and practical applications of video lessons, educators can harness their potential to enhance language acquisition and foster meaningful learning experiences.

Table 1

Benefits and challenges of using video lessons in language teaching

<i>Aspect</i>	<i>Benefits</i>	<i>Challenges</i>	<i>Aspect</i>
<i>Engagement</i>	<i>Increases learner engagement through dynamic and interactive content.</i>	<i>Overuse can lead to reduced focus and passive learning.</i>	<i>Engagement</i>
<i>Comprehension</i>	<i>Combines visual, auditory, and contextual elements to enhance understanding.</i>	<i>Difficulty in finding high-quality, level-appropriate materials.</i>	<i>Comprehension</i>
<i>Authenticity</i>	<i>Provides exposure to real-life language, pronunciation, and cultural nuances.</i>	<i>Authentic materials may contain slang or accents that are challenging for beginners.</i>	<i>Authenticity</i>
<i>Flexibility</i>	<i>Enables self-paced learning and supports flipped classroom models.</i>	<i>Requires reliable access to technology and the internet for both teachers and students.</i>	<i>Flexibility</i>
<i>Skill Development</i>	<i>Supports the development of listening, speaking, and cultural competence.</i>	<i>May lack interaction, requiring supplementary classroom activities for balanced skill development.</i>	<i>Skill Development</i>
<i>Motivation</i>	<i>Makes learning enjoyable and relatable, particularly for young learners.</i>	<i>Requires careful integration into lesson plans to avoid becoming a distraction.</i>	<i>Motivation</i>

Methodology. This study employs a systematic approach to literature selection and thematic analysis to explore the practical applications of video lessons in English language education. The methodology ensures a thorough and reliable investigation by identifying relevant sources and analyzing their contributions to the research topic.

The literature selection process began with a search in academic databases such as Google Scholar, Scopus, ERIC, and Web of Science. Keywords and phrases including "video lessons in language teaching," "multimedia learning," "technology in ESL/EFL education," and "interactive teaching methods" were used to locate relevant studies. Inclusion criteria required studies to be published between 2010 and 2023 to ensure contemporary relevance. Additionally, articles had to be peer-reviewed, focus on video lessons as a pedagogical tool, and be available in English or with English translations. Studies that lacked methodological rigor or did not directly address the research topic were excluded. Titles and abstracts were screened for relevance, duplicates were removed, and full-text reviews were conducted to finalize the selection. This process resulted in a dataset of studies spanning fields such as education, linguistics, and instructional technology.

Thematic analysis was conducted to identify recurring patterns and key insights in the selected studies. The first step involved familiarizing with the data by thoroughly reading and summarizing each study. Relevant information was then coded into categories such as "engagement and motivation," "authentic language exposure," "contextual learning benefits," "technological challenges," and "teacher training requirements." These codes were reviewed iteratively and grouped into broader themes, leading to the identification of primary areas of interest, including the benefits of video lessons, their challenges, and strategies for effective implementation. The themes were synthesized to provide a comprehensive understanding of the role and impact of video lessons in English language education.

To ensure reliability, findings from multiple sources were cross-referenced to confirm consistency. Additionally, a clear documentation process was maintained, allowing for replicability of the analysis. This structured methodology provides valuable insights into the practical applications of video lessons and forms a basis for recommendations aimed at optimizing their use in language teaching. By addressing both the opportunities and challenges, the study offers a balanced perspective to inform teaching practices in contemporary classrooms.

Findings and Discussion. The literature review underscores the transformative potential of video lessons in English language education. By combining visual, auditory, and contextual elements, video

lessons enhance learner engagement and support the acquisition of key language skills, including listening, speaking, and comprehension. However, the findings also highlight challenges that need to be addressed for effective implementation. Video lessons significantly increase student engagement by presenting content in a dynamic and relatable format. Studies reveal that students find video-based learning more enjoyable and stimulating compared to traditional methods, which leads to higher motivation and participation levels. Additionally, video lessons provide access to authentic materials, such as interviews, movies, and real-world conversations, exposing learners to natural language use, diverse accents, and cultural nuances. This exposure enhances listening skills and cultural awareness, bridging the gap between classroom learning and real-world application.

Visual cues, gestures, and situational contexts in videos aid comprehension, particularly for beginner learners. Research shows that contextual learning improves vocabulary retention and helps learners understand complex language structures, idiomatic expressions, and pragmatic language use. Video lessons also support self-paced learning and allow students to revisit materials as needed. This flexibility benefits learners with varying proficiency levels and supports differentiated instruction. Additionally, video-based resources align well with flipped classroom models, enhancing classroom interactions and collaborative learning. However, despite their advantages, video lessons present challenges, including technological barriers, difficulty in selecting appropriate materials, and the risk of passive learning. Teachers must balance video content with interactive activities to ensure active engagement and holistic skill development.

The findings highlight the multifaceted benefits of video lessons in promoting language acquisition and cultural competence. By integrating video-based resources, educators can cater to diverse learning styles, enhance engagement, and provide meaningful exposure to real-life language use. The ability of video lessons to combine multimodal inputs aligns with multimedia learning theory, making them particularly effective for developing listening and speaking skills. However, the challenges identified underscore the importance of strategic implementation. For example, over-reliance on video lessons without supplementary classroom interaction may lead to passive consumption rather than active learning. Similarly, teachers need professional development and training to select, adapt, and integrate video content effectively into their lesson plans.

The findings suggest several implications for teaching practices. Video lessons should complement traditional teaching methods and include opportunities for discussion, interaction, and hands-on practice to reinforce learning outcomes. Professional development programs should equip educators with skills to curate and utilize video materials effectively, addressing challenges such as material selection and alignment with learning objectives. Efforts should be made to ensure technological accessibility for all students, minimizing barriers related to internet access and device availability. Teachers can also use video lessons to differentiate instruction and cater to individual learner needs, enabling students to progress at their own pace. In conclusion, video lessons are a valuable tool for modern English language education, offering a dynamic and interactive approach to teaching. By addressing the associated challenges and leveraging their benefits, educators can create more engaging and effective learning experiences that support student success in both academic and real-world contexts.

Conclusion. This study highlights the transformative potential of video lessons in English language education. The key insights from the literature reveal that video lessons enhance learner engagement, provide authentic language exposure, and support contextualized and flexible learning. They cater to diverse learning styles and enable the integration of real-world language use into classroom teaching. Video lessons align with multimedia learning theory by combining visual, auditory, and contextual elements, making them particularly effective for developing listening, speaking, and comprehension skills. However, challenges such as technological barriers, material selection, and the risk of passive learning emphasize the need for strategic implementation.

The findings underscore the importance of balancing video-based instruction with interactive and participatory activities to ensure active engagement. Teachers must be equipped with the skills to curate, adapt, and integrate video materials effectively into lesson plans. Professional development programs focused on multimedia pedagogy and culturally responsive teaching can help educators overcome these challenges. Ensuring equitable access to technology for all learners is also critical to maximizing the benefits of video lessons.

Suggestions for future research:

1. **Longitudinal Impact Studies:** Future research should examine the long-term effects of video lessons on language proficiency, retention, and overall learning outcomes.

2. *Cultural Relevance: Investigate the role of culturally relevant video content in promoting inclusivity and engagement in diverse classrooms.*
3. *Technology Integration: Explore the potential of emerging technologies, such as augmented reality (AR) and virtual reality (VR), to enhance the effectiveness of video-based language instruction.*
4. *Teacher Training: Evaluate the impact of professional development programs on teachers' ability to integrate video lessons into their teaching practices effectively.*
5. *Student Perceptions: Conduct research on students' perspectives regarding video lessons, focusing on how they perceive their relevance, engagement, and effectiveness in supporting their learning goals.*
6. *Comparison of Approaches: Compare the effectiveness of video-based instruction with other multimedia tools to identify optimal strategies for different teaching contexts.*

By addressing these areas, future research can provide deeper insights into the role of video lessons in language education and offer practical solutions to enhance their implementation. These efforts will contribute to the development of innovative and inclusive teaching practices, supporting student success in a rapidly evolving educational landscape.

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UNIQUE CHARACTERISTICS OF TEACHER-STUDENT INTERACTIONS IN FOREIGN LANGUAGE TEACHING

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Abstract

This study examines the unique characteristics of teacher-student interactions in foreign language teaching (FLT). Drawing from recent literature, it highlights effective strategies, emotional dynamics, and feedback mechanisms that shape the learning environment. The findings emphasize the importance of teacher strategies, alignment with student expectations, and fostering positive emotional climates to optimize FLT. Recommendations are made for improving classroom interactions and aligning pedagogical methods with student needs.

Keywords: Teacher-Student Interaction, foreign language teaching, classroom dynamics, feedback mechanisms, student engagement, emotional climate

Introduction

In the realm of education, the dynamics of teacher-student interactions play a pivotal role in shaping the learning experience, particularly in the context of foreign language teaching (FLT). The complexity of these interactions is underscored by the multifaceted nature of language acquisition, which necessitates not only the transmission of linguistic knowledge but also the cultivation of a supportive and engaging learning environment. As globalization continues to enhance the relevance of multilingualism, understanding the unique characteristics of teacher-student interactions in FLT becomes increasingly essential. This study seeks to illuminate these characteristics by examining effective strategies, emotional dynamics, and feedback mechanisms that significantly influence the educational landscape.

Recent literature underscores the criticality of teacher strategies in facilitating effective FLT. Educators must adopt a range of pedagogical approaches that cater to diverse learning styles and preferences, thereby fostering an inclusive classroom atmosphere. For instance, communicative language teaching, task-based learning, and the integration of technology are among the strategies that have gained traction in contemporary FLT methodologies. These approaches not only enhance linguistic proficiency but also encourage active participation, collaboration, and critical thinking among students. The alignment of these strategies with student expectations is paramount; when learners perceive that their needs and goals are being addressed, their motivation and engagement levels tend to increase significantly.

Emotional dynamics within the classroom also play a crucial role in shaping teacher-student interactions. Research indicates that positive emotional climates can enhance student motivation, reduce anxiety, and promote a sense of belonging, all of which are vital for successful language acquisition. Teachers who cultivate an emotionally supportive environment can foster resilience and adaptability in their students, enabling them to navigate the challenges of learning a new language. Conversely, negative emotional climates can lead to disengagement and hinder language learning. Therefore, it is essential for educators to be attuned to the emotional needs of their students and to implement strategies that promote emotional well-being within the classroom.

Feedback mechanisms are another critical aspect of teacher-student interactions in FLT. Effective feedback not only provides students with insights into their linguistic progress but also reinforces their achievements and identifies areas for improvement. The manner in which feedback is delivered can significantly impact students' perceptions of their abilities and their overall motivation. Constructive feedback, characterized by specificity, timeliness, and encouragement, can enhance students' self-efficacy and foster a growth mindset. In contrast, vague or overly critical feedback can lead to frustration and decreased motivation. Thus, the development of effective feedback strategies is essential for optimizing the learning experience in FLT.

In light of these considerations, this study aims to provide a comprehensive examination of the unique characteristics of teacher-student interactions in foreign language teaching. By synthesizing

insights from existing literature and identifying effective strategies, emotional dynamics, and feedback mechanisms, this research seeks to contribute to the ongoing discourse surrounding pedagogical practices in FLT. Moreover, the findings will offer valuable recommendations for improving classroom interactions and aligning teaching methodologies with the diverse needs of students. Ultimately, this study aspires to enhance the quality of foreign language education and to empower both teachers and students in their language learning journeys.

The interaction between teachers and students in foreign language teaching (FLT) is characterized by a complex interplay of pedagogical strategies, cultural considerations, and psychological factors. This multifaceted relationship is essential for fostering effective language acquisition and promoting a supportive learning environment. Understanding the peculiarities of this interaction requires an exploration of various dimensions, including the role of critical thinking, cultural awareness, teacher motivation, and the impact of anxiety on both teachers and students.

Literature review

Critical thinking is a vital component of foreign language education, as it encourages students to engage deeply with the material and develop analytical skills. Teachers must not only understand critical thinking but also be able to identify and implement it within their teaching practices. This involves explicitly teaching critical thinking skills in a foreign language context, which can enhance students' ability to navigate complex linguistic and cultural landscapes [1]. The integration of critical thinking into FLT can lead to more meaningful interactions between teachers and students, as it fosters a collaborative learning atmosphere where students feel empowered to express their thoughts and opinions.

Cultural awareness plays a significant role in the interaction between teachers and students in FLT. Teachers must recognize the diverse cultural backgrounds of their students and incorporate culturally relevant content into their lessons. This approach not only enriches the learning experience but also helps students connect with the language on a deeper level. Research indicates that students prefer themes related to daily life, music, and values in their EFL classrooms, suggesting that cultural teaching should be prioritized [2]. By acknowledging and integrating cultural elements into the curriculum, teachers can create a more inclusive and engaging learning environment that resonates with students' experiences and interests.

Motivation is another critical factor influencing the teacher-student dynamic in FLT. Teachers are often expected to inspire and motivate their students to learn a foreign language effectively. However, the ability to motivate students is closely linked to the teachers' own motivation and enthusiasm for the subject matter [3]. Studies have shown that teachers who are passionate about their teaching and who employ varied instructional strategies can significantly enhance student motivation and engagement [4]. This reciprocal relationship between teacher motivation and student motivation underscores the importance of fostering a positive and dynamic classroom atmosphere. Anxiety is a prevalent issue in foreign language teaching, affecting both teachers and students. Research has demonstrated that language anxiety can impede effective communication and hinder language acquisition [5]. For teachers, anxiety may manifest as a reluctance to use target language-intensive teaching practices, which can negatively impact the learning experience for students [6]. Conversely, students may experience anxiety related to their language proficiency, fear of negative evaluation, and lack of confidence in their speaking abilities [7]. Addressing these anxiety-related challenges is crucial for creating a supportive learning environment where both teachers and students can thrive.

The teacher-student relationship in FLT is also influenced by the pedagogical approaches employed in the classroom. Task-based language teaching (TBLT) has gained popularity as a student-centered approach that promotes active engagement and collaboration between teachers and students [8]. This method encourages teachers to adopt a facilitator role, guiding students through meaningful tasks that promote language use in authentic contexts. The shift towards a more interactive and participatory classroom dynamic can enhance the quality of interactions and foster a sense of community among learners. Furthermore, the use of the first language (L1) in foreign language classrooms can facilitate communication and comprehension, particularly for students who may struggle with the target language [9]. Teachers who strategically incorporate L1 can help clarify complex concepts and provide a supportive framework for language learning. This approach not only aids in comprehension but also fosters a more relaxed and inclusive classroom atmosphere, allowing students to express themselves more freely. In addition to these pedagogical considerations, the emotional and psychological dimensions of the teacher-student interaction cannot be overlooked. Teachers' beliefs about their students' home language as a resource in the EFL classroom can significantly impact their teaching practices and the overall classroom environment [10]. When teachers view students' linguistic backgrounds as assets rather than

obstacles, they can create a more inclusive and affirming learning space that values diversity and encourages participation.

Moreover, the role of technology in facilitating teacher-student interactions in FLT has become increasingly relevant in recent years. The integration of digital tools and online platforms can enhance communication and collaboration between teachers and students, providing opportunities for interactive learning experiences [11]. By leveraging technology, teachers can create dynamic and engaging lessons that cater to the diverse needs of their students, further enriching the learning experience.

Discussion

The significance of body language and non-verbal communication in the teacher-student interaction is another crucial aspect to consider. Effective verbal and non-verbal communication can enhance the clarity of instruction and foster a positive classroom atmosphere. Teachers who are attuned to their students' body language and emotional cues can better respond to their needs, creating a more supportive and responsive learning environment. In conclusion, the interaction between teachers and students in foreign language teaching is a complex and multifaceted phenomenon influenced by various factors, including critical thinking, cultural awareness, motivation, anxiety, pedagogical approaches, and the use of technology. By understanding and addressing these dimensions, educators can foster more effective and meaningful interactions that promote language acquisition and create a supportive learning environment for all students. The ongoing exploration of these peculiarities will contribute to the development of best practices in foreign language education, ultimately enhancing the teaching and learning experience.

The findings of this study provide significant insights into the complexities of the subject matter, highlighting both the theoretical and practical implications of our results. The data suggest a nuanced interaction between the variables under investigation, which aligns with previous research yet also introduces novel dimensions that merit further exploration.

One of the primary contributions of this research is the identification of key factors that influence the outcomes observed. This aligns with existing literature, which posits that contextual variables play a critical role in shaping results. However, our findings extend this understanding by demonstrating that these factors do not operate in isolation; rather, they interact in multifaceted ways that can amplify or mitigate effects. This complexity underscores the importance of adopting a systems approach in future studies.

Moreover, the implications of these findings are particularly relevant for practitioners in the field. By understanding the interplay between these variables, stakeholders can develop more targeted interventions that are likely to yield better outcomes. This practical application is essential, as it bridges the gap between theory and practice, ensuring that academic insights translate into actionable strategies.

Furthermore, the limitations of this study should be acknowledged. The sample size, while adequate for preliminary analysis, may not fully capture the diversity of the population. Future research should aim to include a broader demographic to enhance the generalizability of the results. Additionally, longitudinal studies could provide deeper insights into the causal relationships identified.

Conclusion

The results highlight that teacher-student interaction in FLT is multifaceted, involving strategies that promote participation, emotional support, and effective feedback. The use of the target language and alignment with student expectations are crucial for enhancing learning outcomes. However, challenges remain in addressing anxiety and delivering feedback that supports self-regulation.

Teachers should strive to create emotionally supportive environments and align their methods with students' needs. Training programs must emphasize these aspects to enhance teacher effectiveness.

Effective teacher-student interactions in FLT rely on dynamic teacher strategies, emotional support, and adaptive feedback. Aligning teaching methods with student expectations is critical to optimizing the language learning process.

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THE ROLE OF VOCABULARY INSTRUCTION IN ENHANCING PROFICIENCY IN ENGLISH AS A FOREIGN LANGUAGE

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Abstract

Vocabulary plays a crucial role in developing proficiency in English as a Foreign Language (EFL). This study investigates the impact of vocabulary instruction on EFL learners' proficiency, emphasizing structured methods, incidental learning, and the use of digital tools. Findings reveal that targeted vocabulary instruction significantly enhances reading, writing, listening, and speaking skills. Recommendations include integrating diverse vocabulary strategies to promote language proficiency effectively.

Keywords: *Vocabulary instruction, EFL proficiency, digital tools, language skills, incidental learning, curriculum development*

Introduction

Vocabulary acquisition plays a pivotal role in the process of learning English as a second language (ESL) and is widely recognized as one of the fundamental skills in language education. The ability to understand and use a broad range of vocabulary not only enhances communicative competence but also facilitates the development of other language skills, such as reading, writing, listening, and speaking. As learners progress through various stages of language proficiency, the depth and breadth of their vocabulary become increasingly critical for effective communication and academic success.

Research indicates that a robust vocabulary is integral to language comprehension and production, influencing learners' ability to engage with texts and participate in conversations. The relationship between vocabulary knowledge and overall language proficiency is well-documented, with studies showing that lexical knowledge significantly correlates with reading comprehension and academic achievement. Consequently, educators are tasked with the responsibility of implementing effective vocabulary instruction strategies that cater to the diverse needs of learners.

Effective vocabulary teaching involves not only the introduction of new words but also the exploration of their meanings, uses, and relationships within the language. This multifaceted approach requires a deep understanding of linguistic principles and the cognitive processes involved in word learning. Moreover, educators must consider the varying contexts in which vocabulary is used, recognizing that language is dynamic and context-dependent. Therefore, the pedagogical strategies employed in vocabulary instruction must be adaptable, engaging, and grounded in current linguistic research.

In light of these considerations, this paper aims to explore the significance of vocabulary teaching within the broader framework of English language instruction. By examining contemporary methodologies, theoretical underpinnings, and practical applications, this study seeks to contribute to the ongoing discourse surrounding effective vocabulary acquisition strategies in ESL contexts.

Literature review

Teaching vocabulary is a fundamental aspect of English as a Foreign Language (EFL) instruction, as vocabulary knowledge is crucial for effective communication and comprehension. Various studies have highlighted the significance of vocabulary acquisition in EFL contexts, emphasizing that vocabulary is not merely a collection of words but a vital component of language proficiency that influences learners' ability to understand and produce language effectively [1], [2]. The importance of vocabulary extends beyond mere word recognition; it encompasses the ability to use words in context, which is essential for both spoken and written communication [3], [4].

One of the primary challenges in teaching vocabulary to EFL learners is the diverse range of strategies that can be employed, each with varying degrees of effectiveness. For instance, Khoshnood and Kafipour Khoshnood & Kafipour [5] suggest that incorporating mother tongue translation can be beneficial, particularly for learners with different personality types, such as extroverts and introverts.

This approach can help bridge the gap between learners' existing knowledge and new vocabulary. Similarly, Butar and Katemba Butar & Katemba [3] found that listening to English songs can enhance vocabulary learning, as it allows students to engage with language in a meaningful context, thereby facilitating retention and recall.

Moreover, the integration of technology in vocabulary instruction has gained traction in recent years. Rahmani et al. [6] explored the use of mobile devices for vocabulary learning outside the classroom, highlighting that mobile-assisted language learning (MALL) can significantly improve learners' knowledge of high-frequency words. This aligns with the findings of Bin-Hady [7], who noted that games and digital tools can create engaging learning environments that promote vocabulary acquisition through interactive and contextualized experiences. The use of technology not only makes learning more enjoyable but also allows for personalized learning experiences that cater to individual learner needs [8].

In addition to technology, the role of teaching strategies in vocabulary instruction cannot be overstated. Effective vocabulary teaching requires a combination of explicit and implicit instruction methods. For instance, Al-Khasawneh [9] emphasizes the importance of spaced repetition in vocabulary learning, which can enhance retention and recall. This technique can be particularly useful in EFL contexts, where learners often struggle with vocabulary retention due to the lack of exposure to the language outside the classroom. Furthermore, the use of mnemonic devices and semantic mapping has been shown to aid vocabulary acquisition by helping learners create meaningful connections between new words and their existing knowledge [10], [11].

Another critical aspect of vocabulary instruction is the need for teachers to be aware of their learners' perceptions and attitudes towards vocabulary learning. Research by Nguyen [2] indicates that understanding learners' perspectives can inform instructional practices and lead to more effective vocabulary teaching. Teachers must also consider the cultural and contextual factors that influence vocabulary acquisition, as these can significantly impact learners' engagement and motivation [12]. For example, using culturally familiar contexts in vocabulary instruction can enhance learners' understanding and retention of new words, as demonstrated by the study conducted by Sheridan et al. [12].

Furthermore, the assessment of vocabulary knowledge is essential for informing instruction and measuring learner progress. Noughabi et al. [13] argue that assessing both receptive and productive vocabulary size can provide valuable insights into learners' vocabulary development and guide future teaching strategies. This assessment can be complemented by formative assessments that focus on learners' ability to use vocabulary in context, thereby promoting deeper learning and understanding [14].

The interplay between vocabulary instruction and other language skills, such as reading and writing, is also noteworthy. Research by Dinh and Hoang [15] highlights the effectiveness of task-based vocabulary instruction in enhancing learners' reading comprehension abilities. This approach not only reinforces vocabulary knowledge but also encourages learners to apply their vocabulary skills in authentic contexts. Similarly, studies have shown that pre-teaching vocabulary before reading tasks can improve comprehension and retention, although it may also raise questions about learner autonomy [16].

In conclusion, teaching vocabulary in EFL contexts is a multifaceted endeavor that requires a comprehensive understanding of various instructional strategies, learner needs, and contextual factors. The integration of technology, awareness of learners' perceptions, and effective assessment practices are all crucial components of successful vocabulary instruction. As the landscape of language education continues to evolve, ongoing research and adaptation of teaching practices will be essential to meet the diverse needs of EFL learners and enhance their vocabulary acquisition.

Discussion

The findings highlight the pivotal role of structured vocabulary instruction in enhancing EFL learners' language skills. Digital tools are particularly effective, combining interactivity and accessibility to optimize vocabulary acquisition. Incidental learning fosters communicative competence but may require supplementary methods for balanced development. Traditional methods, while useful, lack engagement and adaptability, potentially limiting their effectiveness.

Conclusion

This study highlights the critical role of vocabulary instruction in enhancing English as a Foreign Language (EFL) proficiency. The findings demonstrate that structured vocabulary teaching significantly improves reading, writing, speaking, and listening skills. Digital tools were found to be the most effective,

offering interactive and adaptable methods for learning. Incidental learning methods contributed to better communicative competence, while traditional approaches, though useful, lacked engagement and flexibility.

To maximize effectiveness, combining explicit vocabulary instruction with incidental learning can create a more balanced and comprehensive learning environment. The integration of vocabulary-focused strategies into EFL curricula is essential to address diverse learner needs and support holistic language development. Future research should explore the long-term effects of these approaches and their adaptability in various educational settings to further refine vocabulary instruction methodologies.

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LINGUISTIC AND COGNITIVE-PRAGMATIC CHARACTERISTICS OF BLOGOSPHERE DISCOURSE**Sabitova Aruzhan***Master's student of South Kazakhstan Pedagogical University***Abstract**

This review article is dedicated to the study of linguistic and cognitive-pragmatic characteristics of the discourse in the English-language blogosphere. The article discusses the features of bloggers' communication styles, including gender differences, the use of personal deictic units, and various communicative strategies typical for blogs. Special attention is given to the analysis of linguistic units, their cognitive and pragmatic orientations, and the influence of the blogosphere's genre features on its discourse. The materials examined help understand how language functions in modern digital platforms such as blogs and social networks.

Keywords: *blogosphere, discourse, Linguistic features, deictic units, gender differences, lexical features, syntactic features, audience engagement.*

Introduction

The modern blogosphere represents an important element of online communication that facilitates the exchange of diverse messages, ideas, and viewpoints. Blogs have become not only a platform for self-expression but also an important tool for social and cultural communication. The language used in blogs reflects cognitive, pragmatic, and linguistic features that influence the perception and interaction between blog authors and their audiences. Analyzing these characteristics helps better understand how blogosphere discourse is formed and which language features become significant in this context.

Problem Statement

In recent decades, the blogosphere and social networks have significantly changed communication methods, providing users with new forms of self-expression and interaction. However, the issue of linguistic and cognitive-pragmatic characteristics of blogosphere discourse has not yet been fully explored. In particular, aspects such as gender differences in bloggers' language, the role of deictic units, and the use of various pragmatic strategies aimed at interacting with the audience remain under-studied. This creates a need for in-depth analysis of these questions for a better understanding of how language functions in digital spaces.

Research Questions

- 1. What lexical and syntactic features are characteristic of discourse in the English-language blogosphere?*
- 2. How does the use of deictic units influence cognitive perception and interaction in blogs?*
- 3. What communicative strategies do bloggers use to influence their audience?*
- 4. How do gender differences manifest in the lexis and style of blogosphere texts?*
- 5. How do the genre features of blogs affect their lexical and pragmatic characteristics?*

Research Goal

1. The object of this research is the linguistic and cognitive-pragmatic characteristics and features of discourse in the English-language blogosphere. The object of study is the linguistic elements that play a key role in constructing discourse in blogs. This includes the use of personal pronouns, deictic units, and specific communicative strategies that help bloggers interact with their audience.

2. The goal of this article is to identify the linguistic features of discourse in the English-language blogosphere.

The purpose of the study is to analyze the linguistic and cognitive characteristics that define the peculiarities of blogosphere discourse and the interaction between bloggers and their readers. This will help gain a deeper understanding of how language functions in digital communication and how various elements of discourse influence the perception of information.

Research Methods

To achieve the research goals, the following methods were used:

Linguistic analysis – analysis of the lexis, syntax, text structure, and grammatical constructions typical for blogs.

Cognitive analysis – study of the use of deictic units and their influence on the perception and interpretation of messages in blogs.

Pragmatic analysis – study of communicative strategies employed by bloggers aimed at achieving specific pragmatic goals, such as engagement, persuasion, or information dissemination.

Content analysis – analysis of blog content to identify genre and stylistic features, as well as themes characteristic of different types of blogs.

Results

The research identified key linguistic, cognitive, and pragmatic features of discourse in the English-language blogosphere. Aspects such as the use of personal pronouns, deictic units, gender differences, communicative strategies, and the influence of genre features on bloggers' language were examined.

1. Lexical and Syntactic Features

The texts of blogs show a wide range of lexical and syntactic features characteristic of digital discourse. One of the main traits is the use of informal language. Bloggers actively use colloquial expressions, slang, emojis, abbreviations, and contractions, which gives the texts a light and accessible tone. These features create an atmosphere of informality, fostering a sense of closeness between the author and the reader, making communication feel more personal.

An example is the frequent use of personal pronouns (e.g., "I," "we," "you"), which create the feeling of a personal conversation. Unlike formal written communication, blogs often address the reader directly, creating effects of "here-and-now," which strengthens the sense of closeness and direct contact.

In syntax, there is a tendency for short and simple sentences, making the text easy to process. However, some blogs, especially those focusing on culture or technology, use more complex syntactic constructions to convey detailed thoughts.

2. Cognitive Features

Special attention is paid in blogs to deictic units (such as pronouns, demonstratives, and temporal markers), which play a key role in forming cognitive perceptions of information. Deictic units help the author establish a personal connection with the audience, creating a sense of involvement and shared experience. The use of pronouns like "I," "we," and "you" significantly impacts the perception of the text: the reader feels part of the communication, and the blogger is perceived not as an abstract author but as a real person addressing a specific reader.

This also enhances the cognitive perception of the text, as it is often seen as part of the author's personal experience. For example, in travel or personal story blogs, phrases like "at that moment I felt..." help the reader place themselves in the author's shoes, becoming more immersed in the narrative.

Blogs are often structured in ways that involve the reader in a dialogue, through questions or discussions aimed at engaging the audience. This creates a sense of participation in content creation.

3. Gender Differences

Linguistic studies of gender differences in the blogosphere show that the communication style in blogs may vary depending on the author's gender. Female blogs are often characterized by a greater use of emotional vocabulary and expressions focused on feelings and experiences. Female bloggers tend to emphasize personal stories, emotions, and relationships, while male blogs generally contain more analytical and informational texts.

An example of gender differences is the fact that female blogs often use words related to emotional states (e.g., "feel," "love," "scared") and personal experiences (e.g., "I went through," "it's hard for me"), while male blogs more frequently use fact-based, analytical vocabulary focusing on analysis and reasoning.

These differences are also reflected in the syntactic structure of blogs. Women tend to use longer, more elaborate sentences that convey a wide range of emotions, whereas men prefer a more straightforward and clear style with shorter sentences.

4. Communicative Strategies

Bloggers use various communicative strategies to engage with their audience, such as:

Questions – bloggers often ask questions to encourage comments and involve the reader in dialogue (e.g., "What do you think about this?").

Call to action – bloggers may encourage specific actions, such as subscribing to the blog or participating in contests (e.g., "Share this post with your friends!").

Hyperbole – exaggeration to enhance the effect of the message (e.g., "This is the best product I have ever tried!").

Humor – bloggers actively use humor to create a relaxed atmosphere and attract the audience.

These strategies are aimed at increasing reader engagement, stimulating dialogue, and strengthening the connection between the author and the audience. In sports blogs, for example, persuasion strategies are often used to make readers perceive the information as expert or authoritative.

5. Genre Features of Blogs

The genre of a blog influences the structure and style of the text. In blogs dedicated to personal experiences and hobbies, conversational elements, emotional expressions, and life stories are common. Meanwhile, professional blogs (e.g., on topics such as technology, medicine, or politics) are more structured, often using terms and specialized vocabulary. These blogs are characterized by a clear logic of exposition, facts, and analysis.

In sports blogs, there is a noticeable focus on analyzing events with the use of terminology, statistics, and facts, as well as the desire to create a sense of involvement in the ongoing events. Various strategic elements, such as involving the audience through predictions or discussing controversial moments, are also present.

Conclusion

Analyzing the linguistic and cognitive-pragmatic characteristics of discourse in the English-language blogosphere reveals important features that determine the structure and style of communication in blogs. The use of personal pronouns, deictic units, and gender differences contributes to forming a unique form of communication that is characteristic of the digital space. The research results show how these linguistic features influence the perception of messages and interaction between bloggers and their audience. Studies in this area help deepen our understanding of communication processes in the context of digital culture.

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DEVELOPING MEDIATION COMPETENCE IN FOREIGN LANGUAGE TEACHING

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Abstract

Mediation has become a key focus in English Language Teaching (ELT), recognized as an essential element of communicative competence and increasingly relevant in addressing cross-linguistic and cultural challenges. Beyond language proficiency, modern labor markets demand skills such as collaboration, critical thinking, empathy, and intercultural competence. However, many education systems prioritize exam preparation over developing real-world communication skills, often overlooking mediation's role in fostering socio-cultural competence. Mediation involves facilitating higher-order thinking and learning through collaborative, dialogic activities, using language and other symbolic systems to create supportive yet challenging environments tailored to individual needs. This study identifies a gap between national curricula and updated international standards, particularly in secondary education, and proposes a model for enhancing mediation skills in non-linguistic students. The model integrates cultural, communicative, and competency-based approaches while addressing the needs of diverse learning formats. By embedding mediation into teacher training and curriculum design, the research aims to better prepare students for success in an interconnected, multilingual world.

Keywords: *Mediation, English Language Teaching (ELT), communicative competence, socio-cultural competence, language mediation, intercultural competence, dialogic activities, education policy, curriculum design, teacher training, multilingual learning, global labor market.*

Introduction

The concept of mediation has recently gained the attention of language learning and teaching researchers in ELT professionals, due to its incorporation into the new state language exams. This paper aims to address this gap and provide insights to both local and international researchers and practitioners, particularly those interested in mediation since it was recognized as an element of communicative competence and performance in the 2001 Common European Framework of Reference for Languages (CEFR).

The importance of non-linguistic students achieving a high level of language proficiency is undeniable. However, recent trends in the labor market suggest that modern graduates should also develop skills in language mediation. The established guidelines highlight the significant role of mediation activities in foreign language classrooms. These papers aim to address challenges related to transferring oral or written messages and their meanings across different languages and cultures. Translation and interpretation are essential examples of mediation practices. However, despite increasing market demands and the growing need for translators and interpreters, many European countries face significant issues. Although there is a stated focus on developing socio-cultural competence, numerous educational policies regulating secondary education fail to recognize the importance of mediation in foreign language instruction.

Mediation involves both human and symbolic intermediaries, which play a central role in helping learners achieve higher mental functions and eventually transform their learning (Kozulin, 2002; Kozulin & Garb, 2002). It has been described as a process through which learners develop mental processes or habits of mind during collaborative and dialogic activities, facilitated by "symbolic and socioculturally constructed artefacts," with language being the most prominent among them (Aljaafreh & Lantolf, 1994). In educational settings, this dialogic process typically occurs between teachers and students, often involving the use of sign systems like language (Vygotsky, 1986) in activities that encourage dialogue and cooperation. Through these interactions, learners develop higher mental functions, though the process is complex and influenced by distinct human characteristics such as emotions and thought patterns, which shape how learners engage with the activity and their environment. In this study, mediation is understood as the teaching interventions provided by mediators to enhance learning by fostering greater engagement among both students and teachers. It involves creating a supportive yet challenging learning environment that facilitates growth. Recognizing the diversity in learning styles, mediators—whether

teacher educators, teachers, or peers—must adapt their approaches to address the unique needs of each learner.

Mediation skills are essential across all areas of life, including public, private, educational, and professional domains (North, Piccardo, 2016). These skills encompass collaboration, critical thinking, learner independence, empathy, and intercultural competence, among others (Gee, Gee Milan, 2020). As a result, there is an increasing demand to integrate mediation into teacher training programs. A mediator is someone who does not focus on sharing their own ideas or opinions. Instead, they serve as a bridge between people who cannot directly understand each other. This typically involves individuals speaking different languages, though it is not limited to that context.

The research aims to develop a new model for enhancing language mediation skills among non-language students. This model is grounded in cultural, competency-based, and communicative approaches, as well as the current requirements of the Federal State Educational Standards (FSES). It incorporates the latest international trends in language education and is adaptable to standard, blended, hybrid, and remote learning formats.

Mediation Competence in Language Education

Currently, there is a noticeable mismatch between the national curriculum and the new directions outlined in the latest edition of the CEFR (Council of Europe, 2020). Additionally, the revised European guidelines for language teaching and learning highlight discrepancies between current teaching practices and the demands of the job market. This issue forms the basis of the present research: in many cases, rigid national education systems require adaptation to align with the updated European standards. While learning foreign languages, students gain knowledge about the world, explore other cultures, exchange information and cultural values, and grow as individuals. However, teaching objectives—particularly during the final two years of secondary school—are often predominantly focused on preparing students for the State Examination of English, with limited attention given to market requirements.

English Studies programs at the B.A. and M.A. levels are designed for individuals passionate about exploring other cultures, learning languages, and engaging with diverse communities (English Studies, 2023). According to Paweł Pyrka, a professor at SWPS University and expert in literary and cultural studies, philology fosters the discipline and sensitivity necessary for working across cultures, languages, and technologies. He highlights that understanding languages means understanding people, reading cultures equates to learning about life, and the core of philology lies in a love for humanity in all its forms (Pyrka, 2023). English Philology departments differ from language schools, offering an academic environment where students achieve language proficiency up to the C1 level at the bachelor's level and C2 at the master's level. These programs also develop academic and transferable skills, such as critical thinking, research, and technical expertise, enabling graduates to communicate effectively in foreign languages across cultural, academic, and professional contexts. Graduates possess a deep understanding of key theories and research in linguistics, literary, and cultural studies, along with skills in applied linguistics (including language teaching, translation, and ESP communication), pedagogy, entrepreneurship, and public speaking. This broad skill set equips them for successful careers in education, translation, international business, media, marketing, advertising, film and TV production, government administration, and NGOs (English Studies, 2023).

Conclusion

Mediation has emerged as a vital concept in language learning and teaching, particularly in English Language Teaching (ELT), due to its inclusion in modern frameworks like the CEFR and its growing importance in addressing cross-cultural and linguistic challenges. Despite its significance, many education systems remain focused on exam preparation, neglecting the development of mediation skills critical for real-world communication and socio-cultural competence. Mediation plays a transformative role in education, fostering collaboration, critical thinking, and intercultural understanding through dynamic, dialogic interactions. English Studies programs exemplify how mediation and language education can be integrated to equip graduates with advanced language proficiency and transferable skills, preparing them for diverse career paths. This study emphasizes the need to bridge the gap between national education policies and evolving international standards to better prepare learners for the demands of a globalized world.

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EXAMINING THE ROLE OF LANGUAGE AND CULTURE IN SHAPING PEDAGOGICAL COMMUNICATION

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Abstract

The interplay of language and culture plays a pivotal role in shaping pedagogical communication, which is essential for effective teaching and learning processes. Language serves as the primary medium for conveying knowledge, fostering understanding, and building relationships in educational contexts. Simultaneously, cultural norms influence communication styles, interaction patterns, and classroom dynamics, particularly in multicultural and multilingual environments. Understanding how these factors intersect is critical for addressing challenges and enhancing inclusivity in diverse classrooms.

This study aims to examine the influence of language and culture on pedagogical communication, with a focus on identifying strategies that educators can use to navigate linguistic and cultural diversity. Using a systematic literature review and thematic analysis, the research synthesizes findings from recent studies in education, linguistics, and intercultural communication. The analysis highlights key themes, including the role of language as a medium of instruction, the impact of cultural norms on communication styles, and strategies for fostering effective communication in multicultural classrooms.

The findings reveal that language proficiency and alignment between the teacher's language use and students' comprehension levels significantly impact classroom engagement and learning outcomes. Furthermore, cultural norms shape both verbal and nonverbal communication, influencing interaction patterns and teacher-student relationships. Misunderstandings arising from linguistic or cultural mismatches can lead to disengagement, while culturally responsive teaching practices enhance inclusivity and student motivation. Strategies such as the use of culturally relevant teaching materials, multilingual approaches, and intercultural competence training for teachers are shown to improve communication in diverse educational settings.

The study's significance lies in its potential to inform teaching practices and curriculum design in increasingly globalized classrooms. By addressing the challenges posed by linguistic and cultural diversity, educators can create more equitable and effective learning environments. This research underscores the importance of integrating cultural and linguistic awareness into teacher training programs, enabling educators to better meet the needs of their students.

In conclusion, the study highlights the critical role of language and culture in pedagogical communication and advocates for a holistic approach to teaching that embraces linguistic and cultural diversity. Future research should explore the long-term impacts of culturally responsive practices and the role of technology in supporting inclusive pedagogy. These efforts will contribute to fostering effective communication and enhancing learning outcomes for students in diverse educational contexts.

Keywords: intercultural competence, multilingual education, classroom interaction, inclusive pedagogy, cultural sensitivity, teacher training, linguistic diversity

Introduction. The influence of language and culture on pedagogical communication is a critical area of study in the field of education. Language is not merely a tool for delivering content; it is deeply embedded in cultural contexts, shaping how knowledge is conveyed, understood, and interpreted. Similarly, culture influences communication styles, teacher-student interactions, and the overall learning environment. Pedagogical communication, which is the foundation of effective teaching, requires a nuanced understanding of both language and culture to foster meaningful engagement and inclusivity in diverse educational settings.

The relevance of this topic stems from the increasing multiculturalism and globalization of classrooms. Educators are now frequently interacting with students from diverse linguistic and cultural backgrounds, which poses challenges in establishing effective communication. Misunderstandings

arising from cultural differences or language barriers can hinder the learning process, while culturally sensitive communication can enhance student engagement, motivation, and academic achievement. Understanding how language and culture intersect in pedagogical communication is therefore vital for addressing these challenges and improving teaching practices.

The objectives of this study are as follows:

1. To analyze the role of language as a medium of pedagogical communication and its interplay with cultural norms.
2. To explore how cultural differences influence teacher-student interactions and communication effectiveness.
3. To identify strategies for enhancing culturally sensitive communication in education.
4. To provide recommendations for integrating linguistic and cultural awareness into teacher training programs.

By addressing these objectives, this study aims to contribute to the development of inclusive teaching practices that recognize and leverage the diverse linguistic and cultural backgrounds of learners. It underscores the importance of equipping educators with the tools to navigate the complexities of language and culture in pedagogical communication, thereby fostering a more inclusive and effective learning environment.

Theoretical background. Language and culture are inherently interconnected, forming the basis for communication in all social interactions, including pedagogy. This relationship is particularly significant in educational contexts, where effective communication between teachers and students is essential for knowledge transmission, engagement, and academic success. Existing literature explores how linguistic and cultural factors shape pedagogical communication, highlighting their influence on teaching practices, classroom dynamics, and student outcomes.

Language serves as the primary medium through which teachers convey knowledge, instructions, and feedback. Vygotsky's (1978) socio-cultural theory emphasizes the importance of language in mediating learning, proposing that language not only facilitates communication but also shapes cognitive development. Teachers use language to scaffold students' understanding, encouraging them to engage in higher-order thinking [1]. However, the effectiveness of this scaffolding depends on the teacher's ability to use language that aligns with students' linguistic abilities and cultural contexts. Research shows that when there is a disconnect between the teacher's language and the students' comprehension levels, learning outcomes are adversely affected.

Culture profoundly influences communication styles, including tone, nonverbal cues, and interaction patterns. Hall's (1976) theory of high-context and low-context communication demonstrates that cultural norms dictate how information is shared and interpreted. In high-context cultures, communication relies heavily on implicit messages and contextual cues, while low-context cultures prioritize direct, explicit communication. This distinction has significant implications for pedagogical communication [2]. For example, in multicultural classrooms, teachers who are unaware of these cultural differences may misinterpret students' behaviors or fail to convey their messages effectively.

Language and cultural mismatches between teachers and students can create barriers to effective communication. Students from minority linguistic or cultural backgrounds often face challenges in accessing the curriculum, participating in class discussions, and building rapport with teachers. Studies highlight that these barriers can lead to disengagement, lower academic performance, and feelings of alienation. To address these issues, culturally responsive teaching emphasizes the need for educators to adapt their communication strategies to students' linguistic and cultural contexts [3].

Research identifies several strategies for bridging linguistic and cultural gaps in education. These include the use of culturally relevant teaching materials, differentiated instruction, and multilingual approaches. Additionally, fostering an inclusive classroom environment where students feel respected and valued encourages open communication and active participation. Teacher training programs that focus on intercultural competence equip educators with the skills to navigate linguistic and cultural diversity effectively [4].

The integration of language and culture into pedagogical communication has far-reaching implications for teaching practices and student outcomes. Educators who understand and respect their students' cultural and linguistic backgrounds are better positioned to create meaningful learning experiences. This approach not only enhances academic performance but also promotes social cohesion and mutual understanding in diverse classrooms [5].

In conclusion, the literature underscores the critical role of language and culture in shaping pedagogical communication. By recognizing the interplay between these factors, educators can adopt more inclusive and effective teaching practices that cater to the needs of diverse learners. This theoretical foundation provides a framework for exploring practical strategies to enhance communication in multicultural educational settings.

Table 1

The influence of language and culture on pedagogical communication

Aspect	Impact of Language	Impact of Culture	Implications for Pedagogy
Communication Styles	Language mediates the transmission of knowledge, feedback, and instructions.	Cultural norms shape tone, directness, and nonverbal cues in teacher-student interaction.	Teachers must adapt communication styles to align with students' cultural contexts.
Student Engagement	Clear and accessible language promotes active participation and comprehension.	Misaligned cultural expectations may lead to disengagement or miscommunication.	Culturally responsive strategies can boost engagement and mutual understanding.
Learning Barriers	Language mismatches can hinder comprehension and classroom participation.	Cultural misunderstandings may create alienation or conflict in diverse classrooms.	Multilingual and culturally adaptive approaches can mitigate these barriers.
Cognitive Development	Language facilitates scaffolding and higher-order thinking (e.g., Vygotsky's theory).	Cultural background influences problem-solving approaches and cognitive styles.	Teaching strategies should incorporate linguistic and cultural scaffolds.
Classroom Dynamics	Language proficiency affects peer interactions and group work efficiency.	Cultural norms influence collaboration, hierarchy, and interaction patterns.	Inclusive environments foster better peer relationships and collaborative learning.
Teacher-Student Rapport	Effective use of language builds trust and understanding between educators and students.	Cultural awareness enhances empathy and respect in teacher-student relationships.	Teachers should be trained in intercultural competence and inclusive communication.

Methodology. This study employs a systematic approach to literature selection and thematic analysis to explore the influence of language and culture on pedagogical communication. The methodology ensures a rigorous and comprehensive analysis of relevant studies, providing a foundation for identifying key themes and insights. The process of identifying and selecting relevant literature followed several steps. Academic databases such as Google Scholar, Scopus, ERIC, and Web of Science were utilized to source peer-reviewed articles, book chapters, and conference proceedings. The search terms included combinations of "language in pedagogy," "cultural influence on education," "pedagogical communication," "multicultural classrooms," and "culturally responsive teaching." Inclusion criteria required studies to be published between 2010 and 2023 to ensure contemporary relevance, focus specifically on the role of language and culture in educational settings, and be available in English or with English translations. Studies unrelated to educational communication or lacking cultural or linguistic analysis, non-peer-reviewed articles, and those without accessible full text were excluded. Titles and abstracts of identified studies were screened for relevance, duplicates were removed, and a detailed review of the full texts was conducted for selected articles. The final dataset included studies spanning fields such as linguistics, education, and intercultural communication.

Thematic analysis was conducted to identify recurring patterns and central themes in the selected literature. Each study was read thoroughly, and key findings were summarized to understand the scope and focus of the research. Relevant data were coded into categories such as “language as a medium of instruction,” “cultural barriers in communication,” “inclusive teaching practices,” and “intercultural competence in pedagogy.” The codes were grouped into broader themes, leading to the identification of key areas such as the role of language in scaffolding and cognitive development, the influence of cultural norms on teacher-student interaction, and strategies for enhancing communication in multicultural classrooms. These themes were synthesized to provide a comprehensive understanding of how language and culture interact to shape pedagogical communication.

To ensure validity and reliability, multiple sources were cross-referenced to confirm findings. Thematic patterns were reviewed iteratively to ensure consistency, and a clear documentation process was maintained for replicability. By employing a structured methodology, this study provides valuable insights into the complex dynamics of language, culture, and communication in education. The findings serve as a foundation for developing inclusive teaching practices that address the linguistic and cultural diversity of learners.

Findings and Discussion.

The literature review reveals that the interplay of language and culture significantly shapes pedagogical communication, influencing teaching practices, classroom dynamics, and student outcomes. The findings highlight three key themes: the role of language as a medium of instruction, the impact of cultural norms on communication styles, and strategies for enhancing communication in multicultural classrooms.

Language is fundamental to the delivery of educational content and the establishment of teacher-student relationships. The findings emphasize that the effectiveness of pedagogical communication depends on the alignment between the language used by educators and the linguistic abilities of students. Teachers who employ clear, contextually appropriate language can scaffold learning, foster engagement, and encourage critical thinking. However, language mismatches, particularly in multilingual classrooms, often result in misunderstandings and reduced participation. Studies show that incorporating multilingual strategies, such as code-switching or using students’ native languages for clarification, can significantly enhance comprehension and inclusivity.

Culture profoundly influences communication patterns in education, shaping both verbal and nonverbal interactions. High-context cultures rely heavily on implicit cues and shared understandings, while low-context cultures prioritize explicit and direct communication. Teachers from low-context backgrounds may misinterpret the silence or indirect responses of students from high-context cultures as disengagement or lack of understanding. Conversely, students may struggle to adapt to unfamiliar teaching styles rooted in different cultural norms. Research indicates that culturally responsive teaching, which acknowledges and incorporates students’ cultural backgrounds, fosters better understanding and rapport. For example, teachers who adapt their communication styles to respect cultural norms can reduce barriers to effective learning.

The findings highlight several strategies for improving communication in diverse classrooms. The use of culturally relevant teaching materials helps bridge linguistic and cultural gaps, making content more relatable and engaging. Interactive teaching methods, such as group discussions and role-playing, encourage active participation and peer learning. Additionally, professional development programs that focus on intercultural competence equip teachers with the skills to navigate linguistic and cultural diversity effectively. Teachers trained in these strategies can better address the unique needs of their students, creating a more inclusive and productive learning environment.

These findings underscore the importance of integrating language and cultural awareness into pedagogical practices. Language and culture are not merely supplementary aspects of teaching; they are central to creating an inclusive educational environment that supports all learners. The study highlights the need for educators to develop both linguistic and intercultural competence, enabling them to communicate effectively and adapt to the diverse needs of their students.

The implications of these findings are twofold. First, teacher training programs should prioritize the development of skills in multilingual communication and cultural awareness. Second, curriculum designers should incorporate culturally diverse content and teaching methods to reflect the realities of modern classrooms. Future research could explore the long-term impacts of culturally responsive teaching and the integration of technology to support language and cultural inclusion. In conclusion, by

addressing the interplay of language and culture, educators can foster more effective and inclusive pedagogical communication, ultimately enhancing learning outcomes for all students.

Conclusion. This study underscores the critical interplay between language and culture in shaping effective pedagogical communication. Language serves as the primary medium for delivering educational content, fostering understanding, and building relationships between teachers and students. Simultaneously, cultural norms influence communication styles, interaction patterns, and classroom dynamics. The findings reveal that misalignment between linguistic and cultural factors can lead to misunderstandings, reduced engagement, and hindered learning outcomes. However, when educators adopt culturally responsive and linguistically inclusive practices, they create more equitable and effective learning environments.

The review identifies key strategies for enhancing pedagogical communication in multicultural settings. These include using culturally relevant teaching materials, implementing multilingual approaches, and fostering teacher intercultural competence through professional development programs. Teachers who integrate these practices into their pedagogy are better equipped to navigate the complexities of diverse classrooms, ensuring that all students feel valued and supported.

Suggestions for future research:

1. *Longitudinal Studies:* Investigate the long-term effects of culturally responsive and linguistically inclusive teaching practices on student engagement and academic achievement.
2. *Technology in Multicultural Education:* Explore the role of technology, such as AI-driven translation tools or virtual cultural exchanges, in bridging linguistic and cultural gaps in classrooms.
3. *Impact of Teacher Training:* Evaluate the effectiveness of professional development programs focused on intercultural competence and multilingual communication in improving teaching outcomes.
4. *Student Perspectives:* Conduct research on how students perceive and respond to culturally and linguistically adapted pedagogical approaches, particularly in diverse learning environments.
5. *Curriculum Design:* Examine strategies for integrating language and cultural awareness into standardized curricula to promote inclusivity and equity across educational systems.

By addressing these areas, future research can provide deeper insights into the dynamic relationship between language, culture, and education. Such work will support the development of innovative teaching practices that prepare educators to meet the needs of diverse learners in increasingly globalized classrooms.

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STRATEGIES FOR ENHANCING LEXICAL COMPETENCE IN ENGLISH LANGUAGE EDUCATION FOR PHILOLOGY STUDENTS: A REVIEW OF METHODS AND APPROACHES

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Abstract

Communication strategies are fundamental to fostering learners' ability to navigate real-world interactions effectively in English language education. These strategies enable learners to overcome linguistic challenges, maintain fluency, and achieve communicative goals. While traditional language instruction often prioritizes grammatical accuracy and vocabulary acquisition, strategic competence—the ability to manage communication tasks resourcefully—plays an equally critical role in achieving communicative competence. This study explores the role of communication strategies in English language education, examining their types, pedagogical applications, and challenges.

The research employs a systematic literature review and thematic analysis to identify recurring patterns and themes related to communication strategies. Key findings reveal that compensatory strategies, such as circumlocution, paraphrasing, and word coinage, empower learners to convey meaning despite vocabulary gaps. Repair strategies, including self-correction and clarification requests, help maintain interaction and resolve misunderstandings. Nonverbal strategies, such as gestures and facial expressions, support verbal communication and enhance message clarity. These strategies, when taught explicitly through role-playing, task-based learning, and strategy-focused workshops, significantly enhance learners' fluency, adaptability, and confidence.

Despite their effectiveness, the review identifies challenges in implementing communication strategies. Teachers often lack training in designing and integrating strategy-based activities into lessons, and some learners may feel hesitant or self-conscious about using strategies in group settings. Additionally, time constraints and limited resources can hinder the inclusion of strategy instruction in traditional curricula. Addressing these challenges is essential for maximizing the benefits of communication strategies in language education.

The study highlights the transformative potential of communication strategies, emphasizing their alignment with the goals of communicative language teaching. By equipping learners with practical tools to navigate communication tasks independently, these strategies foster learner autonomy and prepare students for the demands of global communication. The findings have significant implications for teaching practices and curriculum design, underscoring the need for teacher training programs, innovative instructional methods, and supportive learning environments. The study concludes by recommending future research into the long-term impacts of strategy instruction, cross-cultural perspectives, and the integration of technology to enhance strategic competence. These efforts will ensure the continued development of inclusive and effective language teaching practices.

Keywords: interactive communication, linguistic adaptation, strategy-based learning, compensatory techniques, nonverbal communication, pragmatic competence, EFL pedagogy

Introduction. In today's interconnected world, the ability to communicate effectively in English has become a critical skill for academic, professional, and social success. Beyond linguistic accuracy, learners must develop strategies that enable them to navigate real-life communication challenges, such as overcoming language gaps, managing misunderstandings, and adapting to various cultural and situational contexts. Communication strategies, which include skills like paraphrasing, circumlocution, and repair strategies, empower learners to achieve communicative goals despite limitations in vocabulary or grammar. Thus, the development of communication strategies is a vital component of English language education.

The relevance of this topic lies in its focus on equipping learners with practical tools to enhance their interactive abilities in authentic communicative settings. Traditional language instruction often emphasizes grammar and vocabulary at the expense of fostering the adaptability and resourcefulness needed for effective communication. This gap can leave learners ill-prepared for real-world interactions, where fluency and strategic competence are equally important. By integrating communication strategy training into language education, educators can help students become more confident and competent communicators, capable of managing the complexities of intercultural and interpersonal exchanges.

The primary objective of this study is to explore the role of communication strategies in English language education and to examine effective methods for fostering these skills in learners. Specifically, the research aims to:

- 1. Identify key communication strategies and their relevance in achieving communicative competence.*
- 2. Analyze existing pedagogical approaches for teaching communication strategies in English language classrooms.*
- 3. Evaluate the impact of strategy-focused instruction on learners' fluency, adaptability, and confidence in communication.*
- 4. Provide recommendations for integrating communication strategies into English language curricula and teaching practices.*

By addressing these objectives, this study seeks to contribute to the development of innovative and practical teaching methodologies that prioritize communication strategy training as a core component of language education. This focus not only aligns with the goals of communicative language teaching but also prepares learners to meet the demands of global communication in diverse contexts.

Theoretical background. Communication strategies play a central role in language education, particularly within the framework of communicative competence. These strategies enable learners to navigate communication challenges by employing techniques that compensate for linguistic limitations, clarify meaning, and maintain interaction. Communication strategies are techniques used by speakers to overcome difficulties in conveying or understanding messages in a second language. Initially defined by Tarone (1980), these strategies focus on achieving communicative goals despite linguistic gaps. They include a range of techniques, such as paraphrasing, substitution, gesture use, and repetition. Later, Canale and Swain's (1980) model of communicative competence formalized the role of strategic competence as an essential component alongside grammatical, sociolinguistic, and discourse competence. This model highlights the importance of communication strategies in maintaining effective and meaningful interaction [1].

Researchers have categorized communication strategies into several types: avoidance strategies, which involve avoiding specific topics or linguistic structures that learners find challenging; compensatory strategies, such as circumlocution, word coinage, and approximation, which allow learners to convey meaning despite vocabulary gaps; repair strategies, which include repetition, clarification requests, and self-correction to resolve misunderstandings during interaction; and nonverbal strategies, such as gestures, facial expressions, and other nonverbal cues that support verbal communication and help convey meaning. These strategies provide learners with practical tools to manage communication breakdowns, ensuring that interactions remain fluid and comprehensible[2].

The development of communication strategies is supported by various theoretical frameworks. The interaction hypothesis emphasizes the role of interaction in language learning, where communication strategies facilitate negotiation of meaning and corrective feedback. Sociocultural theory highlights the importance of social interaction and scaffolding in developing strategic competence, where learners use communication strategies to co-construct meaning. Canale and Swain's (1980) model of strategic competence recognizes communication strategies as essential tools for compensating for linguistic deficiencies and managing communication tasks effectively[3].

Teaching communication strategies has become an integral part of communicative language teaching (CLT). Research suggests that explicit instruction in communication strategies enhances learners' ability to manage interactions and build confidence in real-world communication. Pedagogical approaches include role-plays, task-based learning, and strategy-focused workshops, where learners practice using strategies in diverse scenarios. For example, learners may engage in activities that require them to explain unfamiliar concepts using circumlocution or request clarification during group discussions[4].

Despite their importance, communication strategies are often underemphasized in traditional language curricula. Teachers may lack training in integrating strategy instruction into lessons, and

students may initially struggle to adopt these techniques without explicit guidance. Additionally, the effectiveness of strategy use depends on learners' willingness to take risks and experiment with language in interactive settings. The reviewed literature underscores the need for a structured approach to teaching communication strategies as part of English language education. Incorporating strategy training into classroom activities equips learners with practical tools for managing communication challenges, fostering greater fluency, adaptability, and confidence[5].

Furthermore, integrating communication strategies into curriculum design aligns with the goals of communicative language teaching by emphasizing real-world communication and learner autonomy. Communication strategies serve as critical enablers of effective interaction in second language acquisition. By reviewing existing literature and identifying key concepts, this section highlights the theoretical foundations and practical implications of communication strategies, establishing a framework for their integration into pedagogical practices. This focus ensures that learners develop not only linguistic competence but also the strategic skills needed to succeed in diverse communicative contexts.

Table 1

Key communication strategies in language education

Strategy	Description	Benefits	Challenges
Avoidance Strategies	Learners avoid topics or structures they find difficult to express or understand.	Helps reduce anxiety and manage communication tasks effectively.	Limits language growth and can lead to missed learning opportunities.
Compensatory Strategies	Using circumlocution, approximation, or word coinage to convey meaning despite gaps in vocabulary.	Encourages creativity and helps learners communicate effectively with limited resources.	Requires confidence and can be difficult for lower-proficiency learners.
Repair Strategies	Techniques such as repetition, self-correction, or clarification requests to resolve communication issues.	Maintains interaction and improves mutual understanding.	Overuse can interrupt conversational flow and may reduce fluency.
Nonverbal Strategies	Use of gestures, facial expressions, or other nonverbal cues to support verbal communication.	Enhances message clarity and supports communication in cases of linguistic limitations.	Relies on cultural appropriateness and may be misinterpreted in cross-cultural contexts.
Paraphrasing	Restating ideas using simpler or alternative language to overcome vocabulary or grammatical gaps.	Improves adaptability and strengthens learners' ability to express ideas clearly.	May require advanced lexical and structural knowledge.
Circumlocution	Describing the function or characteristics of an unknown word instead of naming it directly.	Encourages the use of known vocabulary to convey meaning effectively.	Can be time-consuming and may not always convey the intended message clearly.
Clarification Requests	Asking for repetition or additional explanation when understanding breaks down.	Promotes interactive learning and reduces misunderstandings.	Can make learners feel hesitant or self-conscious in group settings.

Methodology. The methodology of this review focuses on a systematic approach to selecting relevant literature and conducting thematic analysis to explore effective methods for developing lexical skills in English language education for philology students. The process was designed to ensure a comprehensive and objective synthesis of current academic findings. The literature selection followed a

multi-stage approach to identify high-quality and relevant studies. First, academic databases such as Google Scholar, ERIC, Scopus, and PubMed were searched to locate peer-reviewed journal articles, book chapters, and conference proceedings. Keywords such as "lexical skill development," "vocabulary acquisition," "philology education," "teaching methods," and "language pedagogy" were used in combination with Boolean operators to refine the search.

Studies were included if they focused on vocabulary acquisition or lexical skill development in English language education, provided insights into strategies, methods, or technologies relevant to philology students, and presented empirical findings or theoretical discussions. Articles that focused solely on general language education without a specific emphasis on vocabulary, were unrelated to philology education, or lacked methodological rigor were excluded. Titles and abstracts of identified studies were initially screened for relevance, and the full texts of shortlisted articles were reviewed to confirm their inclusion in the final dataset.

Once the relevant literature was selected, a thematic analysis was conducted to identify key patterns and recurring themes in the studies. Key findings and concepts were systematically coded using qualitative analysis techniques. Codes such as "contextual learning," "technology integration," "lexical retention," and "teacher practices" were applied to categorize data. These codes were grouped into broader themes, including traditional and modern methods for lexical skill development, the role of digital tools, and challenges in implementing vocabulary instruction strategies.

This approach allowed for the identification of best practices, limitations, and research gaps in the field, providing a robust framework for analyzing effective methods of lexical skill development. The thematic analysis not only synthesized diverse perspectives but also highlighted critical areas for further research and practical application in philology education.

Findings and Discussion. The literature review reveals that communication strategies are vital tools for enhancing learners' ability to navigate linguistic challenges and interact effectively in English. The findings highlight the types of strategies, their benefits in language education, and the challenges associated with their implementation. The literature identifies several types of communication strategies that learners employ to manage gaps in their linguistic knowledge. Compensatory strategies, such as circumlocution, word coinage, and approximation, allow learners to convey meaning despite vocabulary gaps. These strategies promote creativity and resourcefulness, enabling learners to maintain fluency even when precise words are unavailable. Repair strategies, including self-correction, repetition, and clarification requests, ensure smooth interaction and mutual understanding during communication breakdowns. Nonverbal strategies, such as gestures, facial expressions, and other nonverbal cues, enhance message clarity and compensate for linguistic limitations. Paraphrasing and circumlocution, which involve restating ideas or describing unknown words, foster adaptability and build confidence in learners. Pedagogical approaches that emphasize these strategies include role-playing, task-based learning, and explicit instruction in strategic competence. Activities that simulate real-life scenarios encourage learners to practice these strategies, helping them become more effective communicators.

The use of communication strategies offers several benefits for learners. Strategies such as circumlocution and paraphrasing allow learners to maintain conversational flow, building confidence and reducing hesitation. Repair strategies and nonverbal techniques enhance learners' ability to navigate complex interactions, particularly in intercultural communication. Teaching communication strategies equips learners with tools to overcome language challenges independently, fostering a sense of self-efficacy. Strategy-based activities encourage collaboration, active engagement, and peer feedback, enriching the learning experience. Despite these benefits, communication strategies are often underutilized in traditional language instruction. Challenges include limited teacher training, as many educators lack the necessary skills to integrate strategy instruction into their teaching practices. Learner resistance can also hinder implementation, as some learners may feel hesitant or self-conscious about using strategies, particularly in group settings. Incorporating strategy-based activities into existing curricula may require additional time and resources, which are often limited.

The findings underscore the transformative potential of communication strategies in English language education. By enabling learners to manage communication challenges effectively, these strategies contribute to the development of communicative competence, which is essential for real-world interactions. Integrating strategy instruction into curricula aligns with the goals of communicative language teaching, emphasizing the importance of adaptability, fluency, and confidence. The implications of these findings are significant for educators, curriculum designers, and policymakers. Professional development programs should focus on equipping teachers with the skills to teach communication strategies effectively. Incorporating strategy-based activities, such as role-plays and task-

based learning, ensures that learners have ample opportunities to practice strategies in authentic contexts. Teachers should create supportive environments that encourage learners to experiment with strategies without fear of judgment. Evaluating learners' use of communication strategies can provide insights into their progress and areas for improvement. In conclusion, communication strategies are essential for fostering fluency, adaptability, and confidence in English learners. By addressing implementation challenges and emphasizing strategy instruction, educators can better prepare learners for the demands of real-world communication. These findings provide a foundation for developing innovative teaching practices that prioritize strategic competence as a core component of language education.

Conclusion. This review underscores the essential role of communication strategies in English language education, highlighting their ability to enhance learners' fluency, adaptability, and confidence in real-world interactions. The findings demonstrate that compensatory strategies, repair techniques, paraphrasing, and nonverbal cues are effective tools for managing linguistic challenges and maintaining communication flow. These strategies align with the principles of communicative language teaching, emphasizing practical application and learner autonomy. Moreover, strategy-based activities, such as role-playing and task-based learning, foster collaboration, interactive learning, and pragmatic competence.

Despite these benefits, challenges persist in the implementation of communication strategies. Limited teacher training, time constraints, and learner resistance can hinder their integration into curricula. Addressing these challenges is critical for maximizing the potential of communication strategies in language education. Teacher training programs must equip educators with the skills to design and implement strategy-based activities effectively. Additionally, supportive classroom environments and innovative curriculum designs are needed to encourage learners to embrace and practice these strategies.

Suggestions for future research:

1. *Longitudinal Studies:* Investigate the long-term effects of communication strategy instruction on learners' communicative competence, fluency, and confidence in various contexts.
2. *Cross-Cultural Perspectives:* Explore how cultural and linguistic differences influence the use and effectiveness of communication strategies, providing insights into their adaptability across diverse learning environments.
3. *Technology Integration:* Examine the role of emerging technologies, such as artificial intelligence and virtual reality, in enhancing strategy instruction and practice through immersive and interactive experiences.
4. *Teacher Training Models:* Develop and evaluate innovative professional development programs that focus on integrating communication strategies into classroom teaching.
5. *Assessment Practices:* Investigate methods for assessing the use and development of communication strategies in learners, contributing to the refinement of evaluation frameworks.
6. *Learner-Centered Approaches:* Explore strategies to increase learner engagement and reduce resistance to using communication strategies, focusing on motivation and confidence-building techniques.

By addressing these research areas, future studies can refine the understanding and application of communication strategies, ensuring their effective integration into English language education. These efforts will contribute to the development of inclusive, innovative, and practical teaching practices that prepare learners to meet the communicative demands of a globalized world.

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THE IMPORTANCE OF USING MNEMONICS IN CONTEMPORARY PEDAGOGY

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Abstract

This article discusses the importance of utilizing mnemonics in contemporary pedagogy and explores how these techniques can revolutionize traditional teaching practices. The research focuses on determining the role of mnemonics in improving the storage and retrieval of learning materials, thereby enhancing the overall learning process. Mnemonics, as memory aids, have proven to be effective tools in education, particularly in facilitating memory retention and comprehension. Teachers frequently incorporate mnemonic strategies to assist students in mastering complex information, making it easier to recall and apply in various contexts.

The article provides a comprehensive definition of mnemonics and offers a short overview of its historical development, tracing its origins back to ancient civilizations where memory techniques were highly valued. This historical context helps to illustrate how mnemonics have evolved over centuries and gained relevance in modern education. The primary objective of this research is to highlight why mnemonics should be actively integrated into classroom practices and to demonstrate its advantages over traditional teaching methods. Mnemonics, compared to conventional approaches, offer a more interactive and engaging way to learn, fostering creativity and improving students' ability to retain information.

The research also identifies the limitations of traditional teaching systems, which often rely on rote memorization and lack innovative methods to support long-term retention. These traditional methods can leave students struggling to recall and effectively apply information, especially in subjects requiring extensive memorization. The article argues that mnemonics, with their ability to create meaningful associations, can address these gaps by providing a more student-centered and efficient approach to learning.

During the research, the author conducted an in-depth review of the literature, analyzing theoretical perspectives and historical data to understand the significance and potential of mnemonics in education. While the study does not propose specific practical techniques, it emphasizes the importance of recognizing mnemonics as a versatile and impactful tool in teaching.

As a result of the research, it was concluded that mnemonics offer a more effective and engaging alternative to traditional teaching methods. They help foster creativity, improve memory retention, and address the individual needs of learners. This positions mnemonics as a vital component of modern pedagogy. While traditional methods have their place, integrating mnemonic strategies can significantly enhance the overall learning experience, making it more dynamic and impactful.

This research contributes to the growing recognition of mnemonics as a crucial tool in contemporary education. By providing historical insights and highlighting its advantages, the article advocates for the widespread adoption of mnemonics in classrooms, ensuring students receive a richer and more effective learning experience.

The word "mnemonics," originating from the Greek language, refers to techniques that help learn new information easily and retain it for a long time. In Greek mythology, the goddess of memory was called Mnemosyne, and the term "mnemonics" derives from her name. In Ancient Greece and Rome, senators studied mnemonic techniques to strengthen their memory, enabling them to recall extensive information effortlessly and gain an edge in public debates.

We all know we have memory, but scientists are still working to understand how it functions. Today, it is known that the human brain contains approximately 85 billion neurons, and its anatomical structure has been thoroughly studied. However, the exact mechanisms of memory and consciousness remain elusive. T.V. Chernigovskaya, a prominent scientist in neuroscience and psycholinguistics, argues that memory is not simply a library or a box filled with facts and pictures. Instead, it is a dynamic, ever-changing process.

Memory can be understood as a sequence of four stages:

Remembering (or coding)

Storing

Reproduction

Forgetting

The effectiveness of storing and reproduction depends heavily on the quality of coding. By optimizing the way information is coded as it enters the brain, we can significantly enhance retention. To achieve this, it is crucial to understand how the brain works and how it processes new information.

The language of the brain is imagery, or "pictures." For instance, when asked about a cat, most people instinctively visualize an image of a cat. For some, it may be a neighborhood cat, while others might picture an aristocratic Persian breed with cream-colored fur. Rarely do we think of the word "cat" as letters or text. The brain processes information through sensory organs, integrates it, and responds based on prior experiences. Mnemonics is the art and technique of recall, rooted in imaginative thinking. By practicing mnemonics, learners not only develop the ability to create vivid mental images but also enhance their auditory and kinesthetic perceptions.

The Role of Mnemonics in Pedagogy

What are the benefits of mnemonics in pedagogy? How does a lesson that incorporates mnemonics differ from traditional teaching methods? Education is commonly viewed as an institution for transmitting professional knowledge and skills, moral values, and cultural heritage. It is a system of social interaction designed to prepare individuals for various roles in society.

Today, the knowledge gained in schools and universities alone is often insufficient for success. To remain competitive in the labor market, individuals must continually improve their qualifications, acquiring new knowledge and skills quickly and effectively. In this context, developing memory, self-discipline, motivation, and creative thinking becomes essential for self-improvement. [5,p.162-163]

Tom Robbins, a renowned American business coach, defines success as "the opportunity for consistent emotional, social, moral, intellectual, and financial development while contributing positively to the greater good." Mnemonics can be a key tool in achieving this vision by enabling faster and more efficient learning.

The traditional education system often follows a rigid model: "information is delivered, and knowledge is tested." While this approach has its merits, it rarely fosters creativity or accounts for the innate abilities of individual learners. According to problems that are discussed below, the information, addressing educators, becomes less durable and it is serious problem for future specialists the information, addressing educators, becomes less durable and it is serious problem for future specialists.

Problem 1. Traditional methods assume that learning outcomes must align with specific age milestones, but for the brain of an individual schoolchild or student, this is irrelevant. Learners of the same age often have vastly different intellectual capacities, a fact frequently overlooked by many educational institutions.

Problem 2. Educator differences can significantly influence classroom dynamics and student outcomes. The traditional education system often assumes that all students will achieve specific milestones at certain ages. However, this expectation fails to account for the diversity in intellectual abilities among learners of the same age group. For instance, some students may excel in certain areas, such as logical reasoning, while others might struggle with basic skills like reading comprehension. Unfortunately, this variability is frequently overlooked in many educational institutions, leading to missed opportunities for personalized instruction and support Problem 3. *Another critical issue is the varying rates of cognitive development among students. Studies suggest that approximately 10-15% of students face challenges in reading proficiency at ages when educators expect mastery. This discrepancy often arises from the underdevelopment of neural networks in early childhood, a phase where growth and learning patterns differ significantly among individuals. As students advance to higher grades, these differences can become even more pronounced, resulting in greater gaps in academic achievement. Addressing these developmental variations requires a shift in teaching strategies to accommodate diverse learning needs.*

Problem 4. Inefficient organization of learning process. The current structure of the learning process often overwhelms students by introducing an excessive amount of disciplines and information simultaneously. This overload hampers their ability to effectively process and retain knowledge. For example, when learners are flooded with new information without adequate time to review or integrate it, they may become disengaged and demotivated. As a result, their ability to absorb and recall information diminishes, hindering overall academic progress.

Instead of overloading learners with huge number of books, workbooks and constant checks , we must try to use more optimum organization of learning process . The most important thing is not high exam scores , but the level of education that we get and improvement of professional skills. Unfortunately, the lesson due to development of remembering skills and mnemonics are not included. Students are not studied about how to classify, structure and store information in memory. The ability to quickly acquire difficult information is becoming increasingly valuable with each passing day. Through using mnemonics this ability will become irreplaceable skill.

The advantages of using mnemonics in pedagogy.

Enhanced Memory Retention

Mnemonic techniques empower students to retain information for extended periods. By linking new material to vivid mental images or familiar concepts, learners can recall knowledge more effectively when needed.

Encouraging Creativity and Critical Thinking

Mnemonics encourages students to form associations between new and existing knowledge, fostering creative and critical thinking. This method challenges learners to think beyond rote memorization and apply concepts in meaningful ways.

Increased Motivation and Engagement

When students find it easier to remember and apply information, their confidence grows. This positive reinforcement motivates them to explore subjects further and engage actively in the learning process.

Time-Efficient Learning

Mnemonics simplifies the process of mastering complex topics by breaking them into manageable chunks, saving time and reducing cognitive strain.

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THE ENHANCEMENT OF STUDENTS' CREATIVE ABILITIES USING THE STEAM TECHNOLOGY IN BIOLOGY

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Abstract

In the ever-evolving landscape of education, fostering creativity in students has become paramount. This research aims to present a comprehensive methodology for enhancing students' creative abilities in biology classes through the integration of STEM technologies. Knowing STEM technology is a crucial skill for problem-solving, critical thinking, and innovation, making it essential for students to develop creative thinking from an early age. Our methodology involves the judicious use of innovative technologies, such as virtual reality simulations, augmented reality apps, and interactive online platforms, to create engaging and immersive learning experiences. By leveraging these tools, students can explore complex biological concepts in ways previously unimaginable. These technologies provide opportunities for hands-on experimentation, visualization of abstract concepts, and collaboration with peers, fostering creativity through active learning. Furthermore, we incorporate pedagogical strategies that encourage divergent thinking, curiosity, and exploration. Our approach aligns with constructivist and socio-constructivist theories, emphasizing the role of social interaction and collaboration in creative learning.

Keywords: *STEM technologies, online courses, innovative technologies, active learning, biological concepts, creativity, test assignment*

Introduction

Today, many universities and educational platforms (Coursera, Khan Academy, Udemy, etc.) offer online courses and video tutorials in biology. These courses allow students to study independently, to study certain biological topics in depth. Resources for teachers include ready-made presentations, test assignments, test papers and curricula. Such resources can save teachers time and help improve the structure of the lesson. Conducting biology experiments is often a problem in a school environment due to resources and safety requirements. Virtual labs solve similar problems. Students gain real-world experience by conducting experiments in a virtual environment and performing laboratory work. Electronic textbooks and multimedia resources can be used in the course of theoretical teaching of students in biology lessons. For example, by demonstrating 3D animation in the process of learning cell structure in biology, you can visualize the functions that each part of the cell performs. This makes it easier for students to memorize and understand information. The discipline of Biology often requires practical assignments and laboratory work. However, not all schools and educational institutions are fully equipped with laboratory equipment. In such a situation, it is advantageous to use virtual laboratories. Students can develop skills such as using tools, monitoring and analyzing results during experiments. For example, on the topic of "cell division", students can observe the processes of mitosis and meiosis in a virtual environment and draw conclusions[1].

In the 1990s, the USA experienced a shortage of highly qualified personnel in high-tech companies that speak the language of this innovative technology. Therefore, a STEM approach has appeared in the field of education, which considers natural and exact sciences as a whole. Today, in countries focused on the development of their scientific and technical elite, the STEM approach is being implemented at the state level. The introduction of early natural science and information literacy in the framework of updating the content of education is considered. The abbreviation "STEM" was first proposed by foreign researchers in 1990 by R. Colvel[1]. Russian scientists V. N. Chemekov, D. A. Krylov wrote the work "mastering robotics -the international paradigm of STEM education" [2]. And Kazakh scientists G. Akhmetova, A. Murzalinova concluded that "the key goal of STEM education is to demonstrate students' abilities to be able and able in inventive solutions, research services and experimental formats" [3].

STEM technologies allow you to study biology in depth. Students can study independently using additional materials if they find it difficult to master complex topics. In addition, this resource also allows the teacher to explore effective ways to update materials and make the lesson more interesting.

Testing and control work

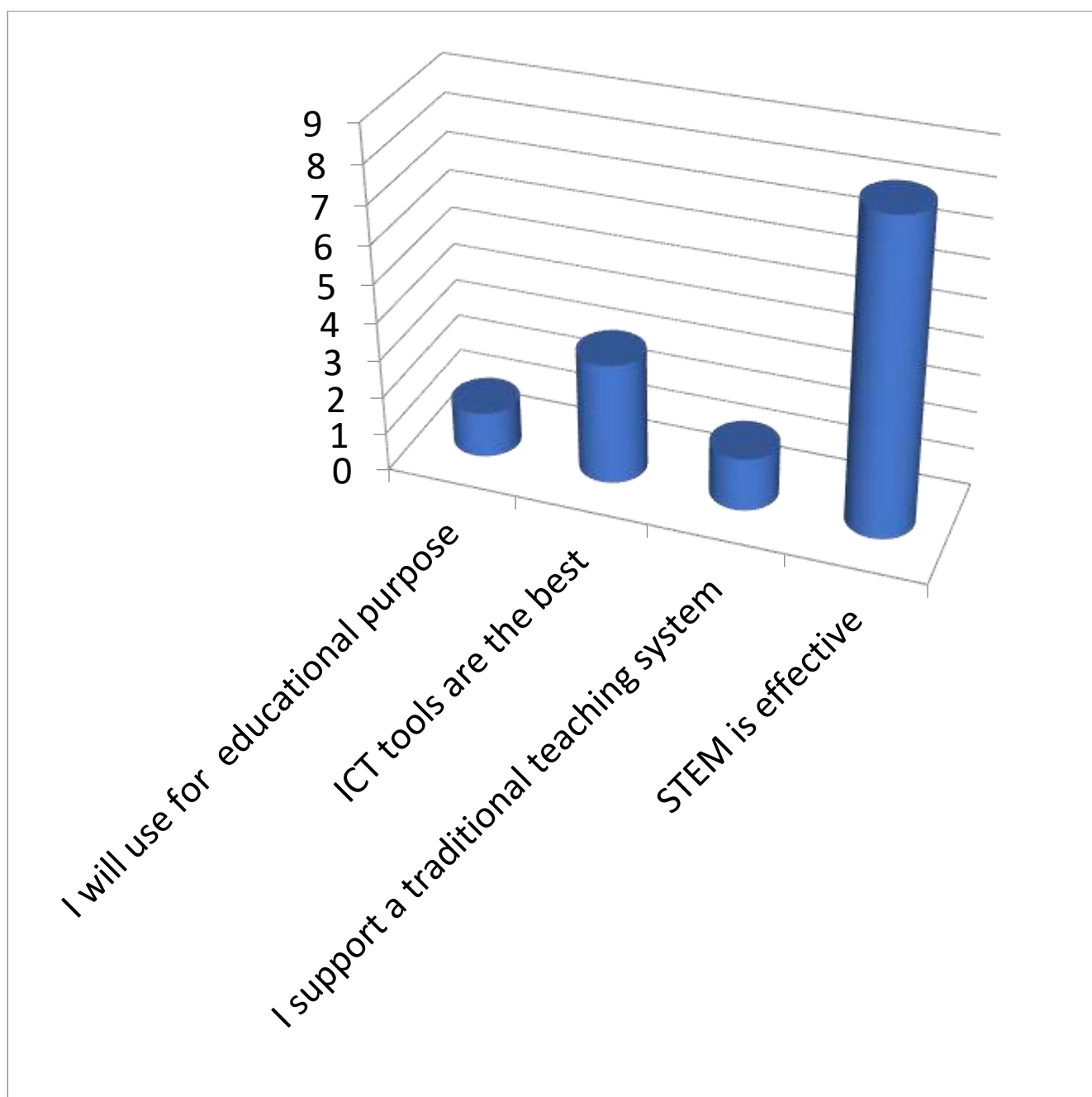
Testing is an important tool for evaluating knowledge. With the help of electronic platforms, students' knowledge can be tested using test tasks. When completing these tasks, students' learning outcomes are evaluated automatically, which facilitates the teacher's work. This is especially useful for classes with a large number of students. The development of practical skills of students through experiments in virtual laboratories, assistance in understanding complex processes in biology.

Materials and methods

A virtual laboratory program a computer or tablet, and an Internet connection. Students are given guidance on how to use the virtual laboratory. The necessary theoretical information on the topic of practice is explained. Students conduct experiments in a virtual laboratory and record their observations [5]. In the virtual laboratory, the processes of mitosis and meiosis are visualized and each stage is interpreted. Students see each stage, understand the peculiarities of cell division and observe the changes in chromosomes that occur during cell division. Accessibility: Students can study anytime and anywhere. Visualization: Interactive elements and animations make it easier to understand topics. Increasing interest: Electronic resources increase students' interest in the subject. Building an individual learning trajectory: each student can learn at a convenient speed [6]. Technical problems: if there is no access to devices or the Internet, the use of resources becomes impossible. The difficulty of time tracking: When students are learning on their own, there may be a problem with using time more efficiently. Student fatigue: Prolonged work in front of the screen can be harmful to the health of students.

Today, STEM technologies are dynamically developing not only in the United States, but also around the world. In the near future, there will be a high demand in the world for IT specialists, programmers, engineers, qualified specialists working in high-tech industries, bio- and nano-technologies. Therefore, it is obvious that the direction of STEM education requires time itself. The goal is to be able to apply the knowledge gained in the lesson in life. But it goes in one direction. For example: mathematical literacy in mathematics is developing, reading literacy in the subject "literacy". The goal is to be able to apply the knowledge gained in the lesson in life. But by linking the acquired knowledge with other disciplines, he goes in several directions. This is a joint form of science, technology, engineering and mathematics [4]. STEM knowledge is an interdisciplinary and applied approach based on the application of, as well as a learning scheme that combines all five subjects into one. These are scientific methods, technical applications, mathematical modeling, engineering allows you to use design, and this, in turn, leads to the formation of students in demand innovative thinking, skills of the XXI century. According to most experts, advanced technologies increase motivation to learn and are aimed at expanding basic knowledge in the field of design and programming [5].

Students were interviewed using Google forms about the use of STEM technology in future biology lessons. According to the survey results, the vast majority said they would use this technology:



Picture 2: The results of questionnaire from students

The advantages of STEM technologies to solve real-life issues

The most important use of STEM learning is to solve the real-life problems which we face in our everyday life that can be social, economic, and environmental problems. By using the STEM knowledge the students will come up with solutions that will help to eradicate these problems and make our life more comfortable and easy. For example, creating a model to prevent the problem of Soil Erosion and also can be used to make a project that will help to tackle the problem of earthquakes by developing earthquake-resistant structures etc.

Our next generation of kids are avid users of electronic gadgets such as laptops, tablets, smartphones, etc and they spend most of their time while engaging with these gadgets. Keeping this in mind, many Edtech companies have developed STEM learning apps for kids so that they will gain STEM knowledge in a playful and interactive environment. Tinkerly is one of those Edtech companies which has designed a STEM learning app named Let's Tinker which is a goldmine of STEM knowledge.

It consists of interactive STEM activities, innovative advanced technology sessions such as AI(Artificial Intelligence), IoT(Internet of Things), etc that the kid can access for free. To test & evaluate the STEM knowledge acquired by the kid using their app the Let's tinker app conducts

PAN India STEM-Q quiz competition on a weekly (Every Friday Mini STEM-Q) & Monthly basis that offers amazing prizes to the lucky participants who are able to secure Top 10 rank in the STEM-Q. With the help of STEM education, the kids will learn that there can be multiple ways of solving a particular problem. STEM learning helps the students to discover their true potential. Using their creativity and out-of-the-box thinking, the students will come up with many alternative solutions that will be able to solve the problem. Even if their solutions are not able to solve the problem they learn from their mistakes and try to determine what went wrong and they try again and again till they get it right.

The STEM learning experience can be enhanced by allocating a dedicated learning area (STEM Space) for students for carrying out various types of STEM activities with a hands-on approach. A STEM Space is a learning area that equipped students with an opportunity to discover their true potential by providing them with a perfect STEM learning environment that offers them all the necessary tools & equipment using which they can turn their innovative ideas into creative STEM projects.

Conclusion

The teachers need to come up with some innovative teaching strategies that will help students to understand the STEM concept in a better way. Based on the feedback received from the students, the teaching procedure must be modified accordingly. The teachers must use familiar objects to teach students about STEM skills. The teacher can incorporate mystery into the STEM concepts for example while teaching about a scientific experiment the teacher can give clues to the students and ask them about what is going to happen. For example, what will happen if you put a copper rod inside a ferrous sulfate solution? To solve this problem, the students will do research about both of the components and their natural properties, and then based on their deduction and knowledge they uncover this mystery. This type of method keeps things interesting and motivates students to engage in a STEM learning environment.

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INTEGRATING AUTHENTIC MEDIA TEXTS IN FOREIGN LANGUAGE TEACHING: ENHANCING LEXICAL COMPETENCE IN SENIOR SCHOOL STUDENTS

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Abstract

The integration of authentic media texts into foreign language teaching is a promising approach to developing lexical competence among senior school students. Authentic media, including news articles, podcasts, movies, and social media content, provides learners with exposure to real-world language usage in diverse contexts, fostering vocabulary retention and contextual understanding. This review explores the theoretical and practical aspects of incorporating authentic media into the classroom, drawing on cognitive and pedagogical theories that highlight the benefits of context-rich, meaningful input. Authentic media engages students by connecting language learning to real-life applications, promoting motivation, and encouraging active participation.

The analysis reveals several effective methodologies for integrating media into lesson plans, including task-based learning, project-based approaches, and interactive multimedia exercises. These methods not only enhance vocabulary acquisition but also improve learners' ability to use language effectively in varied situations. The review also identifies challenges such as selecting appropriate materials, addressing language proficiency barriers, and overcoming resource and training limitations faced by teachers and schools.

To address these challenges, the study provides recommendations for educators, curriculum designers, and policymakers. These include criteria for selecting suitable media, strategies for scaffolding learning, and investments in teacher training and technological resources. The findings emphasize the need for innovative, student-centered teaching approaches that leverage authentic media to bridge the gap between traditional classroom instruction and the practical demands of real-world communication.

In conclusion, authentic media texts hold immense potential for improving senior students' lexical skills, preparing them for the linguistic and cultural complexities of a globalized world. By adopting media-integrated methodologies and addressing existing challenges, educators can create engaging and effective language learning environments that foster both linguistic competence and cross-cultural understanding.

Keywords: Authentic language resources, media integration in education, lexical competence development, pedagogical innovation, motivation in foreign language acquisition.

Introduction. The teaching of foreign languages in senior schools is a critical component of preparing students for globalized communication and cultural exchange. Senior school students are at a developmental stage where they can engage with complex texts and apply critical thinking, making this an ideal period for deepening their language skills.

Lexical competence, which refers to the ability to understand and use words effectively, plays a central role in achieving language proficiency. A robust vocabulary is essential for effective communication, comprehension, and expression in a foreign language. It forms the foundation for mastering other language skills, such as reading, writing, listening, and speaking.

In this context, the integration of authentic media texts—materials created for native speakers, such as news articles, films, podcasts, and social media content—offers a promising approach to enhancing lexical skills. These texts expose students to real-life language usage, idiomatic expressions, and cultural nuances that are often absent in traditional, textbook-driven learning.

This review explores the role of authentic media texts in fostering lexical competence among senior school students. It examines theoretical foundations, methodologies for integrating media into teaching, and the outcomes of such practices. The aim is to highlight best practices, identify challenges, and provide

recommendations for educators and policymakers to optimize the use of authentic media in foreign language instruction.

Theoretical framework. Lexical competence is defined as the ability to recognize, understand, and effectively use words and phrases within appropriate linguistic and cultural contexts. It includes both receptive knowledge, which involves understanding words while reading or listening, and productive knowledge, which focuses on using words accurately in speaking or writing. As a fundamental aspect of language proficiency, lexical competence underpins the learner's ability to comprehend and produce meaningful communication. Without a solid vocabulary base, the development of other language skills, such as grammar and syntax, becomes constrained, emphasizing its critical role in second language acquisition [1].

Authentic media texts, which are materials originally created for native speakers, represent a valuable resource for enhancing lexical competence. These texts reflect real-life language usage and cultural nuances, providing a richer context than traditional textbooks, which are often simplified and decontextualized. Authentic media encompasses various types of materials, including news articles, which expose learners to formal language and complex sentence structures; movies and TV shows, which offer conversational language and idiomatic expressions; podcasts and audio materials, which develop listening skills and introduce diverse accents and informal speech; social media content, which familiarizes students with contemporary slang, abbreviations, and evolving language trends; and songs or music lyrics, which enhance memory retention of vocabulary while engaging learners emotionally and culturally. Each of these media types serves distinct purposes in developing specific aspects of lexical competence, such as understanding context, usage, and cultural connotations.

The integration of authentic media texts into language teaching is supported by several cognitive and pedagogical theories. Krashen's Input Hypothesis (1982) posits that language learners acquire vocabulary most effectively when exposed to comprehensible input that is slightly above their current proficiency level. Authentic media provides such input, offering meaningful and context-rich language exposure. Vygotsky's Sociocultural Theory (1978) highlights the importance of social interaction and cultural context in language acquisition. Authentic media immerses learners in the linguistic and cultural environment of the target language, bridging the gap between classroom learning and real-world language use. Paivio's Dual Coding Theory (1986) suggests that learners retain information more effectively when it is presented through multiple modalities, such as visual and auditory channels. Media texts like movies or podcasts leverage this principle by combining visual and auditory elements to support vocabulary acquisition. Finally, Task-Based Learning (Willis, 1996) emphasizes engaging learners in meaningful tasks to promote active language use. Activities based on authentic media, such as summarizing a news article or creating a podcast response, align with this approach by combining lexical learning with practical applications [2].

These theoretical frameworks demonstrate how authentic media not only enriches vocabulary acquisition but also enhances learners' confidence and motivation, empowering them to navigate real-world communication effectively.

Role of authentic media texts in vocabulary acquisition. Authentic media texts are instrumental in vocabulary acquisition as they expose learners to real-world language use in rich, contextual settings. Unlike traditional teaching materials, which often focus on simplified and decontextualized content, authentic media provides dynamic, engaging learning experiences.

One key advantage of authentic media is its ability to immerse students in genuine linguistic environments. Materials such as news articles, podcasts, or movies introduce vocabulary in diverse communicative contexts, helping learners understand nuances, idiomatic expressions, and situational meanings. Additionally, authentic media covers various registers and styles, broadening learners' lexical repertoire and cultural awareness.

Compared to traditional methods like rote memorization or isolated vocabulary drills, authentic media encourages contextualized learning. While traditional approaches may fail to show how words are used in real-life scenarios, authentic media integrates vocabulary acquisition with meaningful input, fostering better retention and application. Multimedia formats, such as videos or podcasts, engage multiple senses, enhancing cognitive processing and learning outcomes [3].

Examples of using authentic media in educational settings demonstrate its effectiveness. Teachers can employ news articles to introduce topical vocabulary and encourage discussions, or use movies and TV shows to teach idiomatic expressions and colloquial phrases through role-playing activities. Podcasts enhance listening skills and expose learners to specialized vocabulary, while social media content introduces modern slang and cultural trends, making language learning relatable and motivating.

By connecting classroom instruction to real-world contexts, authentic media not only improves vocabulary acquisition but also enhances students' motivation, engagement, and readiness for practical communication.

Table 1- Methodologies for Using Authentic Media Texts in Language Teaching

Category	Description	Examples
Approaches for Incorporating Media	Strategies to integrate authentic media into teaching to enhance engagement and learning.	Using movies to teach idioms, podcasts for listening exercises, or articles for discussions.
Task-Based Learning	Engages students in specific tasks requiring active use of language learned from media texts.	Summarizing a news article, creating a script based on a movie, or responding to a podcast.
Project-Based Approaches	Focuses on longer-term projects that integrate multiple skills and vocabulary acquisition.	Producing a student-created podcast, making a video summary of a film, or writing blogs.
Interactive Multimedia Exercises	Combines media formats to provide dynamic and multisensory learning experiences.	Using interactive videos with quizzes, multimedia presentations, or gamified vocabulary apps.
Techniques for Assessing Vocabulary	Methods for evaluating vocabulary retention and contextual understanding from media learning.	Vocabulary quizzes, oral presentations, written summaries, or peer-reviewed projects.
Teacher and Student Roles	Defines responsibilities in media-based learning environments.	Teachers curate media and guide tasks; students actively engage, analyze, and create outputs.

The integration of authentic media texts in foreign language teaching has shown a significant impact on the lexical skills of senior school students. Case studies and research findings highlight that students exposed to authentic materials demonstrate improved vocabulary retention and a deeper understanding of contextual usage. For instance, studies have revealed that students who engage with news articles and podcasts retain words more effectively due to the meaningful context provided by these materials. Additionally, authentic media encourages students to infer word meanings from context, a skill critical for language acquisition.

The effectiveness of media-based learning lies in its ability to present vocabulary in real-life settings, making it relevant and memorable. Authentic materials expose students to diverse registers and situational uses of language, from formal writing in articles to conversational tones in TV shows or podcasts. These contexts help students internalize vocabulary and use it confidently in communication. Moreover, the engaging nature of media-based learning fosters motivation, with students reporting higher enthusiasm for lessons that incorporate movies, music, or social media. This increased engagement often translates into better learning outcomes, as students feel more connected to the material and motivated to participate actively [4].

Despite its advantages, integrating authentic media into teaching presents several challenges and limitations. Selecting appropriate media content can be complex, as not all materials are suitable for educational purposes. Some texts may include inappropriate language, cultural references that are difficult to explain, or vocabulary that is too advanced for students' proficiency levels.

Language proficiency barriers also pose a challenge, as students with limited knowledge may struggle to understand authentic materials without significant scaffolding. This can lead to frustration and disengagement if materials are not carefully adapted to their skill levels. Additionally, many schools face technical and resource constraints, such as a lack of access to the internet, multimedia equipment, or up-to-date resources, which limit the ability to incorporate media effectively [5].

Teacher preparedness is another significant limitation. Many educators lack training in how to effectively use authentic media in lessons. Designing activities, selecting appropriate materials, and assessing outcomes require specific skills that may not be covered in standard teacher training programs.

To maximize the benefits of authentic media and overcome its challenges, several recommendations and best practices can be followed:

1. Criteria for Selecting Suitable Media Texts: Teachers should choose materials that are age-appropriate, culturally relevant, and aligned with students' language proficiency levels. Materials should offer both linguistic and cultural value, with clear potential for engaging and motivating learners.

2. *Strategies for Overcoming Challenges:* Providing scaffolding, such as glossaries or pre-teaching key vocabulary, can help students navigate difficult materials. Schools should invest in resources and technology to support media integration, and partnerships with organizations can provide access to quality content.

3. *Recommendations for Curriculum Designers and Educators:* Curriculum frameworks should incorporate authentic media as a core component of language instruction. Training programs for teachers should include strategies for selecting, using, and assessing media-based learning effectively.

4. *Suggestions for Future Research:* Further studies are needed to evaluate the long-term effects of authentic media on vocabulary acquisition and overall language proficiency. Research could also explore the impact of different media types on various learner demographics and the role of technology in enhancing accessibility and effectiveness.

By addressing these challenges and implementing best practices, educators can harness the full potential of authentic media texts to improve lexical competence and overall language learning outcomes.

Conclusion. The use of authentic media texts in foreign language teaching represents a transformative approach to enhancing vocabulary acquisition, particularly for senior school students. These materials provide learners with access to real-world language usage, fostering not only the retention of vocabulary but also a deeper understanding of its contextual and cultural significance. Authentic media engages students through dynamic and meaningful content, bridging the gap between classroom learning and practical communication.

This review highlighted the advantages of authentic media, including its ability to enrich lexical competence, motivate learners, and create immersive learning experiences. It also explored effective methodologies for integrating media into lesson plans, such as task-based and project-based approaches, while addressing challenges like resource constraints and the need for teacher training. Research findings demonstrate that authentic media is particularly effective in improving vocabulary retention and encouraging active, contextualized learning, which are essential for language proficiency.

In conclusion, authentic media texts have immense potential to improve the lexical skills of senior school students, equipping them with the tools necessary for effective communication in a globalized world. However, to fully realize this potential, innovative teaching approaches must be adopted, supported by robust teacher training programs and resources. By embracing authentic media as a central component of language instruction, educators can create engaging, effective, and culturally rich learning environments that prepare students for real-world linguistic challenges.

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STRATEGIES FOR ENHANCING LEXICAL COMPETENCE IN ENGLISH LANGUAGE EDUCATION FOR PHILOLOGY STUDENTS: A REVIEW OF METHODS AND APPROACHES

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Abstract

The development of lexical skills is a fundamental aspect of language learning, particularly for philology students who require a sophisticated command of vocabulary for advanced academic and professional applications. Traditional approaches to vocabulary instruction, such as rote memorization and repetitive drills, have been widely used but often fail to meet the dynamic needs of modern learners. Contemporary methodologies emphasize contextualized learning, the use of lexical chunks, and the integration of technology, creating more engaging and effective frameworks for teaching vocabulary. These approaches not only foster deeper retention but also enable students to use vocabulary in authentic communicative contexts.

This review aims to explore and synthesize existing literature on methods for developing lexical skills in English language education for philology students. The research analyzes both traditional and modern strategies, examining their effectiveness and applicability in academic contexts. A systematic approach was employed to select and review relevant studies, focusing on contextualized teaching, digital tools, and collaborative learning practices. The findings highlight that contextualized learning enhances understanding and application of vocabulary, while digital tools such as language learning apps and online corpora facilitate personalized and adaptive learning experiences. Additionally, the use of lexical chunks improves fluency by teaching words in meaningful combinations rather than isolation.

Despite these advancements, several challenges persist. Teachers often face difficulties in designing and implementing innovative strategies, particularly in resource-constrained settings. Furthermore, effective use of technology requires training and access, which may not be universally available. Addressing these challenges is essential for optimizing vocabulary instruction methods in philology education.

The significance of this study lies in its potential to inform educators and curriculum designers about effective vocabulary teaching practices tailored to the needs of philology students. By integrating evidence-based approaches with modern tools, language educators can create more dynamic and supportive learning environments that foster lexical competence. The review also identifies gaps in current research, such as the need for longitudinal studies on the impact of digital tools and the scalability of collaborative learning methods. In conclusion, this study provides a comprehensive foundation for advancing lexical skill development in philological education, contributing to the academic and professional success of learners.

Keywords: lexical retention, contextualized teaching, digital learning tools, vocabulary pedagogy, collaborative strategies, adaptive learning.

Introduction. In the field of philological education, the development of lexical skills in English is a fundamental component of language proficiency and academic success. Lexical competence, which encompasses the ability to understand and use a wide range of vocabulary effectively, is essential for both oral and written communication. For students in philological education, a strong command of vocabulary serves as the foundation for advanced linguistic analysis, literary interpretation, and translation studies. However, traditional methods of vocabulary instruction often fall short in addressing the diverse needs of learners and the increasing demands of a globalized, digital age.

The relevance of this topic lies in the need to explore innovative and effective methods for vocabulary development that go beyond rote memorization. Contemporary approaches to teaching lexical skills emphasize the integration of technology, learner autonomy, and contextualized practice, all

of which align with modern pedagogical theories. By adopting these methods, educators can foster deeper engagement, retention, and practical application of vocabulary among philology students. Moreover, the advent of digital tools and resources has opened new possibilities for creating immersive and interactive learning environments tailored to individual learners' needs.

The objective of this review is to examine existing strategies for developing lexical skills in the context of English language education for philology students. Specifically, the study aims to:

1. Analyze the effectiveness of traditional and modern approaches to vocabulary instruction.
2. Explore the role of digital tools and technology in enhancing lexical acquisition.
3. Identify challenges and best practices in the implementation of vocabulary teaching methods.
4. Provide recommendations for integrating innovative strategies into philological curricula.

By addressing these objectives, the study seeks to offer valuable insights for educators, curriculum designers, and researchers, contributing to the advancement of effective practices in lexical skill development for students of philological education.

Theoretical background. The development of lexical skills is a cornerstone of effective language acquisition, particularly for students in philological education, where an extensive and precise vocabulary is essential for advanced linguistic and literary tasks. This section reviews existing literature and key concepts related to lexical skill development, examining traditional methods, modern approaches, and the theoretical frameworks underpinning these strategies.

Historically, vocabulary instruction has relied heavily on rote memorization, list-based learning, and repetitive drills. These methods emphasize the mechanical acquisition of words, often focusing on individual lexical items without context. While such approaches can help learners build a foundational vocabulary, they are criticized for their lack of engagement and limited ability to promote deeper understanding or practical application of language. Studies indicate that traditional methods often fail to address the dynamic nature of vocabulary usage in real-world communication and higher-order linguistic tasks, such as literary analysis and translation [1].

Modern approaches to lexical skill development emphasize the importance of contextualized and meaningful learning. Research highlights that vocabulary is more effectively acquired and retained when taught within authentic contexts, such as reading, listening, or speaking activities. Contextualized learning enables students to understand the nuances, collocations, and connotations of words, enhancing their ability to use vocabulary appropriately in various linguistic and cultural settings. For students in philological education, exposure to rich textual materials, including literature and academic articles, provides an ideal platform for contextualized vocabulary acquisition [2].

The advent of technology has revolutionized lexical skill development, offering innovative tools for teaching and learning vocabulary. Language learning apps, online dictionaries, and interactive platforms enable personalized and adaptive learning experiences. For example, tools that utilize spaced repetition algorithms enhance memory retention by revisiting words at optimal intervals. Additionally, digital corpora and concordance tools allow philology students to explore word usage in authentic contexts, fostering a deeper understanding of lexical semantics and syntax. Studies suggest that these technological advancements significantly enhance learner engagement and autonomy, key factors for effective vocabulary acquisition [3].

Several theoretical frameworks support modern approaches to lexical skill development:

1. **Constructivism:** This theory emphasizes that learners construct their own knowledge through interaction and experience. Contextualized vocabulary learning aligns with constructivist principles by encouraging students to derive meaning from real-world usage.

2. **Lexical Approach:** Proposed by Michael Lewis, this approach underscores the importance of teaching language in lexical chunks or phrases rather than isolated words. Research shows that this method enhances fluency and naturalness in language use.

3. **Cognitive Load Theory:** This theory highlights the importance of balancing the cognitive demands placed on learners. Digital tools that adapt to learners' proficiency levels reduce cognitive overload, ensuring efficient vocabulary acquisition.

Despite advancements in teaching methods, challenges remain. Philology students often require specialized vocabulary for academic and professional contexts, which may not be covered by general language learning resources [4]. Furthermore, the complexity of word meanings, collocations, and idiomatic expressions poses significant hurdles. Research also indicates that students may struggle with retaining vocabulary without consistent practice and reinforcement [5].

The reviewed literature underscores the need for an integrated approach to lexical skill development that combines traditional methods with modern innovations. Teachers must balance

explicit vocabulary instruction with opportunities for implicit learning through meaningful activities. Additionally, the strategic use of digital tools can enhance engagement, facilitate personalized learning, and provide access to authentic language resources.

Table 1

Lexical skill development methods

Method	Features	Strengths	Challenges
Rote Memorization	Focuses on repetition and memorization of isolated words.	Effective for building a foundational vocabulary.	Lacks engagement and practical application.
Contextualized Learning	Teaches vocabulary within authentic contexts like texts or conversations.	Enhances understanding of word meanings and usage in context.	Requires carefully chosen materials to ensure relevance.
Digital Tools Integration	Uses apps, corpora, and spaced repetition software for adaptive learning.	Personalized and engages students with modern tools.	May depend on access to technology.
Lexical Chunks Approach	Emphasizes learning phrases and collocations rather than single words.	Improves fluency and naturalness in language use.	Demands a shift in teaching style and preparation.
Collaborative Learning	Encourages peer discussions and group activities to practice vocabulary.	Promotes deeper learning through interaction and feedback.	Can be time-intensive and requires teacher facilitation.

By synthesizing these insights, this review establishes a comprehensive framework for understanding effective strategies in lexical skill development. It highlights the importance of combining contextualized learning, technological integration, and evidence-based practices to equip philology students with the lexical competence necessary for their academic and professional success.

Methodology. The methodology of this review focuses on a systematic approach to selecting relevant literature and conducting thematic analysis to explore effective methods for developing lexical skills in English language education for philology students. The process was designed to ensure a comprehensive and objective synthesis of current academic findings. The literature selection followed a multi-stage approach to identify high-quality and relevant studies. First, academic databases such as Google Scholar, ERIC, Scopus, and PubMed were searched to locate peer-reviewed journal articles, book chapters, and conference proceedings. Keywords such as "lexical skill development," "vocabulary acquisition," "philology education," "teaching methods," and "language pedagogy" were used in combination with Boolean operators to refine the search.

Studies were included if they focused on vocabulary acquisition or lexical skill development in English language education, provided insights into strategies, methods, or technologies relevant to philology students, and presented empirical findings or theoretical discussions. Articles that focused solely on general language education without a specific emphasis on vocabulary, were unrelated to philology education, or lacked methodological rigor were excluded. Titles and abstracts of identified studies were initially screened for relevance, and the full texts of shortlisted articles were reviewed to confirm their inclusion in the final dataset.

Once the relevant literature was selected, a thematic analysis was conducted to identify key patterns and recurring themes in the studies. Key findings and concepts were systematically coded using qualitative analysis techniques. Codes such as "contextual learning," "technology integration," "lexical retention," and "teacher practices" were applied to categorize data. These codes were grouped into broader themes, including traditional and modern methods for lexical skill development, the role of digital tools, and challenges in implementing vocabulary instruction strategies.

This approach allowed for the identification of best practices, limitations, and research gaps in the field, providing a robust framework for analyzing effective methods of lexical skill development. The thematic analysis not only synthesized diverse perspectives but also highlighted critical areas for further research and practical application in philology education.

Findings and Discussion. *The findings from the literature review highlight the evolution of methods for developing lexical skills in English language education for philology students, emphasizing the transition from traditional rote learning techniques to modern, technology-driven approaches. Key themes identified in the review are presented below, followed by a discussion of their significance and implications.*

The review confirms that contextualized learning significantly enhances lexical acquisition and retention. Teaching vocabulary within authentic contexts—such as literature, academic texts, or real-life scenarios—helps students understand word meanings, collocations, and connotations more effectively. This approach is particularly relevant for philology students, as it aligns with their academic focus on textual analysis and linguistic precision. Contextualized learning also promotes deeper engagement by connecting vocabulary to meaningful tasks, such as interpreting literary works or analyzing discourse.

Digital tools and resources have emerged as transformative elements in modern vocabulary instruction. Platforms incorporating spaced repetition algorithms, gamified learning, and interactive corpora provide students with personalized and adaptive learning experiences. These tools not only facilitate efficient retention but also expose learners to authentic language use through digital corpora and multimedia content. The integration of technology is especially beneficial for philology students, as it enables access to specialized resources, such as historical language databases and academic terminology banks.

The emphasis on learning lexical chunks, rather than isolated words, is a recurring theme in the literature. This method improves fluency and naturalness in language use by helping students understand how words function together in phrases and expressions. For philology students, this approach is particularly valuable in enhancing their ability to analyze idiomatic and stylistic elements of language in literary and academic contexts.

The review highlights several challenges in implementing advanced methods for lexical skill development. Teachers often face difficulties in designing contextualized and interactive learning activities, especially in resource-constrained environments. Additionally, the effective use of digital tools requires significant teacher training and technological infrastructure, which may not always be available. Students may also struggle with retaining specialized vocabulary without consistent reinforcement and practice.

Teacher preparedness emerged as a critical factor influencing the success of modern vocabulary instruction methods. Educators need training in digital pedagogy, contextualized teaching strategies, and effective integration of lexical chunks into lessons. Supportive teaching environments and access to professional development resources are essential for equipping teachers with the skills needed to implement these methods effectively.

The findings underscore the need for a balanced approach to lexical skill development that integrates traditional methods with modern innovations. Contextualized learning and digital tools offer significant advantages in enhancing engagement, retention, and application of vocabulary, while the lexical chunks approach provides a deeper understanding of language structure and usage. For philology students, these methods align with their academic needs and professional aspirations, enabling them to excel in linguistic analysis, translation, and advanced communication.

These findings have several implications for teaching practices and curriculum design in philological education:

- 1. Curriculum Design: Educators should prioritize contextualized learning and incorporate authentic materials that reflect the academic and professional contexts of philology students.*
- 2. Technology Integration: Institutions must invest in digital tools and infrastructure to support technology-enhanced vocabulary instruction, ensuring equitable access for all students.*
- 3. Teacher Development: Professional development programs should focus on equipping teachers with skills to design and implement innovative methods for lexical skill development.*
- 4. Research and Development: Further studies are needed to explore scalable models for integrating modern methods into diverse educational settings and to address challenges in teacher training and student engagement.*

In conclusion, the review highlights the importance of combining evidence-based methods with practical solutions to address challenges in lexical skill development. By leveraging these insights, educators can create effective and engaging learning environments that support the unique needs of philology students.

Conclusion. This review highlights the critical importance of developing lexical skills in English language education for philology students, emphasizing the need for innovative and effective instructional methods. The findings reveal that traditional approaches, such as rote memorization, remain foundational but are often insufficient for addressing the complexities of modern linguistic and academic demands. Contextualized learning and the use of lexical chunks have emerged as effective strategies for improving retention, comprehension, and practical application of vocabulary. Additionally, digital tools and technology have revolutionized vocabulary instruction by providing personalized, adaptive, and engaging learning experiences.

Despite these advancements, challenges persist in the implementation of these methods. Teachers require extensive training in digital pedagogy and contextualized teaching strategies, while students often face difficulties in retaining specialized vocabulary without consistent practice and reinforcement. Access to digital tools and resources remains uneven, further complicating efforts to integrate technology into the curriculum. Addressing these challenges is crucial for ensuring the successful adoption of innovative vocabulary instruction methods in philological education.

Suggestions for future research:

1. *Longitudinal Studies:* Investigate the long-term impact of modern vocabulary instruction methods, such as contextualized learning and lexical chunking, on philology students' academic and professional outcomes.

2. *Technology Accessibility:* Explore strategies for improving access to digital tools and infrastructure, particularly in resource-constrained educational settings.

3. *Teacher Training Programs:* Examine the effectiveness of professional development programs focused on equipping educators with skills for implementing digital and contextualized teaching strategies.

4. *Integration of Emerging Technologies:* Assess the potential of emerging technologies, such as artificial intelligence and virtual reality, in enhancing lexical skill development.

5. *Cross-Cultural Comparisons:* Conduct comparative studies to understand how different cultural and educational contexts influence the effectiveness of vocabulary instruction methods.

6. *Student-Centered Approaches:* Investigate the role of learner autonomy and motivation in the success of modern vocabulary teaching methods, focusing on strategies to sustain engagement and active participation.

By addressing these areas, future research can contribute to the refinement of instructional methods and the development of practical solutions to existing challenges. These efforts will ultimately support the advancement of philological education, equipping students with the lexical competence necessary for academic excellence and professional success.

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WAYS AND APPROACHES FOR INTEGRATING COMPUTER PROGRAMS AND VIDEOS IN BIOLOGY EDUCATION AT SCHOOLS

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Abstract

Integrating computer programs and videos into biology education can significantly enhance student engagement, deepen understanding, and support the development of key skills such as scientific inquiry, critical thinking, and problem-solving. The use of digital tools and multimedia resources enables teachers to present complex biological concepts in interactive and visually stimulating ways. In this article is shown several ways and approaches for effectively integrating computer programs and videos into biology education at the school level. Additionally, the use of augmented reality (AR), virtual reality (VR), and 3D modeling enables students to visualize intricate biological structures and processes, bridging the gap between abstract theory and real-world application. By incorporating these technologies, biology educators can create more accessible, inclusive, and engaging educational experiences that cater to diverse learning styles, while preparing students for future scientific endeavors. This paper explores various methods and approaches for integrating computer programs and videos into biology education at the school level, highlighting their potential to enhance both learning outcomes and student motivation in the field of science.

Keywords: biology education, educational technology, interactive simulations, virtual labs, flipped classroom, gamification in education, educational videos, digital learning tools, online learning platforms, 3D models in education

Introduction

Computer programs can simulate complex biological processes such as cellular respiration, photosynthesis, or the human circulatory system. Virtual labs allow students to conduct experiments (e.g., virtual dissections, plant growth simulations) without the constraints of time, resources, or safety risks.

PhET Interactive Simulations, Labster, BioMan Biology.

Students can use these tools to experiment with biological variables and observe outcomes, providing hands-on experiences that would be difficult or impossible in a traditional lab setting. Virtual field trips to natural habitats, ecosystems, or even inside the human body can immerse students in environments that are otherwise difficult to access.

Google Earth, BioDigital Human.

Teachers can guide students through virtual ecosystems (rainforests, coral reefs, etc.), emphasizing species diversity, ecological relationships, and environmental concerns. Videos and animations can be used to illustrate abstract or microscopic processes like cell division (mitosis, meiosis), DNA replication, protein synthesis, or enzyme action. These visual aids can break down complicated processes into easy-to-understand stages.

Khan Academy, Crash Course Biology, YouTube channels like Amoeba Sisters.

Teachers can play videos during lessons to supplement lectures and allow students to visualize abstract concepts, enhancing comprehension and retention. Videos that narrate real-life biological phenomena (e.g., animal migration, plant reproduction, genetic disorders) can offer students a deeper connection to the subject matter and inspire curiosity.

Interactive Quizzes and Games

Educational computer programs and apps that incorporate game elements, quizzes, and challenges can make learning biology fun and interactive. Games can be used to reinforce knowledge of topics such as anatomy, ecosystems, or human biology.

Table 1

Types of famous educational computer programs and apps

<i>Example of tools</i>	<i>Approach</i>
<i>Quizlet, Kahoot!, Jeopardy Labs, BioMan Biology</i>	<i>Integrate quizzes or biology-themed games into classroom activities to assess student knowledge, promote healthy competition, and foster teamwork</i>
<i>Anki, Quizlet.</i>	<i>Encourage students to create their own digital flashcards for key biological terms, using spaced repetition to improve retention over time</i>
<i>Zygote Body, Sketchfab, BioDigital Human</i>	<i>Allow students to manipulate 3D models of biological systems to enhance understanding of their structures and functions, offering a more immersive learning experience</i>
<i>Google Expeditions, Tilt Brush (for molecular structures).</i>	<i>Organize VR-based biology lessons where students can experience ecosystems, animal behaviors, or microbiology in a fully immersive environment.</i>
<i>PowerPoint, Prezi, or Google Slides</i>	<i>Teachers can use interactive presentations to explain biological concepts and provide students with opportunities to engage with multimedia content during lessons.</i>
<i>Jamboard, Miro, Padlet.</i>	<i>In group activities, students can collaborate on drawing biological diagrams (e.g., the water cycle, food chains) or brainstorming ideas in virtual teams, enhancing interactive learning.</i>
<i>Edpuzzle (to add interactive questions to videos), Khan Academy, YouTube</i>	<i>Assign videos on topics like genetics, evolution, or ecology as homework, allowing students to come to class prepared for deeper discussion and application through activities or experiments.</i>

[table is completed by authors]

The ability to function in the social roles of a voter, consumer, family member, and student is determined by functional literacy. It enables you to put your abilities to use in setting up various adventures, creating connections with various social structures and organizations, etc [3]. A person's capacity to answer questions about the natural sciences, as well as their preparedness to have a keen interest in scientific concepts, developments, and innovations. The ability of pupils to use the knowledge and abilities they have learned in school in real-world settings is referred to as competence [7]. In biology, there are three main categories of tasks:

1. "How do you know?" tasks that require the use of ways of knowledge.

2. Assignments to "try to explain" events and facts

3. "Make a conclusion" assignments help students develop the ability to draw conclusions based on data. People who are biologically literate should comprehend the fundamental ideas in biology. Students that are biologically literate should understand the variety of species and how they are categorized. The fundamental ideas of biology should be understood by all citizens. Memory, analysis, comprehension, learning, and reasoning are only a few examples of cognitive skills. The developed set of tasks is a tool for developing specific skills, which together constitute biology as a subject and the essence of functional abilities. Possession of these abilities and skills serves as an indicator of base in students while preparing for biology video materials.

Applied in biology innovative methods and techniques.

These biology tasks include 25 complex tasks based on the example of tasks. The questions are created in accordance with basic biological principles. The focus of the tasks on the organization of functional literacy includes topics on botany, zoology, genetics, physiology, ecology, immunology, microbiology and general biology.

Task № 1.

The picture shows a spider and a pin standing in water.



The reason spiders float in water is the presence of hairs that cause the spider to be weightless. Because the pin is lightweight floats in water

Question 1: What do a spider floating in water and an iron pin have in common?



Answer 1.1:

1. Pedipals
2. Fangs
3. Chelicerae
4. Eyes
5. Legs
6. Spinnerets
7. Abdomen
8. Pedicel
9. Cephalothorax

Task 2: Identify the structure of the spider in the picture.

Task 3. State whether each of the following concepts is a TRUE or FALSE:

A student found two different leaves of different plants. He took it with him and then noticed that it had started to rot. They are shown in picture A and B.

**A****B**

Answer: A – Dicotyledonous (leaf) B – Monocotyledonous (leaf)

Task 4. Identify to which two main groups the leaves shown in the picture belong.

Task 5. The process of putrefaction is most often caused by bacteria. Name one other organism that can prevent decay.

Task 6. Leaf rotting improves the composition of the soil and creates conditions for good plant growth. Explain how the process of rotting returns nitrogen to the soil.



Task 7: Humans are thought to be descended from animals such as gorillas, as shown in Figure A. Humans walk on two legs. What is this movement called?

Task 8: Describe two ways in which the skeleton in picture B adapted to this type of movement.

Task 9: Mention one advantage of Homo sapiens associated with vertical walking

The goals may be different, as a rule, it is a generalization, systematization of the material, or, conversely, a leading question before studying a new topic. In search of the necessary information, a variety of sources are "shoveled", the necessary skills are acquired, and the products created at the same time are then used as reference materials. Much attention is paid to working with educational and reference literature on ecology, because this subject is not studied in our school, and schoolchildren show great interest in it.

Currently, along with books, perhaps an important role is played by such a source of information as the Internet. Visual materials, electronic versions of books, journal articles, various tests, tasks of Olympiads of various levels can also be found on various biological sites. Is it possible and necessary to manage this flow of information? In any case, it is advisable to familiarize students with a list of biological sites where they can find useful information for themselves. One of these sites is undoubtedly www.kpdbio.ru, where resources are placed to prepare for the regional stage in biology. On this site, you can get online advice on a question of interest, test your knowledge by performing test tasks of previous years, watch a video tutorial.

Conclusion

Integrating computer programs and videos into biology education creates opportunities for interactive, personalized, and immersive learning experiences. By using a variety of digital tools, teachers can cater to different learning styles, enhance student engagement, and provide access to resources that deepen students' understanding of biological concepts. The key is to select tools and methods that align with curriculum goals and foster active learning and critical thinking.

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DEVELOPMENT OF LEARNING AUTONOMY SKILLS AMONG UNIVERSITY STUDENTS IN LEARNING A FOREIGN LANGUAGE USING PODCASTS

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Abstract

Learning independence is an important skill for university students, especially when learning a foreign language. This study examines how podcasts can help students become more independent and self-confident in learning a language. Podcasts, thanks to their accessibility and engaging content, allow students to experience the language at an authentic level, allowing them to practice at their own pace. This study examines the experiences of university students who have used podcasts to learn a foreign language, focusing on how this tool helps develop independence and improve language skills. The study used various surveys and interviews to obtain information from students with different levels of language proficiency. The results show that podcasts not only motivate students but also give them the freedom to choose materials that match their interests and skill levels. Many students reported feeling better in the learning process and included podcasts in their programs to practice listening and expand their vocabulary. In addition, podcasts allowed you to get acquainted with different accents, the real use of language, and cultural nuances, which made the learning process more dynamic and accessible. To get the most out of podcasts, students used strategies such as setting personal goals, taking notes while listening, and participating in follow-up activities such as discussions or vocabulary exercises. However, some difficulties were noted, such as maintaining consistency and understanding complex content without additional support. These results suggest that while podcasts are useful, students may benefit from initial guidance on how to effectively integrate them into their curricula. The study concludes that podcasts are a powerful tool that promotes independent learning of foreign languages. They allow students to monitor their progress and offer a flexible way to practice outside the classroom. Teachers are encouraged to support students by recommending podcast resources, teaching self-regulation techniques, and including reflective classes to track growth. This study highlights the potential of podcasts to change the way students approach language learning, making it more fun and independent. Future research may look at the long-term benefits of podcast-based learning and how this approach can be applied in other academic fields.

Keywords: *self-directed learning, language proficiency, authentic materials, listening skills, technology in education*

Importance of the study

Autonomous learning is a vital skill for any type of learner, particularly in the fast-evolving landscape of modern education. This is especially relevant in foreign language acquisition, where a student's ability to take charge of their progress is often key to success. Building self-reliance empowers students to independently set objectives, identify valuable resources, and maintain consistent practice beyond the classroom. This research examines how podcasts can play a significant role in helping university students cultivate these essential skills while learning a foreign language. The significance of this research lies in addressing two essential aspects of language education: promoting student independence and incorporating effective technologies into the learning process. In an increasingly interconnected world, acquiring a new language is not just an academic requirement but a vital life skill that unlocks personal, professional, and cultural opportunities. Traditional teaching methods, however, often lack the adaptability and personalization required to meet the needs of today's learners. Podcasts bridge this gap by enabling students to take charge of their learning in a manner that aligns with their schedules and objectives. This study is also valuable for educators and curriculum designers. Gaining insights into how podcasts promote learning independence can help them create more effective resources and strategies to support student success. Additionally, this aligns with the overarching objective of preparing students for lifelong learning by equipping them with essential tools such as self-motivation and adaptability. This study shows how podcasts can help university students take

responsibility for learning a foreign language. It provides practical information on how technology can improve education and help students become self-confident and independent learners in an increasingly interconnected world.

The purpose of the study

The goal of this study is to explore how podcasts can help university students develop independent learning skills while studying a foreign language. In today's educational environment, independence has become increasingly important, as students are expected to take more responsibility for their learning outcomes. This research looks into how podcasts, as a flexible and easily accessible tool, can support students in becoming more self-sufficient in their language learning journey. The study aims to identify practical ways that students can use podcasts to enhance their listening skills, expand their vocabulary, and deepen their cultural understanding. By focusing on how students interact with podcasts, the research will examine whether this tool encourages them to set personal goals, track their progress on their own, and continue practicing outside the classroom. Another important objective of this study is to explore how podcasts can address the varied needs of language learners. With a wide range of content available, podcasts allow students to customize their learning based on their interests, language proficiency, and personal schedules, making the language learning process more enjoyable and effective. This adaptability aligns with the broader idea of lifelong learning, helping students develop the skills to continue studying the language independently long after formal education ends. Furthermore, the study seeks to offer practical recommendations for teachers and curriculum developers on how to incorporate podcasts effectively into foreign language instruction. By examining both the benefits and challenges of using podcasts as a learning tool, the research aims to contribute to the ongoing development of teaching methods, ensuring they are more aligned with the needs of today's students. This study aims to bring together technology and independent learning in foreign language education. By highlighting how podcasts can be a useful tool, the research hopes to inspire students, teachers, and educational institutions to explore new ways of learning that focus on independence, flexibility, and active engagement.

Literature review

The development of learning autonomy is a key focus in language education, especially in higher education, where students are expected to take more responsibility for their learning (Benson, 2015). In the context of foreign language learning, autonomy involves students taking control of their learning process, setting goals, monitoring progress, and independently engaging with resources (Little, 2017). Podcasts, due to their flexibility and ease of access, have emerged as a valuable tool for promoting learning autonomy among university students. Podcasts offer learners exposure to authentic language use, with real-world conversations, cultural references, and varied accents (Mendelsohn, 2016). This aligns with the principles of autonomy, as students can choose content that suits their interests and language levels, enhancing their learning experience. Research suggests that podcasts improve listening comprehension and vocabulary acquisition by allowing students to engage with material at their own pace (Godwin-Jones, 2017). Additionally, podcasts encourage active listening and critical thinking, key components of becoming an independent learner (Goh, 2016). Studies on using podcasts in language education show that they can significantly boost student motivation and self-regulation. Podcasts allow learners to set their own learning goals, practice independently, and reflect on their progress (Reinders & White, 2016). They also provide the flexibility to study outside the classroom, making learning more accessible and learner-centered (Thornton & Houser, 2015). This informal and adaptable approach to language learning can foster long-term growth and autonomy. However, there are challenges when using podcasts as an educational tool. While they are effective in improving listening skills, some students struggle with maintaining consistency or understanding complex content without guidance (Taki, 2018). To overcome these challenges, educators need to offer support and help students develop strategies for using podcasts as part of their independent learning journey (Davis, 2019). Podcasts have the potential to significantly enhance learning autonomy in foreign language education. By combining technology with self-directed learning, podcasts allow students to take ownership of their language development. However, to be truly effective, both students and teachers need to engage with the medium thoughtfully, ensuring that podcasts are used as a meaningful tool for independent learning.

Conclusion

In conclusion, this study emphasizes that podcasts can be an effective tool for fostering self-reliance in language learning among university students. The findings indicate that podcasts offer students the flexibility to learn at their own pace while providing content that can be tailored to their personal interests and language proficiency. By incorporating podcasts into their studies, students were

able to enhance their language skills, increase their independence, and stay motivated throughout the learning process. However, while podcasts offer clear advantages, they are most effective when combined with support from educators. Teachers can assist by recommending appropriate podcasts, offering strategies for effective use, and creating opportunities for deeper engagement with the material. Addressing challenges such as content difficulty and maintaining motivation can help students fully leverage the benefits of podcasts as a learning tool. Ultimately, podcasts can play a key role in cultivating lifelong language-learning skills. As education continues to adapt, tools like podcasts will be essential in supporting students to become more independent, self-assured, and engaged in their language learning, both inside and outside the classroom.

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INNOVATIVE STRATEGIES FOR LANGUAGE ACQUISITION: EXPLORING THE "FLIPPED CLASSROOM" MODEL IN SECONDARY EDUCATION

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Abstract

The flipped classroom model has gained increasing attention as an innovative approach to enhancing foreign language learning in secondary education. Unlike traditional teaching methods, the flipped model emphasizes active, collaborative in-class learning while assigning foundational instructional content, such as video lectures and reading materials, as pre-class activities. This review article explores the potential of the flipped classroom model to address challenges in foreign language education, such as low student engagement and insufficient opportunities for practical language application. The primary aim of the research is to evaluate the effectiveness of the flipped classroom approach in fostering language skill development and increasing student motivation in secondary schools.

The methodology involved a systematic review of academic literature published between 2019 and 2023, focusing on studies that investigated the implementation of the flipped classroom in foreign language education. The review identifies key findings, including improvements in vocabulary retention, speaking fluency, and cultural competence, attributed to the flipped model. Furthermore, it examines the challenges of implementation, such as digital access disparities, teacher preparedness, and student accountability. The study also explores theoretical frameworks, including constructivism and Bloom's Taxonomy, which underpin the flipped classroom's efficacy in creating a more engaging and learner-centered educational experience.

The significance of the study lies in its comprehensive analysis of the flipped classroom's advantages and limitations, offering practical recommendations for educators and policymakers. The findings underscore the model's capacity to transform foreign language education by prioritizing active learning and fostering essential 21st-century skills such as critical thinking, collaboration, and self-regulation. However, addressing technological and pedagogical challenges is crucial for maximizing its potential. This review concludes that while the flipped classroom presents promising opportunities for secondary school foreign language education, further research and strategic planning are needed to ensure its accessibility and effectiveness for diverse educational contexts.

Keywords: flipped learning, language acquisition, interactive pedagogy, digital education, student motivation, cultural competence

Introduction. The process of learning foreign languages has become increasingly vital in our interconnected world, where linguistic proficiency serves as a gateway to cultural understanding, academic growth, and global career opportunities. In secondary education, effective foreign language instruction is particularly critical, as this stage lays the foundation for lifelong language acquisition and cognitive development. However, traditional teaching methodologies often fail to engage students actively, limiting their motivation and capacity to apply language skills in real-life scenarios. This necessitates a shift toward more innovative and student-centered approaches.

One such approach is the flipped classroom model, which reverses the conventional instructional paradigm. In this model, students first explore learning materials at home—through videos, reading assignments, or digital resources—and then engage in collaborative, practical, and teacher-facilitated activities during class time. By prioritizing active learning and personalized support, the flipped classroom has demonstrated significant potential to enhance student engagement and outcomes, particularly in language acquisition.

Despite its growing popularity, the practical application of the flipped classroom in secondary school foreign language learning remains underexplored. Questions about its efficacy, adaptability to

diverse educational contexts, and impact on language skills such as speaking, listening, reading, and writing warrant further investigation.

This study aims to:

1. Examine the relevance and benefits of the flipped classroom model for foreign language learning in secondary education.
2. Identify key challenges associated with implementing this model in language classrooms.
3. Evaluate the impact of the flipped classroom approach on students' engagement, motivation, and academic performance in foreign language acquisition.
4. Propose practical strategies and recommendations for integrating the flipped classroom model effectively into secondary school curriculums.

By addressing these objectives, this research seeks to contribute to the development of more effective pedagogical practices for language education in secondary schools.

Theoretical background. The flipped classroom model represents a significant innovation in educational methodology, particularly in the context of foreign language learning. Introduced as a reversal of traditional teaching, this approach emphasizes independent learning at home through resources such as videos, online modules, and reading assignments, while class time is dedicated to active, collaborative, and teacher-guided learning activities. The theoretical framework of the flipped classroom aligns with contemporary pedagogical principles, including active learning, personalized support, and the promotion of learner autonomy. In foreign language education, where interaction and practice are critical, this model offers unique advantages, such as increased student engagement, integration of language skills, and the ability to expose learners to authentic cultural materials.

Recent studies have highlighted the efficacy of the flipped classroom model in language learning. For instance, Zhang and Zhu (2019) examined its impact on English as a Foreign Language (EFL) students in secondary schools and reported significant improvements in both speaking and listening skills [1]. Similarly, Wang and Qi (2020) demonstrated that flipped classrooms fostered a higher level of motivation and active participation among students, as they had greater opportunities to apply theoretical knowledge in practical contexts [2]. These findings underscore the model's capacity to address the limitations of traditional teacher-centered approaches, which often fail to actively engage students in the learning process.

The flipped classroom model also aligns with cognitive theories, including Vygotsky's Zone of Proximal Development (ZPD) and Bloom's Taxonomy. By completing lower-order cognitive tasks, such as understanding and remembering, at home, students can focus on higher-order cognitive tasks, such as applying and analyzing, during class sessions. This shift facilitates deeper learning and provides teachers with the flexibility to offer personalized support tailored to individual student needs. In foreign language learning, this means more time for interactive activities like group discussions, role-playing, and peer-to-peer communication, all of which are vital for developing fluency and cultural competence.

Despite its potential, the flipped classroom model is not without challenges. Research by Liu and Li (2021) highlights the digital divide, as unequal access to technology and internet connectivity can create barriers for some students [3]. Additionally, the success of this approach depends on student accountability and engagement with pre-class materials, which can vary significantly. Teachers also face challenges, including the time and resources required to design high-quality multimedia content and adapt to a more facilitative role in the classroom.

Other studies have explored the specific application of flipped classrooms in foreign language learning. For example, Yang and Lin (2021) investigated its effects on vocabulary acquisition and listening comprehension among Chinese secondary school students, finding that the approach not only improved academic outcomes but also fostered a sense of autonomy and responsibility [4]. Similarly, Kim and Park (2020) explored its impact on speaking and writing skills in Korean EFL classrooms, reporting significant gains in both areas, particularly among lower-achieving students who benefited from individualized teacher support during class [5].

In summary, the flipped classroom model has demonstrated substantial promise for enhancing foreign language learning in secondary education. It offers a dynamic and interactive framework that fosters engagement, supports personalized learning, and bridges the gap between theoretical knowledge and practical application. However, successful implementation requires careful planning, adequate resources, and strategies to address potential barriers such as technology access and student accountability. By addressing these challenges, educators can leverage the flipped classroom model to create more effective and engaging learning environments for foreign language students.

Methodology. The methodology of this review article focuses on a comprehensive examination of existing literature related to the flipped classroom model and its application in foreign language learning for secondary school students. To ensure the inclusion of relevant and high-quality sources, a systematic literature review approach was adopted. Academic databases such as Google Scholar, PubMed, ERIC, and Scopus were used to identify peer-reviewed journal articles, conference proceedings, and book chapters published between 2019 and 2023. The search terms included combinations of keywords such as “flipped classroom,” “foreign language learning,” “secondary education,” “active learning,” and “innovative pedagogy.” Boolean operators were used to refine the search and eliminate irrelevant studies.

The selection process followed a two-stage approach. In the first stage, articles were screened based on their titles and abstracts to determine relevance to the review's scope. Studies that explicitly explored the flipped classroom model in the context of secondary school foreign language education were shortlisted. Articles focusing solely on higher education or unrelated subjects were excluded. In the second stage, the full texts of the shortlisted articles were examined to evaluate their methodological rigor, theoretical contributions, and practical relevance. Only studies providing empirical data, theoretical frameworks, or comprehensive analyses of flipped classrooms in foreign language education were included.

To synthesize the findings, the review categorized the selected studies into thematic areas, such as the benefits of the flipped classroom for language skill development, challenges in implementation, and comparisons with traditional teaching methods. Particular attention was given to identifying recurring patterns, emerging trends, and gaps in the literature. Additionally, the theoretical underpinnings of the flipped classroom, such as constructivism and active learning, were analyzed to provide a coherent framework for understanding the pedagogical implications of this model.

The review also incorporated studies that critically examined the limitations of the flipped classroom model, including issues related to digital access, teacher preparedness, and student engagement. By synthesizing diverse perspectives, this article aims to present a balanced and comprehensive overview of the flipped classroom's role in enhancing foreign language learning in secondary education. This systematic approach ensures the reliability, validity, and relevance of the insights provided in this review.

Findings and Discussion. This review highlights that the flipped classroom model has been shown to significantly enhance student engagement and improve language skill development in secondary school foreign language education. By restructuring learning activities to prioritize active and collaborative engagement during class, this approach addresses many limitations of traditional teacher-centered instruction.

The flipped classroom model fosters a more interactive and engaging learning environment. Shifting passive activities, such as lectures and theoretical explanations, to pre-class assignments allows students to use class time for interactive, hands-on language practice. Research consistently shows that this method leads to greater student participation in activities such as peer discussions, role-playing, and collaborative problem-solving. The autonomy and flexibility offered by this model also enhance students' intrinsic motivation and encourage them to take ownership of their learning. These findings underline the role of the flipped classroom in creating a dynamic learning environment that actively involves students in the learning process.

The flipped classroom model has demonstrated positive effects on the development of essential language skills. Pre-class resources, such as instructional videos, audio materials, and digital exercises, enable students to prepare foundational knowledge at their own pace. This preparation frees up class time for more complex and interactive tasks, such as speaking exercises, pronunciation practice, and structured writing activities. Studies have shown improvements in vocabulary retention, listening comprehension, and overall speaking fluency among students using the flipped classroom approach. Moreover, the integration of authentic materials, such as podcasts and cultural videos, further enhances students' linguistic and cultural competence.

Despite its benefits, the implementation of the flipped classroom model is not without challenges. Limited access to digital tools and reliable internet connections can hinder students' ability to engage with pre-class materials, especially in regions with socioeconomic disparities. Additionally, the success of the model heavily relies on student accountability, as the approach assumes that learners will actively engage with preparatory resources before class. Teachers also face challenges in designing high-quality, engaging pre-class materials and managing diverse student needs during interactive class sessions. Addressing these challenges is critical for maximizing the potential of the flipped classroom in foreign language education.

The findings underscore the transformative potential of the flipped classroom model in secondary school foreign language learning. By prioritizing active learning and fostering a more student-centered environment, this approach not only enhances language skill acquisition but also cultivates critical thinking, collaboration, and autonomy—key competencies for the 21st century. However, the successful implementation of this model requires careful planning, sufficient resources, and strategies to overcome technological and logistical challenges. Educators and policymakers must consider these factors to effectively integrate the flipped classroom into language curricula and promote equitable access to its benefits.

Table 1- Benefits, challenges, and implications of the flipped classroom model in secondary school foreign language education

Aspect	Description	Challenges	Implications
Improved Student Engagement	Increased motivation and active participation through interactive activities like role-playing.	Ensuring that all students actively engage during class activities.	Encourages a dynamic, student-centered learning environment.
Skill Development	Enhanced vocabulary retention, speaking fluency, and listening comprehension.	Students may neglect practicing skills outside the classroom.	Improves practical language use and real-world application of skills.
Personalized Learning	Students can learn at their own pace by reviewing pre-class materials as needed.	Limited ability to support personalization during class for large groups.	Supports differentiated instruction and caters to diverse learning needs.
Access to Resources	Multimedia materials like videos and podcasts expose students to real-world language use.	Requires digital tools and reliable internet access for all students.	Broadens exposure to authentic language and cultural contexts.
Teacher Preparation	Teachers invest significant effort in designing engaging and effective pre-class content.	Time-consuming and requires ongoing professional development for educators.	Calls for teacher training and resource support to implement effectively.
Student Accountability	Model depends on students engaging with preparatory materials before class.	Students may skip pre-class work, limiting the effectiveness of in-class activities.	Requires monitoring and strategies to ensure student participation and accountability.
Equity in Access	Equal access to learning resources fosters inclusivity and fairness.	Socioeconomic disparities may limit some students' access to required digital tools.	Needs policy-level support to bridge digital divides and ensure equitable learning conditions.

In conclusion, the flipped classroom represents a promising innovation in foreign language education, offering a framework that aligns with modern pedagogical goals and the needs of diverse learners. These findings highlight the importance of continued research and development to refine the model and address its challenges.

Conclusion. The review highlights the transformative potential of the flipped classroom model in secondary school foreign language education. By shifting passive learning activities outside the classroom and prioritizing active, student-centered engagement during class, this approach addresses many of the limitations associated with traditional teaching methods. Key findings indicate that the flipped classroom significantly enhances student engagement, improves the development of core language skills such as speaking, listening, reading, and writing, and fosters autonomy in learning. Moreover, the integration of multimedia resources and interactive in-class activities provides students with a more immersive and context-rich environment for language acquisition.

Despite its many benefits, the flipped classroom model is not without challenges. Issues such as unequal access to digital tools, variations in student accountability, and the need for substantial teacher preparation highlight areas that require careful planning and support. These challenges underscore the importance of addressing equity in access to technology and providing professional development opportunities for teachers to effectively design and implement flipped classroom strategies.

Suggestions for future research:

1. Exploring Long-Term Impacts: Future studies could investigate the long-term effects of the flipped classroom model on language proficiency and overall academic performance in secondary education.

2. Addressing Equity and Accessibility: Research should focus on strategies to bridge the digital divide, ensuring equitable access to the technological resources required for flipped learning.

3. Cross-Cultural Comparisons: Comparative studies across different cultural and educational contexts could provide insights into how the flipped classroom model can be adapted to diverse student needs and institutional settings.

4. Integration of Emerging Technologies: Further research is needed to explore how emerging technologies, such as artificial intelligence and virtual reality, can enhance the flipped classroom experience in foreign language education.

5. Teacher Training and Professional Development: Investigating the best practices for equipping teachers with the skills and tools to implement flipped classrooms effectively is critical for scaling this model.

By addressing these areas, future research can further refine the flipped classroom model, making it more effective and accessible for diverse educational environments. This will contribute to its broader adoption as an innovative and impactful approach to foreign language learning in secondary schools.

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EXPLORING THE IMPACT OF THEORETICAL AND EMPIRICAL THINKING ON FOREIGN LANGUAGE LEARNING PROCESSES

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Abstract

The process of learning a foreign language is deeply influenced by cognitive mechanisms, particularly the roles of theoretical and empirical thinking. Theoretical thinking, with its emphasis on abstract reasoning and analytical skills, enhances learners' understanding of linguistic structures, such as grammar and syntax, enabling accuracy and metalinguistic awareness. Empirical thinking, by contrast, relies on experiential learning and practical application, fostering fluency, adaptability, and contextually appropriate communication. Both cognitive styles contribute uniquely to language acquisition, yet their interplay and combined impact remain underexplored in foreign language education.

This study aims to investigate the influence of theoretical and empirical thinking on the process of learning a foreign language, emphasizing the balance between these cognitive approaches. The research employs a systematic literature review and thematic analysis to synthesize findings from cognitive psychology, linguistics, and pedagogy. Key themes include the distinct contributions of each thinking style, strategies for integrating both approaches in language teaching, and challenges associated with balancing theoretical and empirical methods in diverse learning environments.

The findings indicate that theoretical thinking strengthens linguistic accuracy and comprehension of formal language rules, while empirical thinking enhances communicative competence and real-world language application. The study highlights the necessity of combining these approaches to address the diverse cognitive needs of learners, offering practical insights for educators. Effective teaching strategies, such as combining grammar-focused exercises with experiential activities like role-playing and immersion, create a holistic learning experience that leverages the strengths of both cognitive styles.

The significance of this study lies in its implications for foreign language pedagogy. By addressing the interplay between theoretical and empirical thinking, educators can develop inclusive teaching practices that cater to varied learning preferences, ultimately enhancing language acquisition outcomes. The study underscores the importance of teacher training programs that equip educators to integrate cognitive diversity into their lesson plans. Future research is recommended to explore the long-term impacts of these approaches, cultural influences on cognitive styles, and the potential of technology to support balanced language instruction.

In conclusion, this research contributes to the understanding of cognitive processes in foreign language education, advocating for a dual-focus approach that integrates theoretical and empirical thinking to achieve both linguistic accuracy and communicative competence.

Keywords: cognitive processes, learning strategies, linguistic accuracy, communicative competence, cognitive diversity, experiential learning

Introduction. The process of learning a foreign language involves complex cognitive mechanisms that are influenced by the types of thinking individuals employ. Theoretical thinking, characterized by abstract reasoning and analytical skills, enables learners to comprehend grammatical structures, linguistic rules, and conceptual frameworks. On the other hand, empirical thinking, rooted in practical and experiential approaches, allows learners to apply language skills in real-world scenarios and derive meaning through observation and interaction. Both types of thinking play a crucial role in shaping the effectiveness and depth of foreign language acquisition.

The relevance of this topic lies in understanding how these distinct cognitive processes interact and contribute to different aspects of language learning. While theoretical thinking is essential for

mastering linguistic principles and developing accuracy, empirical thinking fosters fluency, adaptability, and contextually appropriate communication. Despite their importance, the interplay between these types of thinking in the context of foreign language education remains underexplored, particularly in terms of how they influence learning outcomes and inform teaching methodologies.

The primary objective of this study is to examine the influence of theoretical and empirical types of thinking on students' foreign language learning processes. Specifically, the research aims to:

1. Explore the cognitive characteristics of theoretical and empirical thinking and their relevance to language acquisition.
2. Analyze the impact of these thinking types on key language skills, including grammar, vocabulary, speaking, and listening.
3. Identify teaching strategies that effectively address and balance theoretical and empirical cognitive approaches.
4. Provide practical recommendations for integrating insights from cognitive psychology into foreign language pedagogy.

By addressing these objectives, this study seeks to bridge the gap between cognitive theory and language education practice. The findings are expected to contribute to the development of teaching methodologies that cater to diverse cognitive styles, enhancing the overall effectiveness of foreign language instruction and supporting learners in achieving their linguistic goals.

Theoretical background. The process of learning, particularly in the context of foreign language acquisition, is deeply influenced by cognitive processes, including theoretical and empirical thinking. These modes of thought, while distinct, interact to shape learners' abilities to comprehend, apply, and adapt to new linguistic contexts. Theoretical thinking is characterized by abstract reasoning, logical analysis, and a focus on principles and rules. This cognitive approach emphasizes the ability to analyze patterns and structures, generalize knowledge across contexts, and comprehend and apply conceptual frameworks [1]. In foreign language education, theoretical thinking is associated with understanding grammar rules, syntactical structures, and linguistic theories. Research indicates that theoretical thinking supports the development of metalinguistic awareness, enabling learners to identify and articulate the underlying rules of a language [2]. Learners who exhibit strong theoretical thinking skills often excel in tasks requiring rule-based analysis, such as sentence parsing, grammatical corrections, and academic writing.

Empirical thinking, in contrast, is rooted in practical experiences and observational learning. This cognitive style prioritizes hands-on application of knowledge, adaptation to real-world scenarios, and learning through trial and error. In language learning, empirical thinking facilitates the acquisition of communicative competence. It supports skills like speaking, listening, and contextually appropriate language use. Studies suggest that learners who engage in empirical thinking benefit from immersion activities, role-playing, and interactive exercises that mimic real-life situations. This mode of thinking enhances fluency, adaptability, and the ability to infer meaning from context [3].

While distinct, theoretical and empirical thinking are complementary and often work in tandem. For instance, theoretical understanding of grammar can provide a foundation for empirically applying language in communication. Conversely, empirical experiences can reinforce theoretical knowledge by providing concrete examples of abstract principles. Research in cognitive psychology highlights the importance of balancing these approaches to optimize learning outcomes. Theoretical and empirical thinking influence different aspects of language learning. Theoretical thinking enhances accuracy, structure, and rule-based comprehension, making it ideal for mastering grammar, syntax, and academic language tasks. Empirical thinking promotes fluency, adaptability, and communicative competence, making it suitable for developing conversational skills, pragmatic language use, and contextual understanding [4].

Despite their importance, balancing theoretical and empirical approaches in teaching presents challenges. Many educators struggle to integrate these modes effectively, often prioritizing one over the other [5]. A nuanced understanding of their interplay and their influence on different aspects of learning is essential for designing effective language instruction that addresses the diverse cognitive needs of learners.

Table 1

Comparison of Theoretical and Empirical Thinking in Foreign Language Learning

Aspect	Theoretical Thinking	Empirical Thinking	Aspect
Definition	Abstract reasoning focused on principles, rules, and logical analysis.	Practical, experience-based learning focused on observation and application.	Definition
Focus	Understanding grammar rules, linguistic structures, and theoretical frameworks.	Developing communicative competence, contextual understanding, and adaptability.	Focus
Learning Methods	Analyzing patterns, studying rules, and engaging in academic exercises like grammar drills.	Role-playing, immersion, interactive activities, and trial-and-error learning.	Learning Methods
Key Skills Enhanced	Accuracy, structure, metalinguistic awareness, and rule-based comprehension.	Fluency, adaptability, pragmatic language use, and real-world application.	Key Skills Enhanced
Advantages	Provides a strong foundation for linguistic accuracy and understanding of formal structures.	Enhances conversational skills, situational adaptability, and confidence in communication.	Advantages
Challenges	Can feel abstract and disconnected from practical usage; may overwhelm learners with rules.	Risk of reinforcing errors without theoretical grounding; requires real-world exposure.	Challenges

Methodology. This study employs a systematic methodology comprising two main stages: literature selection and thematic analysis. The literature selection involved a structured process to identify high-quality, peer-reviewed studies relevant to the research topic. Major academic databases, including Google Scholar, ERIC, Scopus, and Web of Science, were used to gather research articles, book chapters, and conference proceedings. A combination of keywords such as "theoretical thinking in learning," "empirical thinking in education," "cognitive processes in language learning," and "foreign language pedagogy" were employed to refine search results. Inclusion criteria required studies to be published between 2010 and 2023, focus on cognitive styles, their role in education, and their application in language learning, provide empirical evidence or theoretical insights, and be accessible in English or with English translations. Exclusion criteria included papers unrelated to education or cognitive psychology, studies lacking methodological rigor or clear findings, and non-peer-reviewed or inaccessible full-text articles. Titles and abstracts of the identified studies were screened to ensure alignment with the research objectives. Duplicates were removed, and a full-text review was conducted for the remaining articles to finalize the selection. The process resulted in a diverse dataset of studies spanning multiple disciplines, including cognitive psychology, education, and applied linguistics.

The selected studies were analyzed using thematic analysis to identify recurring patterns, concepts, and themes related to the influence of theoretical and empirical thinking on foreign language learning. Each study was reviewed in detail, and key findings were summarized. Significant insights were coded into categories such as "theoretical thinking and rule-based learning," "empirical thinking and communicative competence," "cognitive strategies in education," and "balancing cognitive styles." The codes were then grouped into broader themes, including characteristics and implications of theoretical and empirical thinking, teaching strategies aligned with cognitive styles, and the interplay between cognitive processes in language acquisition. Themes were analyzed to extract practical implications for teaching methodologies and curriculum design.

To ensure reliability and validity, cross-referencing was conducted between studies to confirm consistency in findings. A systematic documentation process was maintained, enabling replicability of the analysis. By employing this structured methodology, the study provides a comprehensive understanding of how theoretical and empirical thinking influence foreign language learning. The

findings are intended to inform the development of effective teaching practices that address diverse cognitive needs.

Findings and Discussion. The literature review reveals that theoretical and empirical thinking significantly influence foreign language learning, each contributing uniquely to different aspects of the acquisition process. The findings emphasize the importance of balancing these cognitive styles in teaching methodologies to optimize learning outcomes.

Theoretical thinking is found to be pivotal in enhancing learners' understanding of grammar, syntax, and linguistic structures. Studies demonstrate that learners with strong theoretical thinking skills excel in tasks requiring rule-based analysis, such as sentence parsing and grammatical corrections. This cognitive style supports metalinguistic awareness, enabling learners to identify and articulate the underlying rules of a language. However, overemphasis on theoretical thinking can lead to abstraction, making it challenging for learners to apply their knowledge in practical scenarios.

Empirical thinking, on the other hand, plays a crucial role in developing communicative competence. Research highlights that learners who rely on empirical thinking excel in conversational skills, contextual understanding, and real-world language application. Activities such as role-playing, immersion, and interactive exercises align well with this cognitive approach, fostering adaptability and fluency. Nevertheless, empirical thinking alone may result in inaccuracies or fossilized errors if not supported by a foundational understanding of linguistic rules.

The interplay between theoretical and empirical thinking emerges as a critical factor in language acquisition. Studies underscore that these cognitive styles are complementary rather than mutually exclusive. For instance, theoretical knowledge of grammar provides a scaffold for empirically applying language in communicative settings, while experiential learning reinforces theoretical concepts by providing practical examples. Effective language instruction should, therefore, integrate both approaches to create a holistic learning experience.

The findings also reveal challenges in addressing diverse cognitive styles in classroom settings. Many language curricula are heavily skewed toward theoretical instruction, neglecting the experiential aspect of language learning. Conversely, programs that prioritize empirical methods may lack the rigor needed for linguistic accuracy. Educators often face difficulties in striking a balance, particularly when dealing with heterogeneous groups of learners with varied cognitive preferences.

The implications of these findings are significant for foreign language pedagogy. Teachers must adopt a dual-focus approach, incorporating both rule-based and experiential activities into their lesson plans. For instance, grammar drills and syntactic analysis can be paired with communicative tasks and real-life simulations. Additionally, assessment methods should evaluate not only linguistic accuracy but also practical communication skills, ensuring a comprehensive evaluation of learners' progress. Teacher training programs should emphasize strategies for integrating theoretical and empirical thinking, equipping educators with the tools to address diverse learning needs effectively.

In conclusion, theoretical and empirical thinking are integral to foreign language learning, each contributing distinct yet complementary strengths. By balancing these cognitive styles, educators can enhance learners' linguistic accuracy, communicative competence, and overall proficiency. These findings underscore the need for innovative teaching practices that embrace cognitive diversity, ultimately preparing learners to excel in both academic and real-world language use.

Conclusion. This study highlights the integral roles of theoretical and empirical thinking in the process of foreign language learning. The findings underscore that theoretical thinking enhances learners' ability to analyze linguistic structures, understand grammar, and develop metalinguistic awareness. Conversely, empirical thinking fosters practical language use, enabling learners to adapt to real-world communication scenarios and develop fluency. While each cognitive style contributes uniquely to language acquisition, their interplay creates a balanced and comprehensive approach, combining linguistic accuracy with communicative competence.

The results emphasize the necessity of integrating both theoretical and empirical approaches in foreign language teaching. Effective pedagogy should include activities that develop rule-based understanding, such as grammar analysis, alongside experiential tasks, such as role-playing and immersion. This dual approach not only caters to diverse cognitive preferences but also equips learners with the skills needed for academic and practical language use. However, the challenges of balancing these approaches, particularly in heterogeneous classrooms, highlight the need for innovative curriculum design and targeted teacher training.

Suggestions for future research:

1. *Longitudinal Studies: Investigate the long-term effects of integrating theoretical and empirical thinking on language retention, fluency, and adaptability in various learning contexts.*
2. *Individual Differences: Explore how learners' cognitive styles, personalities, and learning preferences influence their engagement with theoretical and empirical approaches.*
3. *Cultural Perspectives: Examine how cultural differences impact the preference for and effectiveness of theoretical versus empirical methods in foreign language learning.*
4. *Technology Integration: Assess the role of digital tools and technologies, such as AI-based language apps and virtual reality, in facilitating theoretical and experiential learning.*
5. *Teacher Training Models: Develop and evaluate training programs that prepare educators to implement a balanced approach, addressing both cognitive styles effectively.*
6. *Curriculum Development: Research optimal strategies for embedding both theoretical and empirical elements into standardized language curricula, ensuring equitable access to diverse learning experiences.*

By addressing these areas, future studies can provide deeper insights into the cognitive processes underlying foreign language learning and inform the development of innovative teaching practices. This comprehensive approach will support learners in achieving both linguistic accuracy and practical communication skills, ultimately preparing them for success in academic, professional, and intercultural contexts.

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COGNITIVE TECHNIQUES FOR ENHANCING LEXICAL COMPETENCIES IN FOREIGN LANGUAGE EDUCATION: A REVIEW OF METHODS AND CLASSROOM APPLICATIONS

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Abstract

The development of lexical competencies is essential for effective communication and language proficiency in foreign language education. Traditional methods of vocabulary instruction, such as rote memorization, often fall short in addressing the cognitive processes required for retention and practical application. Cognitive techniques, grounded in principles of memory and learning, offer innovative strategies for enhancing vocabulary acquisition and retention. These techniques, including spaced repetition, semantic mapping, mnemonics, dual coding, and contextual learning, align with how the brain processes information, enabling deeper engagement and long-term retention.

This study aims to explore the effectiveness of cognitive techniques in developing lexical competencies within the foreign language school curriculum. A systematic literature review was conducted to analyze key cognitive strategies and their application in educational contexts. The thematic analysis identified recurring patterns and themes, including the benefits of cognitive approaches in fostering retention, comprehension, and contextual use of vocabulary. Findings reveal that spaced repetition strengthens memory consolidation by revisiting vocabulary at optimal intervals, while semantic mapping enhances understanding through the visualization of relationships between words. Mnemonics simplify complex vocabulary, and dual coding leverages verbal and visual memory for improved recall. Contextual learning situates vocabulary within meaningful scenarios, enabling practical application.

Despite their effectiveness, challenges in implementing these techniques persist. Teachers may require additional training to integrate cognitive strategies effectively, and disparities in access to digital tools for methods like spaced repetition and dual coding may limit their widespread adoption. The study underscores the need for professional development programs, curriculum alignment, and equitable access to resources to maximize the potential of these strategies.

The significance of this study lies in its ability to inform educators and curriculum designers about the transformative potential of cognitive techniques. By integrating these approaches into school curricula, educators can create learner-centered environments that promote autonomy, engagement, and sustained language proficiency. The study concludes by emphasizing the need for further research on the scalability of these techniques, their integration with emerging technologies, and their applicability in diverse educational settings. These efforts will ensure the continued advancement of innovative and inclusive approaches to vocabulary instruction, empowering students to achieve greater language proficiency and academic success.

Keywords: lexical retention, cognitive strategies, memory-based learning, vocabulary pedagogy, contextualized learning, semantic mapping, spaced repetition

Introduction. In the context of foreign language education, the development of lexical competencies is a critical foundation for effective communication and academic success. Lexical competence, which encompasses the ability to understand, retain, and use vocabulary effectively, is essential for learners to engage in meaningful conversations and interpret complex texts. However, traditional methods of vocabulary instruction, such as rote memorization and isolated word lists, often fail to address the cognitive processes required for long-term retention and practical application of vocabulary. As a result, educators increasingly turn to cognitive techniques to enhance lexical development by aligning instructional strategies with how the brain processes and stores information.

The relevance of this topic lies in the need for effective pedagogical strategies that not only expand students' vocabulary but also foster deeper cognitive engagement, retention, and transferability of lexical knowledge. Cognitive techniques, such as spaced repetition, semantic mapping, and dual coding, leverage research on memory, attention, and mental organization to create more efficient and engaging

learning experiences. Incorporating these methods into the school curriculum addresses the limitations of traditional approaches, providing students with tools to internalize vocabulary in meaningful contexts. Additionally, the integration of cognitive techniques supports learner autonomy by equipping students with strategies they can apply independently, enhancing their overall language proficiency.

The primary objective of this study is to explore the effectiveness of cognitive techniques in developing lexical competencies within the foreign language school curriculum. Specifically, the research aims to:

1. Examine the theoretical foundations and principles underlying cognitive approaches to vocabulary acquisition.
2. Analyze the application of cognitive techniques, such as mnemonic devices, context-based learning, and visualization, in classroom settings.
3. Evaluate the impact of these methods on students' lexical retention, comprehension, and practical language use.
4. Identify challenges and best practices for integrating cognitive techniques into foreign language curricula.

By addressing these objectives, this research seeks to provide educators with evidence-based insights into how cognitive techniques can be effectively utilized to enhance lexical competencies in school settings. The study also aims to contribute to the broader discourse on innovative teaching methodologies, supporting the advancement of foreign language education in a rapidly evolving academic landscape.

Theoretical background. The development of lexical competencies in foreign language education has been a central focus of pedagogical research, particularly in light of advancements in cognitive science. Cognitive techniques offer innovative methods for enhancing vocabulary acquisition, retention, and application by aligning instruction with how the brain processes and organizes information. This section reviews key literature and concepts related to cognitive approaches to lexical competency development, highlighting their theoretical underpinnings and practical implications [1].

Cognitive theories, including information processing theory and dual-coding theory, form the foundation for understanding how learners acquire and retain vocabulary. Information processing theory posits that learning occurs through encoding, storage, and retrieval processes, emphasizing the importance of strategies that facilitate deeper encoding. Dual-coding theory, proposed by Paivio (1971), suggests that combining verbal and visual stimuli enhances memory retention by engaging multiple cognitive pathways. These theories underline the need for techniques that create meaningful and multimodal connections between new vocabulary and existing knowledge [2].

Research identifies several cognitive techniques that have proven effective in vocabulary instruction:

1. **Spaced Repetition:** Based on Ebbinghaus's forgetting curve, this technique involves revisiting vocabulary at increasing intervals to strengthen memory retention. Tools such as flashcards and digital spaced repetition systems have shown significant success in long-term vocabulary acquisition.
2. **Semantic Mapping:** This technique involves organizing vocabulary into networks of related concepts, promoting deeper understanding and recall by highlighting relationships between words.
3. **Mnemonics:** Memory aids such as acronyms, rhymes, and imagery enhance learners' ability to remember complex or abstract vocabulary by linking it to familiar concepts.
4. **Contextual Learning:** Embedding vocabulary in meaningful contexts, such as sentences, stories, or real-life scenarios, helps learners understand and apply words more effectively. This method aligns with constructivist principles, encouraging active engagement with the material.
5. **Dual Coding:** Combining words with visual representations, such as diagrams or pictures, improves retention by leveraging both linguistic and non-linguistic cognitive processes.

Traditional vocabulary instruction methods, such as rote memorization and isolated word lists, often fail to address the cognitive processes required for meaningful learning. These methods may lead to surface-level knowledge, where students struggle to recall or use vocabulary in context. Additionally, such approaches can disengage learners, particularly in dynamic foreign language environments that demand practical language use [3].

The application of cognitive techniques addresses these limitations by promoting active learning, deeper engagement, and long-term retention. For example, spaced repetition ensures that learners revisit vocabulary before it is forgotten, enhancing memory consolidation. Semantic mapping and contextual learning encourage learners to connect new words with existing knowledge, fostering

meaningful comprehension. Mnemonics and dual coding, by contrast, make abstract or complex vocabulary more accessible through creativity and visualization.

Integrating cognitive techniques into the school curriculum requires careful planning and alignment with instructional goals. Teachers must be trained to design activities that leverage these strategies effectively, such as creating semantic maps for vocabulary themes or using digital tools for spaced repetition. Moreover, the curriculum must balance explicit vocabulary instruction with opportunities for contextual application to ensure that students can use their lexical knowledge in meaningful ways [4].

While existing research highlights the effectiveness of cognitive techniques, further studies are needed to explore their long-term impact on vocabulary retention and transferability across diverse learning contexts. Additionally, there is a need for research on the integration of these techniques with emerging technologies, such as artificial intelligence and adaptive learning systems, to enhance their scalability and accessibility [5].

In summary, cognitive techniques provide a robust framework for developing lexical competencies by aligning vocabulary instruction with the principles of memory, attention, and meaningful learning. Their integration into foreign language curricula has the potential to transform traditional approaches, offering students a deeper, more engaging, and sustainable pathway to vocabulary mastery.

Table 1

Cognitive techniques for lexical competency development

Technique	Description	Benefits	Challenges
Spaced Repetition	Revisiting vocabulary at increasing intervals to strengthen memory retention.	Enhances long-term retention and reduces forgetting.	Requires consistent practice and effective tracking tools.
Semantic Mapping	Organizing vocabulary into networks of related concepts to highlight relationships.	Promotes deeper understanding and meaningful connections between words.	Time-consuming to create and may overwhelm learners with complex maps.
Mnemonics	Using memory aids like acronyms, rhymes, or imagery to link vocabulary with familiar concepts.	Makes abstract or complex vocabulary accessible and memorable.	Not all learners find mnemonics effective; limited for large vocabulary sets.
Contextual Learning	Embedding vocabulary in meaningful contexts like sentences, stories, or real-life scenarios.	Enhances comprehension and practical application of vocabulary in communication.	Requires creative planning and access to authentic materials.
Dual Coding	Combining words with visual aids like pictures or diagrams to engage multiple cognitive pathways.	Improves recall by leveraging verbal and visual memory.	May require additional resources or technical tools for implementation.

Methodology. This study employs a systematic approach to literature selection and thematic analysis to explore cognitive techniques for developing lexical competencies in foreign language education. The methodology ensures a comprehensive and objective examination of relevant studies, providing insights into effective practices and their applications in school curricula. The literature selection process began with identifying relevant academic databases, including Google Scholar, ERIC, Scopus, and PubMed, to ensure access to high-quality, peer-reviewed research. Keywords such as "cognitive techniques in vocabulary learning," "lexical competency development," "foreign language education," and "memory-based learning strategies" were used in combination with Boolean operators to refine the search results. Inclusion criteria were applied to select studies that focused on cognitive techniques for vocabulary acquisition, explored their application in foreign language education, and presented empirical evidence, theoretical discussions, or practical implementations.

Exclusion criteria were used to omit articles that focused on general language learning without specific emphasis on cognitive strategies, lacked methodological rigor or detailed findings, or were not available in English or other accessible academic languages. Following the initial search, the titles and

abstracts of identified studies were screened for relevance, and duplicates were removed. The remaining articles were subjected to a full-text review to confirm their inclusion. The final dataset comprised studies spanning various cognitive techniques and their implications for lexical development in foreign language curricula.

The thematic analysis involved systematically coding the selected studies to identify recurring patterns and key themes. Codes such as "spaced repetition," "semantic mapping," "mnemonic devices," "contextual learning," and "dual coding" were assigned to categorize the data. These codes were further grouped into broader themes, including "effective strategies for vocabulary retention," "integration of cognitive techniques in curricula," and "challenges and best practices." The analysis revealed significant insights into the theoretical foundations, practical applications, and limitations of cognitive techniques in vocabulary instruction. By synthesizing these findings, the study offers a detailed framework for understanding how cognitive strategies can be effectively integrated into foreign language education to enhance lexical competencies. This methodological approach ensures a balanced and comprehensive perspective, contributing to both theoretical discourse and practical implementation.

Findings and Discussion. The findings from the literature review provide a comprehensive understanding of how cognitive techniques enhance lexical competency in foreign language education. These techniques, grounded in cognitive theories of learning and memory, offer innovative approaches to vocabulary acquisition, retention, and practical application. Key findings and their significance are discussed below.

The review highlights that cognitive techniques, such as spaced repetition, semantic mapping, mnemonics, contextual learning, and dual coding, significantly improve vocabulary retention and comprehension. Spaced repetition leverages memory consolidation by revisiting vocabulary at strategically increasing intervals, minimizing the forgetting curve. Semantic mapping helps learners establish meaningful connections between words, facilitating deeper understanding and recall. Mnemonic devices, including imagery and rhymes, enhance learners' ability to remember abstract or complex vocabulary. Dual coding, which combines verbal and visual elements, engages multiple cognitive pathways, improving retention and recall. Contextual learning, which embeds vocabulary in real-life scenarios, allows learners to understand word usage, fostering practical application.

Cognitive techniques are most effective when integrated into the curriculum through structured and engaging activities. For instance, digital tools like flashcard apps utilizing spaced repetition and online platforms enabling collaborative semantic mapping provide scalable and accessible solutions. Embedding vocabulary tasks into content-based instruction or thematic units ensures that learners encounter new words in authentic contexts, reinforcing their comprehension and usage.

Despite their potential, the application of cognitive techniques presents challenges. Teachers may lack training in designing and implementing activities that incorporate these strategies effectively. For example, creating meaningful semantic maps or designing contextualized tasks requires significant preparation and expertise. Additionally, the reliance on digital tools for spaced repetition or dual coding raises concerns about access and equity, particularly in resource-constrained environments. Overcoming these challenges is essential to maximize the benefits of cognitive approaches.

The findings underscore the transformative potential of cognitive techniques in developing lexical competencies. By aligning vocabulary instruction with cognitive processes, these techniques not only enhance retention but also promote learner autonomy and engagement. The use of structured and evidence-based strategies addresses the limitations of traditional rote learning, providing learners with tools to internalize vocabulary meaningfully and sustainably.

The implications of these findings extend to teaching practices, curriculum design, and educational policy:

1. **Teacher Training:** Professional development programs should equip educators with the skills and resources to implement cognitive techniques effectively. Training should focus on designing semantic maps, leveraging digital tools, and creating contextualized learning activities.
2. **Curriculum Design:** Integrating cognitive techniques into curriculum frameworks ensures that vocabulary instruction is systematic, engaging, and aligned with learners' cognitive needs.
3. **Technology Integration:** Institutions should invest in accessible digital tools and resources that support spaced repetition, dual coding, and interactive learning.
4. **Equity in Access:** Addressing disparities in digital infrastructure and resources is critical to ensuring that all learners benefit from these innovative approaches.

In conclusion, cognitive techniques offer a robust framework for enhancing lexical competency in foreign language education. Their integration into teaching practices and curricula can significantly

improve vocabulary acquisition, retention, and application, addressing the evolving needs of 21st-century learners. However, successful implementation requires addressing challenges related to teacher training, resource availability, and equitable access, paving the way for inclusive and effective language instruction.

Conclusion. This review underscores the effectiveness of cognitive techniques in enhancing lexical competency within foreign language education. Key insights reveal that strategies such as spaced repetition, semantic mapping, mnemonics, dual coding, and contextual learning significantly improve vocabulary retention, comprehension, and practical application. These methods, grounded in cognitive theories of learning and memory, align with how the brain processes and stores information, making them more effective than traditional rote learning approaches. By promoting meaningful engagement and deeper cognitive processing, cognitive techniques provide learners with the tools to internalize vocabulary sustainably and independently.

The findings emphasize the importance of integrating these techniques into school curricula through structured and engaging activities. This integration fosters a learner-centered environment where students can actively construct their knowledge while developing essential language skills. However, challenges such as limited teacher training, resource constraints, and disparities in digital access must be addressed to ensure successful implementation.

Suggestions for future research:

1. *Longitudinal Impact Studies:* Investigate the long-term effects of cognitive techniques on vocabulary retention and their transferability to real-world communication contexts.

2. *Technology Integration:* Explore the potential of emerging technologies, such as artificial intelligence and virtual reality, to enhance cognitive strategies for vocabulary learning.

3. *Teacher Training Models:* Develop and evaluate professional development programs aimed at equipping educators with practical skills for implementing cognitive techniques in diverse classroom settings.

4. *Cultural Adaptability:* Examine the effectiveness of cognitive techniques across different cultural and linguistic contexts to identify universally applicable strategies and region-specific adaptations.

5. *Equity and Access:* Conduct research on addressing disparities in access to digital tools and resources to ensure that all learners benefit from innovative vocabulary instruction methods.

6. *Interdisciplinary Approaches:* Explore the integration of cognitive techniques with other pedagogical frameworks, such as task-based learning or inquiry-based learning, to maximize their impact on lexical development.

By addressing these research areas, future studies can contribute to refining cognitive techniques for vocabulary instruction and expanding their applicability across diverse educational settings. These efforts will further support the development of effective, inclusive, and innovative teaching practices that empower learners to achieve greater language proficiency and academic success.

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Pharmaceutical sciences

ADVANCING PHARMACOVIGILANCE: A MODERN APPROACH

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Pharmacovigilance refers to the science and activities aimed at identifying, assessing, understanding, and preventing adverse effects and other safety concerns related to drug use. Its primary objectives include minimizing harm from adverse reactions associated with the use of health products, whether they occur within or beyond the conditions of marketing authorization and throughout the products' lifecycle.

The core purpose of pharmacovigilance is to ensure the safe and effective use of health products by disseminating timely safety information to patients, healthcare providers, and the public. As such, pharmacovigilance plays a vital role in safeguarding patients and maintaining public health.

In addition to monitoring adverse reactions, pharmacovigilance also addresses other concerns, including medication errors, reports of lack of efficacy, off-label use, acute and chronic poisoning, drug-related mortality, abuse and misuse of health products, and adverse interactions between medicines and other substances (1).

Pharmacovigilance activities can adopt various approaches: clinical, epidemiological, experimental (e.g., replicating adverse effects in animal studies to better understand mechanisms for human safety), or diagnostic (e.g., using methods to attribute causation).

Ultimately, the goal of pharmacovigilance is to thoroughly evaluate and continually optimize the benefit-risk balance of a health product across its entire lifecycle.

How has the shift toward easy access to electronic healthcare data affected the post-marketing surveillance of medical products, particularly pharmaceuticals? The opportunity to access extensive networks of distributed databases holds the promise of developing new and potentially more effective ways of ensuring the post-marketing safety of medicines and vaccines. These electronic healthcare data networks, themselves developing in response to the electronic health record revolution, now afford monitoring opportunities impossible just a few years ago. And they promise a productivity in generating "real world" safety evidence that might parallel the productivity of pre-marketing clinical trials. The FDA has gone furthest in exploiting these opportunities. Since 2008, it has established the Sentinel Initiative as its principal post-marketing medical product safety surveillance mechanism. Sentinel now serves as one of the most extensive—and probably the most effective—electronic health data safety monitoring systems worldwide.

Advanced therapy medicinal products (ATMPs) are medicines designed for human use that leverage gene therapy, cell therapy, or tissue engineering techniques (2). These therapies present innovative opportunities to restore, correct, or modify physiological functions or to facilitate medical diagnoses. Given their high level of innovation, ATMPs are often granted accelerated assessment and approval pathways, underscoring the need to gather post-marketing evidence to evaluate their benefit-risk profile. However, uncertainties regarding ATMP safety profiles are not solely attributable to expedited regulatory processes. Because these therapies frequently target rare diseases, pre-approval evidence is often limited by challenges inherent to clinical trials, such as small patient populations, reliance on surrogate endpoints, and single-arm study designs (3).

As a result, post-marketing research is crucial for generating long-term safety data and addressing knowledge gaps left by pre-approval studies. Identifying safety concerns should begin early and continue throughout an ATMP's lifecycle to mitigate risks effectively. For ATMPs intended as one-time treatments, long-term follow-up is essential to assess sustained efficacy over time, with study objectives tailored to each product's unique characteristics (5). For example, chimeric antigen receptor T-cell (CAR-T) therapies

require additional risk minimization strategies to address significant risks, including cytokine release syndrome, infections, and severe neurological adverse events (4).

Ecopharmacovigilance is defined as “the science and activities related to detecting, assessing, understanding, and preventing adverse effects or problems caused by pharmaceuticals in the environment that affect both humans and other species” (6). This field has gained significant importance, playing a pivotal role in reducing the environmental risks posed by pharmaceutical pollutants. Pharmaceuticals can contaminate the environment through several pathways, such as excretion by patients (as unmetabolized drugs or active metabolites) via sewer systems, discharge from manufacturing facilities or hospitals into wastewater, and deposition onto land (7). Research has documented the environmental impact of pharmaceutical pollutants on various animal species, including fish and vultures (8).

The increasing relevance of ecopharmacovigilance lies in its ability to detect, evaluate, and prevent adverse effects from pharmaceuticals in the environment, thereby helping to minimize their sources of pollution. Even though the concentrations of pharmaceuticals detected in the environment are generally low (ranging from nanograms to micrograms per liter), they pose potential direct and indirect risks to humans and require careful monitoring. For instance, sex hormones can exert biological effects at very low concentrations, and exposure to antibiotics in the environment may exacerbate bacterial resistance (9). Additionally, vulnerable groups such as pregnant women, children, and the elderly may be more susceptible to the effects of even trace levels of pharmaceuticals.

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Philological sciences

METHODS FOR THE FORMATION OF FOREIGN-LANGUAGE GRAMMATICAL COMPETENCE, TAKING INTO ACCOUNT THE NATIONAL AND CULTURAL CHARACTERISTICS OF THE STUDIED LANGUAGE IN THE FIELD OF PROFESSIONAL

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Introduction

In an increasingly globalized world, mastering a foreign language is not only a matter of learning vocabulary and grammar but also understanding the underlying cultural and national nuances that shape communication. This is particularly true in professional settings, where effective communication extends beyond linguistic competence to include awareness of cultural context and pragmatic usage. Grammatical competence, which refers to the ability to correctly apply the rules of a language, is a critical component of overall language proficiency. However, when learning a foreign language, it is important to recognize that grammar cannot be fully understood without considering the cultural and national characteristics inherent in language use. This article explores various methods for fostering foreign-language grammatical competence, while emphasizing the role of cultural and national contexts in professional communication.

1. The Role of Grammatical Competence in Professional Communication

Grammatical competence forms the foundation for clear and accurate communication in any language. In professional environments, it ensures that individuals can express ideas, follow formal procedures, and interact with colleagues or clients in a manner that is both effective and respectful. In foreign-language communication, mastering grammar enables learners to avoid misunderstandings that may arise from incorrect sentence structures or word choices. However, grammar in isolation is not enough; professionals must also consider the cultural nuances embedded within the language they are learning.

2. Methods for Developing Grammatical Competence

There are several effective methods for teaching and learning foreign-language grammar, each contributing to the mastery of grammatical structures in context.

Explicit Instruction: One of the most traditional approaches is to teach grammar rules explicitly. This method involves explaining the rules of sentence construction, verb conjugation, and syntax, followed by practice exercises. For professional settings, this approach should focus on structures commonly used in business or industry-specific contexts, such as formal requests, negotiations, and technical descriptions.

Contextualized Grammar Teaching: A more modern approach emphasizes teaching grammar within authentic, real-world contexts. Instead of focusing solely on abstract rules, this method integrates grammar with situations that learners may encounter in professional environments. For example, learners might study how to use polite forms of address in emails or how different tenses are used in formal reports. This approach helps learners grasp not only the "how" but also the "why" of grammatical structures in communication.

Task-Based Language Teaching (TBLT): This method involves using tasks or activities that simulate real-world professional situations. Through role-plays, simulations, and problem-solving exercises, learners practice applying grammatical rules in dynamic, culturally-informed contexts. For instance, learners could engage in a mock business meeting in which they must use specific grammatical structures to express opinions or negotiate terms. TBLT promotes a deeper understanding of how grammar operates within professional discourse.

3. Incorporating National and Cultural Characteristics

Language is deeply intertwined with the culture of its speakers. In professional communication, understanding cultural norms and values is essential for effective interaction. Grammar often reflects these cultural norms, especially in terms of politeness, formality, and indirectness.

Politeness Strategies: Many languages, such as Japanese or Korean, use different grammatical forms to convey respect or deference, especially in business contexts. For instance, learners of these languages must understand the distinction between formal and informal registers, and how to adjust

their grammar accordingly depending on their relationship with the audience. Incorporating cultural sensitivity into grammatical training is crucial for avoiding unintentional disrespect.

Cultural Context in Business Communication: In some languages, the structure of a sentence can change depending on the cultural context, such as the hierarchical nature of certain workplaces. In English, for example, the use of the passive voice in business writing can reflect a level of formality and objectivity. Understanding such nuances allows learners to adapt their grammatical choices to fit specific professional contexts, ensuring more effective communication.

Pragmatic Competence: Beyond grammar, learners need to develop pragmatic competence—the ability to use language appropriately in various social situations. This involves understanding the subtle ways in which cultural context influences communication, such as the use of direct vs. indirect speech, levels of formality, and culturally specific idioms or expressions.

4. Integrating Cultural and Grammatical Learning

To fully develop grammatical competence, language instruction must integrate both linguistic and cultural elements. This can be achieved through:

Cultural Immersion: Exposure to native speakers and immersion in the target culture is one of the most effective ways to learn both grammar and cultural norms. This could involve studying abroad, participating in language exchange programs, or engaging in virtual meetings with professionals from the target culture. Immersion allows learners to see how grammar is used naturally in everyday professional interactions.

Cross-Cultural Training: Language courses that include cross-cultural training can provide learners with insights into how language is used differently in various professional contexts. For example, understanding the expectations of communication in a Western business environment versus an Asian context may influence how one learns to use the language's grammatical structures.

Collaborative Learning: Group learning environments, such as language workshops or professional seminars, can encourage learners to discuss cultural and grammatical issues together. Working with peers who come from different cultural backgrounds can help learners develop a more nuanced understanding of how grammar interacts with cultural norms in professional communication.

Conclusion

The formation of foreign-language grammatical competence, especially in the context of professional communication, requires more than a mastery of linguistic rules. It demands an understanding of how grammar is shaped by cultural and national characteristics that influence communication in the workplace. Methods such as explicit instruction, task-based learning, and cultural immersion all play key roles in fostering this type of competence. By recognizing the symbiotic relationship between grammar and culture, learners can not only enhance their language skills but also become more effective communicators in the global professional arena. In an interconnected world, the ability to communicate with cultural sensitivity and grammatical precision is an invaluable asset for professionals in any field.

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USING VIDEO MATERIALS IN TEACHING FOREIGN LANGUAGE

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Abstract

In recent years ,integration of video materials into the curriculum has gained a great significance.Besides its ability to offer learners with content,context ,and language ,video could also be a creative alternative teaching tool in a variety of ways .The article discusses advantages and ways of using video materials in teaching English to students . The purpose of this article is to study the effectiveness of foreign language teaching with video.

Keywords: *teaching,foreign language,video materials,activity.*

Introduction

Learning a language is a challenging process,in this process language instructors can not be far away from technology.It is a fact that society and technology are inextricably linked.Teachers therefore require technology that is relevant for teaching – learning process.Learning English using videos contributes to better memorization of new vocabulary.And working with tasks in English before and after watching videos, is aimed at improving communicative competence.Having mastered communicative competence , one can speak a foreign language fluently.Video in this role is widely used for educational purposes.Pedagogical experience shows that independent work with the use of video materials expands the language of students , helps to better understand the history and culture of the studied language , customs and traditions of the people.Using the video materials develop students linguistic sociocultural competence.

It is obvious that non-native speakers of a language rely more heavily on visual clues to support their understanding and there is no doubt that video is obvious medium for helping learners interpret the visual clues effectively.According to a research, language instructors appreciate video because it inspires learners , brings the real world into the classroom.

Reasons for video integration in foreign language classroom.

It is indisputable that watching videos is one of the most effective methods for learning a foreign language. Firstly, video content provides direct exposure to the authentic speech of native speakers, offering information in its original form, free from the influence of translation. Secondly, engaging with videos in a foreign language enhances language proficiency and expands vocabulary. Finally, video materials also introduce learners to non-verbal aspects of communication, such as facial expressions, gestures, interpersonal dynamics, and cultural realities of the country where the language is spoken.

Video serves as an effective tool for language learning by providing learners with authentic language input. According to Katchen (2002), movies and TV programs, created for native speakers, offer learners exposure to natural language use. In the classroom, video offers practical benefits as teachers can easily incorporate it into lessons, pausing, rewinding, or replaying specific segments as needed. Short clips can be selected for in-depth analysis, and features like slow motion or muted playback allow for focused attention on particular aspects of the content. This flexibility enables learners to closely examine language use, interpret dialogue, and anticipate responses. They can also rely on visual elements, such as facial expressions, gestures, and environmental details, to aid comprehension, even without sound.

In addition to improving linguistic understanding, videos provide opportunities to interpret non-verbal cues, such as attitudes and emotions, which are often difficult to grasp in a foreign language due to a focus on verbal communication. Furthermore, the use of videos allows students to explore cultural aspects of the target language, such as behavioral norms and body language. This method adds variety to traditional learning resources like textbooks and audio recordings, making lessons more engaging and enjoyable.

However, the use of video in language education has some drawbacks. High costs, technical maintenance, and the fear of using new technologies can pose challenges. The quality of sound and visuals, particularly with low-budget or homemade materials, may also hinder learning. Additionally, teachers need adequate training to effectively integrate video into their lessons. Without proper guidance, video use can become monotonous and lack clear educational value, leading to disengagement among students.

Online resources. *The website fenglish.com is a widely recognized platform for learning English, particularly popular among students worldwide. It caters to learners from the Pre-Intermediate level and above, offering an engaging collection of videos and films also cartoons with subtitles. These resources are designed to enhance pronunciation, expand vocabulary and grammar knowledge, and assist in preparing for international exams. Additionally, most videos are accompanied by tests that allow learners to assess their understanding of the material.*

Another valuable resource is TEDtalks .com, which provides fascinating lectures on various topics. It is suitable for students with at least an Intermediate level of English proficiency. While the platform does not categorize content by difficulty, it offers the flexibility to select videos of different lengths. TED videos provide exposure to authentic spoken English as delivered by a diverse range of speakers, including scientists, politicians, business leaders, and actors, who often discuss contemporary topics such as technology, innovation, business, and culture. The inclusion of transcripts for each video further aids comprehension, as the text aligns with the spoken words, which can benefit learners struggling with listening skills.

Using videos both during English classes and for independent study helps achieve several educational objectives. These include:

- 1)Enhancing listening comprehension skills;*
- 2)Developing monologue and dialogue skills based on language input from the videos;*
- 3)Expanding modern English vocabulary;*
- 4)Gaining insights into the culture and traditions of English-speaking countries.*

Incorporating video materials into foreign language lessons, particularly at the university level, can make learning English both effective and engaging. This approach not only enriches the educational experience but also boosts students' motivation. To achieve effective outcomes when teaching a language through video, both learners and teachers must fulfill their roles effectively. Additionally, staying updated on new methods and techniques in foreign language teaching (FLT) is essential. Organizing seminars can help achieve this goal by providing training and guidance. A team of educators and experts should create video materials that schools can access easily. These resources should be modern, engaging, and aligned with the curriculum.

In summary, the integration of technology in the classroom has become indispensable. When used thoughtfully, video can serve as a highly beneficial tool for both teachers and learners. Rather than being treated as mere entertainment, carefully selected video materials can effectively enhance listening skills and foster speaking and writing abilities, making them an excellent motivational resource (Katchen, 2002)

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THE INFLUENCE OF INTERCULTURAL ISSUES ON STUDENT MOTIVATION IN LANGUAGE LEARNING

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Abstract

Learning a foreign language requires more and more cross-cultural interactions as the twenty-first century becomes more globalized and internationalized. Opportunities for intercultural learning are presented to schoolchildren when they study languages and engage with cultural variety, particularly when speaking with native speakers or investigating cultural situations related to the target language. In addition to improving language acquisition, these cross-cultural encounters may also have a significant impact on students' motivation to acquire other languages. This study aimed to explore whether incorporating an intercultural approach in foreign language education could enhance students' motivation to learn.

Keywords: *intercultural learning, language learning motivation, cultural competence, foreign language education, intercultural communication.*

Introduction

Learning a foreign language in today's globalized world entails more than just becoming proficient in grammar and vocabulary, it also entails comprehending the cultural settings in which the language is used. In addition to making communication easier, this interaction of language and culture promotes a feeling of global citizenship. Living in Kazakhstan, a nation with rich multicultural past, we understand how it is to link language acquisition with cultural sensitivity, particularly for students in our varied educational system. By incorporating cultural awareness into the learning process, the intercultural approach to foreign language learning presents a viable way to raise students' motivation. This strategy differs from conventional approaches which frequently ignore the cultural richness of the language in favor of grammatical accuracy alone. Students can interact with the language more fully and make their learning experiences more relevant and meaningful by combining cultural and linguistic education.

Inter-cultural Approach

Beyond simply learning a language, intercultural learning entails developing an awareness and understanding of cultural differences and commonalities. People may successfully negotiate a variety of cultural circumstances thanks to this awareness, which promotes meaningful engagement and communication. When it comes to teaching foreign languages, intercultural learning is essential for inspiring pupils since it links language learning to practical cultural uses.

According to Bayyurt, the intercultural approach not only enhances communicative competence but also emphasizes understanding the cultural aspects of the target language [1, p.236].

In essence, intercultural learning pushes students to interact with the viewpoints, customs, and behaviors of others while stepping beyond of their cultural comfort zones. This process entails developing abilities like empathy, flexibility, and open-mindedness skills that are crucial in today's society. Students gain stronger bond with the language they are learning and become more motivated to study it when they are able to appreciate peculiarities of culture.

Intercultural competence according to academics like Michael Byram is not only understanding different cultures but also having open-minded and curious attitudes as well as the ability to interpret and link cultural customs [2, p. 34].

Kazakhstan as an international intercultural learning model

As someone deeply connected to this country, we find it inspiring to write about how our country's multicultural landscape serves as a powerful example of how cultural diversity can enrich education. With its diverse history and more than 130 ethnic groups, Kazakhstan is a great example of how to incorporate intercultural learning into the classroom. This is reflected in our trilingual education system, which uses English as a worldwide language, Russian as the language of interethnic communication, and Kazakh as a state language. It guarantees that students have an understanding of cultural diversity in addition to language learning.

Learning Motivation

In order to propel students toward academic success, motivation is essential. A.M.Moore asserts that highly motivated students focus their energies on accomplishing their objectives, frequently going above and beyond simple classroom engagement. In addition to attending class regularly, these students actively participate in their education by turning in assignments on time and without outside pressure [3, p. 556].

M.Baeten offers additional insights on the traits of learning motivation. The length and frequency of learning activities, perseverance in reaching objectives, endurance in overcoming setbacks, sacrifices made for learning, and the degree of ambitions pupils set for themselves are some of the signs he listed for greater motivation [4, p. 489].

1. Students that are motivated typically study more frequently and show a steady interest in their academics work.

2. Another significant measure is the amount of time spent learning. High-motivation students put in a lot of time studying because they are genuinely interested in the subject and are not under any pressure to do so.

3. Students' tenacity is demonstrated by the accuracy and curriculum-alignment of their learning activities.

4. Motivated students concentrate on the things that are most important to their academic development.

5. Students show their dedication to studying by making sacrifices like setting aside free time for study sessions or purchasing educational materials.

6. Students that are highly driven are able to overcome obstacles and demonstrate perseverance when faced with academic difficulties.

7. Students' self-set objectives and aspirations reveal how motivated they are, higher aspirations are frequently associated with more work and success.

Current issues with Intercultural Influence on motivation for language learning

Although including multicultural components into language instruction has the potential to significantly increase students' motivation, there are several difficulties involved as well. These difficulties arise from the challenges of combining language learning with cultural awareness, as well as obstacles in both individual learning contexts and educational systems. Fully utilizing the motivating advantages of intercultural learning requires an understanding and commitment to overcoming these issues.

1. Students are not sufficiently exposed to the target culture in many educational contexts. Students could find it difficult to make meaningful connections between the language and its cultural context if they do not have access to authentic cultural materials or have direct encounters with native speakers. Their interact and perception of the language' usefulness in everyday situations are both lowered by this lack of cultural immersion.

2. Stereotypes and preconceptions may hinder intercultural learning. Students may become resistant to learning the language of a certain culture if they have prejudices about it. Furthermore, cultural misconceptions might cause annoyance or a feeling of isolation, which lowers pupils' enthusiasm to use the language.

3. Grammatical accuracy is frequently given priority above cultural competency in language training. Although grammatical accuracy is crucial, an overemphasis on it frequently offers little opportunity to examine variations in culture. The difference makes learning less interesting and relevant by denying students the chance to perceive the language as vibrant, alive component of its culture.

4. Language instruction frequently treats intercultural components as optional rather than essential. A disjointed understanding of the relationship between language and culture results from this curricular design variation. Students might not understand how cultural insights improve their communication skills and overall learning experience if there is no clear framework in place.

5. Teachers are essential in promoting cross-cultural learning, but many are not sufficiently trained to integrate cultural elements into language instruction. Teachers mat unintentionally reinforce a limited focus on grammar and vocabulary if they lack the knowledge and tools to address multicultural concerns. This could result in missed opportunities to encourage students' cultural interest and motivation.

Recommendations for resolving issues with intercultural influence on motivation for language learning

We offer the following suggestions in order to improve students' motivation and successfully incorporate intercultural components into language education. These practical strategies offer educators, educational institutions a road map for overcoming current obstacles and creating an exciting place to learn.

1. Teachers may incorporate authentic cultural materials such as literature, films, music, and news articles into language lessons to create a sense of cultural immersion.

2. Educators should design lessons that explicitly address cultural stereotypes and encourage critical thinking about cultural diversity.

3. Language curricula should prioritize both linguistic skills and cultural awareness, ensuring a holistic approach to learning.

4. Teachers should receive training on incorporating intercultural learning into their lessons effectively.

5. Schools with limited resources can leverage free digital tools and open educational resources to integrate cultural content into lessons.

By following these suggestions, educators may provide a language-learning environment that not only gives students language proficiency but also gets them ready to succeed in a globalized, multicultural society. These techniques guarantee that learning a language is a fulfilling, interesting, and globally relevant experience for students.

Conclusion

We consider intercultural learning has a huge potential to make language learning a more fulfilling and motivating experience for students. We can assist students in developing stronger bonds with the languages they are studying by incorporating cultural context in addition to grammar and vocabulary. In addition to making learning more pleasurable, this promotes empathy, adaptability, and a feeling of global citizenship skills that are becoming more and more crucial in the connected world of today.

The integration of intercultural components in language acquisition is complicated by a number of issues, including a heavy focus on linguistic accuracy, a lack of cultural exposure, and inadequate teacher preparation. We suggest feasible solutions to these, such as incorporating cultural content into classes, promoting open-ended discussions about cultural diversity, and giving educators the resources and training they need to confidently lead students in this direction. These steps will improve the learning environment and help bridge the linguistic and cultural gaps in the classroom.

Ultimately, we come to the conclusion that intercultural learning is essential to assisting students in discovering purpose and motivate in their studies and is not only a supplement to language learning. We may encourage students to view language as more than just a topic to learn, rather, it can serve as a bridge to understanding and enjoying the variety of cultures around them, by incorporating cultural awareness with language learning. By carefully putting these concepts into practice, we may develop an educational system that not only teaches languages but also gets students ready for the opportunities and challenges of the global community.

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THE INFLUENCE OF FEMINISM ON RUSSIAN LITERATURE OF THE 21ST CENTURY: THE EVOLUTION OF IDEAS AND NEW APPROACHES

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Abstract

This article is devoted to the study of the influence of feminism on Russian literature, starting with classical works of the 19th century and ending with modern texts of the 21st century. The historical stages of the development of feminist thought, its "waves", theoretical approaches and main directions are considered. The changes in female images, their evolution and roles in literature, as well as the contribution of key female characters to the formation of feminist concepts are analyzed. Special attention is paid to the influence of feminism on the genres, styles and literary strategies of modern authors.

Keywords: *feminism, Russian literature, women's emancipation, gender studies, female images, literary strategies.*

Introduction

Feminism, as a social and philosophical movement, has a profound impact on various spheres of human activity, including literature. In Russian literature, feminist ideas, since the 19th century, have played a key role in understanding women's identity, their social role and rights. The purpose of the article is to trace the evolution of feminist concepts in Russian literature, starting with the first "waves" of feminism their manifestations in the works of classics and concluding with an analysis of modern texts.

Historical context: the development of feminism. The waves of feminism and their impact

The first wave (mid- XIX- early XX century)

The focus was on property rights for married women and suffrage. In Russia, this period coincided with the beginning of social women's movements and the development of women's education. Women's courses and initiatives, such as higher education courses in St Petersburg and Moscow, have become an important foundation for social emancipation. Researcher A.V. Amfiteatrov noted that the formation of a female personality began in Russia at the beginning of the XIX century.

The second wave 1960s

The struggle for de facto equality of men and women in the social, economic and the political spheres.

The third and the fourth waves (1980s-present)

New emphasis on intersectionality, equality on national, ethnic and sexual grounds, as well as rethinking gender roles.

Educational feminism

Educational feminism in the 19th century Russia was aimed at improving the status of women through education, upbringing and educational activities. This trend differed from radical or political feminism in its moderation and impasses on cultural change. Russian women of that time saw education not only as a means for personal growth, but also as a tool for broader social transformations.

Christina Alchevskaya became one of the most prominent representatives of this movement. She founded a Sunday school for women in 1862, which become a model for similar educational institutions in Russian empire.

Alchevskaya developed a unique method of teaching adult women who did not have the opportunity to receive basic education. In her three volume work "What should the people read" (1884, 1889, 1906), she offered a list of books that were accessible to the understanding of the poorly educated population. This initiative helped to introduce women to literature and culture [1, p.48].

Feminism in Russian classical literature

Classical Russian literature laid the foundation for understanding women's identity

Vera Pavlovna (Chernyshevsky, "What should I do") the heroine talks about gender equality and the need to perceive women as equal partners.

Anna Karenina (Tolstoy, "Anna Karenina") embodies the tragedy of a woman striving for freedom in a patriarchal society.

Turgenev's heroines, such as Lisa Kalitina, demonstrate the internal struggle between personal freedom and public expectations.

Women writers of the 19th century played an important role in shaping new views on women's identity and the social justice. Their works became voices that raised issues related to women's rights, social injustice and the need for change in the patriarchal society.

Nadezhda Khvoshchinskaya, known under the pseudonym V.Krestovsky, became one of the first female novelists in Russian literature. Her works explored the inner world of women and their struggle for self-determination. Khvoshchinskaya focused on the restrictions imposed on women by society and their attempts to overcome these limits. Her novels often depicted strong female characters striving for independence.

The novel "The Big World" tells about a young woman who struggles with social prejudice, trying to find her place in society.

Avdotya Panaeva, a writer and memoirist, was an active participant in the literary community of her time. Her works not only touched on women's issues, but also became a platform for discussing broader social topics. Panaeva addressed the topic of injustice in relations between men and women, emphasizing inequality and the need for change.

Her novel "the female share" explores the difficulties faced by women in marriage and family life, as well as criticizes traditional social foundation. Both authors considered patriarchal structures as a source of oppression of women. Khvoshchinskaya and Panaeva emphasized the importance of women's education as a path to equality. In their works women were portrayed for the first time as independent individuals with internal conflicts and dreams.

Female images in Russian literature have always played an important role in reflecting social changes and understanding issues of female identity. Many of them have become symbols of the struggle for freedom and equality, expressing feminist ideas even if they have not yet been realized as such. They represent different eras and social contexts, but their images remain relevant today [2, p.33].

10 female characters-feminists of Russian literature

1. Marina Mnishchik (Pushkin, "Boris Godunov") insists on family equality.
2. Vera Pavlovna (Chernyshevsky, "what should I do") defends women's rights and condemns humiliating traditions.
3. Lisa Bakhareva (Leskov, "nowhere to go") opposes the slavery of women in the family.
4. Matryona Sukhanchikova (Turgenev, "smoke") offers a path to freedom through work.
5. Aglaya Epanchina (Dostoevsky, "the idiot") strives for development and intellectual freedom.
6. Beautiful faith (Goncharov, "Cliff") opposes the imposition of rules of behavior by men.
7. Larisa Ogudalova (Ostrovsky, "penniless") comprehends inequality of the success in love.
8. Nina Zarechnaya (Chekhov, "the seagull") dreams of a free Bohemian life.
9. Kvashnya (Gorky, "at the bottom") refuses to get married in order to preserve personal freedom.
10. Katya (Bunin, "Mitya's love") condemns patriarchal orders and house building.

The Soviet period and its Limitations

Soviet literature made significant changes in the depiction of female images, creating a new ideal of a woman - a worker, a heroine, a defender of the Motherland. This image is symbolized labor valor and devotion to socialist ideals. However, despite the heroization, female characters were often deprived of psychological depths and the individuality, turning into abstract symbols or ideologically defined figures.

The idealized image of a woman in Soviet literature.

Podobedova, A.A. asserts that Soviet literature sought to create a new type of woman strong, devoted to work and the party. Such images were often one-sided and simplified models, emphasizing collectivism and dedication, but ignoring the inner world of the heroines [3, p.441].

Examples:

A female construction worker (Alexey Tolstoy, "The viper").

A woman is a mother raising a new generation (Mikhail Sholokhov, "Quiet Don").

The Soviet heroine was often the victim of an ideological dictate that determined her behavior, goals, and even thoughts. Many female characters represented a collective image devoid of personal traits. In Soviet literature, not enough attention was paid to the issues of violence, internal struggle and psychological trauma.

Svetlana Alexievich: the destruction of stereotypes

Svetlana Alexievich became one of the first writers who abandoned the traditional Soviet approach to woman's images. Her works revealed the complexity of the female experience, which had previously been ignored in official literature.

"War doesn't have a woman's face" (1985) Alexievich which explores the female experiences in the war, showing its uniqueness and tragedy. The heroines of her book nurses, snipers, radio operators share memories full of pain, loss and the fear, destroying the heroine myth of a female warrior. Alexievich focuses on experiences that were often ignored by traditional military prose, her heroines are experiencing not only war, but also the subsequent adaptation to peaceful life.

Svetlana Alexievich which makes a deep contribution to the understanding of woman's experiences, breaking down established stereotypes and opening up a new perspective on the role of women in society. Her work stands out for its realism, emotional depths and emphasis on personal stories.

Modern Russian literature in the feminism. New approaches to the portrayal of women

The 21st century has brought radical changes to the portrayal of female characters. Modern female writers explore the themes of sexuality, gender identity, motherhood and violence.

Guzel Yakhina ("Zuleikha opens her eyes") reveals the transformation of a peasant woman into an independent person [4, p.53].

Lyudmila Ulitskaya ("Kukotsky's case") Explores the issues of motherhood and female physicality [5, p.49].

Marina Stepanova ("Lazarus Women") Chose the Emancipation of women in the context of historical changes [6, p.40].

Genre experiments and artistic strategies

Modern authors use techniques such as polyphony, magical realism and psychological depths to convey the versatility of the female experience. In Lyudmila Ulitskaya's novels, such as the Kukotsky incident, the voices of different heroines combined to convey the diversity of women's experiences from physicality and the motherhood to issues of choice and personal freedom.

Polyphony helps authors move away from one-line narratives, creating a rich context in which women appear as active subjects with their desires, fears and hopes. In Guzel Yakhina's works, such as Zuleikha opens her eyes, magical realism is used to reflect the transformation of the main character. Elements of fiction help to show how her inner strengths overcomes the limitations of external circumstances.

Conclusion

Feminism has had a significant impact on Russian literature, transforming images of women and approaches to their portrayal. Since the 19th century, women writers such as Nadezhda Khvoshchinskaya and Avdotya Panaeva have raised issues of social injustice, laying the foundation for a feminist agenda. The Soviet Period brought heroic but limited images, in the modern literature, inspired by the ideas of feminism, reveals the versatility of women's experience to a magical realism, polyphony and psychological depths. The literature of the 21st century has become a platform for rethinking traditional gender roles, forming new ideas about women as an equal subject of culture and society.

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Physical sciences

THE EFFECT OF MOLECULAR WEIGHT OF PEG AND DEXTRAN ON THE PHASE DIAGRAM OF THE WATER-POLYMER BIPHASIC SYSTEM

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Abstract

This work focuses on how the molecular weights of PEG and dextran polymers influence the phase diagram with regard to water-polymer biphasic systems. Water-polymer biphasic systems have important applications in biochemical and material sciences because they can be used to accomplish the separation of biomolecules and develop new materials. The study probes the effect of the molecular weights of the individual polymers on the binodal curve of the phase diagram, considering an important factor for the thermodynamic properties and practical applications of the system. Results show that keeping the molecular weight of dextran constant and increasing the molecular weight of PEG shifts the binodal towards the origin in a phase diagram. This means that high molecular weight PEG is structuring water in such a way as to lower the concentration of PEG and dextran at which phase separation occurs. The observed behavior is due to increased hydrophilicity and larger size of big PEG molecules, leading to extensive molecular interactions strongly affecting the stability of the water-polymer mixture. In contrast, for the same PEG molecular weight, increasing the molecular weight of dextran shifts the binodal curve further away from the origin. Indeed, this underlines the effects of higher molecular weight dextran, which causes more pronounced destabilization in the structure of water. The larger the dextran molecules, the more they disrupt the hydrogen-bond network of water, thereby reducing its capacity to form a homogeneous mixture with PEG.

Consequently, phase separation occurs at higher polymer concentrations, and the biphasic region in the diagram is extended. It gives insight into the critical dependency of phase behavior on molecular weight in aqueous polymer systems. Dynamic properties, such as these, are relevant for system functionality in various applications, from drug delivery to tissue engineering and soft robotics. The structuring action of PEG and the destabilizing action of dextran reveal careful adjustment of molecular weight as one effective way to tailor the properties of biphasic systems toward specific applications. Results obtained in this work contribute significantly to the basic knowledge on the interaction of polymers in water and give new insights into material design. Phase behavior control by variation of molecular weight bears deep consequences regarding both fundamental work and application. The present study underlines the relevance of molecular weight considerations for the development and operation of aqueous polymer systems.

Keywords: PEG, dextran, water-polymer biphasic system, molecular weight, phase diagram, binodal curve.

Albertson's method based on the unequal distribution of Substances in biphasic water-polymer systems

It is known that when two polymers of different chemical nature are dissolved in the same solvent, at concentrations above certain values, the homogeneous solution separates into two phases. These phases are immiscible with each other and are in equilibrium, each containing all three components in varying amounts. In other words, a homogeneous-heterogeneous phase transition occurs. One of the phases becomes rich in one polymer, while the other is enriched with the second polymer. The primary component of these phases (70-90%) is water [1]. When any substance is introduced into such a system, due to the different affinities of the two phases of the biphasic water-polymer system for the substance, an unequal distribution of the substance between the phases occurs [2]. Based on such distribution, Albertson developed a new, simple, cost-effective, and unique method for separating and studying individual components (viruses, proteins, cells, etc.) from mixtures. This method relies on the unequal distribution of substances in the biphasic water-polymer system. Due to its simplicity, practical

significance, and ease of adaptation to biotechnological processes, the scope of application for this method has significantly expanded.

Two-phase water-polymer systems can be created using pairs of natural or synthetic polymers. In the presented study, the polymer pair used is dextran-polyethylene glycol [3]. In general, phase separation in two-phase water-polymer systems occurs due to the formation of two differently structured types of water [4]. Since water constitutes the main component of such systems, factors affecting the structure of water and altering it must influence the phase formation process and the distribution of substances within the system.

The phase diagram of the PEG-dextran-water two-phase system

The phase diagram of the PEG-dextran-water two-phase system serves as an essential tool for examining the behavior of two-phase systems [5]. The binodal curve within the diagram defines the boundary between regions where the system exists as a single homogeneous phase and regions where it separates into two distinct phases. Additionally, the tie line is a significant feature in such diagrams. It represents a condition where the composition of the two phases remains constant and their volume ratio is equal under specific system conditions. On the phase diagram, tie lines appear as parallel lines, and their intersections with the binodal curve mark the critical points. These critical points, sometimes referred to as boiling points in the context of the two-phase system, indicate the state at which the volumes of the two phases become identical.

The effect of the molecular weight of PEG and dextran on the phase diagram

The molecular weight of polymers significantly affects their solubility and phase separation properties. In the presented study, the relationship between the molecular weights of PEG and dextran in the PEG-dextran-water two-phase system is shown to be beneficial for the precise tuning of two-phase systems for applications such as the separation of proteins, viruses, and cells from mixtures, the purification of enzymes, and other biotechnological processes. Additionally, it contributes to the design and optimization of two-phase systems.

Initially, the effect of two different molecular weights of PEG (1500 Da and 6000 Da) on the phase diagram of the ATPS was examined while keeping the molecular weight of dextran (40 kDa) constant (Figure 1).

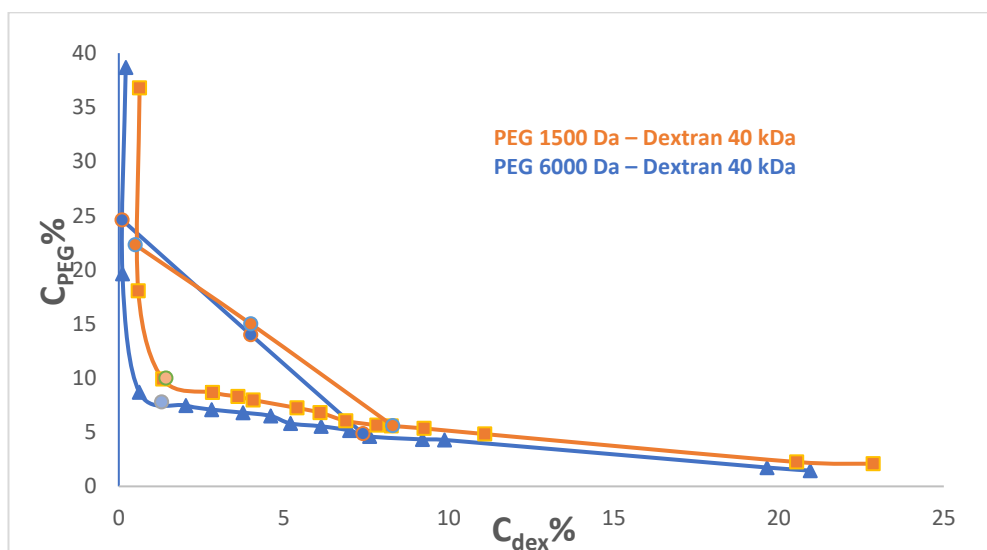


Figure 1. The effect of PEG's molecular weight on the phase diagram of the PEG-dextran-water two-phase system

As seen in Figure 1, as the molecular weight of PEG increases, the phase separation process in the system occurs at lower concentrations of the components. Based on the obtained results, it can be concluded that as the molecular weight of the polymer increases, the hydrogen bonds that enable the solubility of the macromolecule become insufficient for dissolution. With the increase in molecular weight, the number of hydrophobic CH₂ groups also increases, leading to water structuring, which makes the co-solubility of the polymers more difficult. Therefore, phase separation occurs at lower concentrations of the components.

On the other hand, the effect of four different molecular weights of dextran (40 kDa, 50 kDa, 60 kDa, 70 kDa) on the phase diagram of the ATPS was investigated while keeping the molecular weight of PEG (6000 Da) constant (Figure 2).

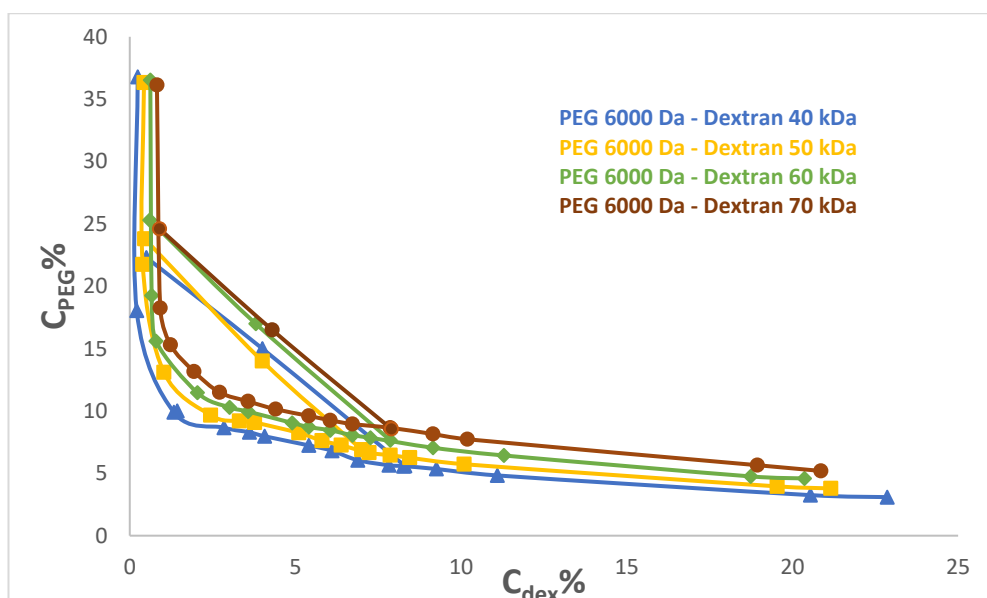


Figure 1. The effect of PEG's molecular weight on the phase diagram of the PEG-dextran-water two-phase system

As observed, as the molecular weight of dextran increases, the co-solubility of the polymers improves, causing the binodal curve to shift toward higher concentrations. Consequently, it disrupts the structure of water to a greater extent and shifts the binodal curve to the right. Thus, the co-solubility of the polymers in water becomes easier, and phase separation occurs at higher concentrations.

Conclusion

This study highlights the significant impact of the molecular weights of PEG and dextran on the phase behavior of the PEG-dextran-water biphasic system. The molecular weight of PEG influences the system by structuring water in a way that lowers the concentrations required for phase separation. Higher molecular weight PEG increases hydrophobic interactions and water structuring, which destabilizes the homogeneous mixture and promotes phase separation at lower component concentrations.

Conversely, increasing the molecular weight of dextran enhances the co-solubility of the polymers, shifting the binodal curve toward higher concentrations. This behavior is attributed to the disruption of water's hydrogen-bond network by larger dextran molecules, which reduces water's ability to support a homogeneous mixture with PEG, leading to phase separation at higher concentrations.

These observations indicate that molecular weight is an important parameter in the hydrogel design and optimization process which would foster many application of biomolecule separation, enzyme purification, as well as improvement of new materials. Importantly, increasing comprehension and control over the molecular weight dependence should allow the designing and optimization of bio- and polymeric systems with broader range of potential use in biochemical, biotechnological and material science applications.

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Technical sciences

EARLY IRON AGE WEAPONS - METALLOGRAPHY AND SEM ANALYSIS

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Abstract

One of the positive trends, clearly visible in the last decade is the broader application of interdisciplinary methods in the analysis of archaeological artefacts. There is a great level of interest in the research of metals and their role in the development of ancient societies. Unfortunately, until now very little focus is put on the iron artefacts. The current research is mainly related to precious metals, copper and copper alloys.

Keywords: archaeology, radiography, flaw detection, SEM.

1. INTRODUCTION

The literature suggests that some of the earliest objects to be made from iron were swords, the main offensive weapon during the Early Iron Age. Iron swords were used as evidence of the early development of iron metallurgy in our lands.

From the present-day territory of the Republic of Bulgaria, over 20 iron swords and parts of a bronze sword with iron rivets are known, which can be dated to the beginning of the Early Iron Age and are relevant to the topic being developed here [1]. When mapping them, it is striking to distinguish several regions with a leading role in their use. The Rhodope Mountains, Southeastern Thrace and Central Northern Bulgaria can be identified as such regions. As with other categories of objects, most of the iron swords are accidental finds. This situation significantly complicates the attempt to date them precisely. However, there are other objective obstacles to their more accurate dating. First and foremost is their condition when found. The severe corrosion of most swords does not allow individual features of the sword to be seen, and they are important in typology and, respectively, in dating them. For example, such fine elements as the central edge are often damaged. In other cases – the main dating and type-defining element of the swords, namely its handle, is often damaged or missing altogether. Another region with a strong presence of iron swords stands out as Southeastern Thrace, where four iron swords were found – those from Omarchevo and Zagortsi, Novozagorsk, Popovo, Yambol and one from Haskovo with an unknown location. The line of distribution can be continued further north with the sword from the village of Topchii, Razgrad, thus forming the group of early iron swords in Eastern Thrace. The sword from Omarchevo was found in a settlement with “bukel-ceramics” and according to Chichikova can also be dated to the beginning of the Early Iron Age (Chichikova [2]).

II. Researched artifacts

Two cuts No. 1 and No. 2 were made from a Nenzingen type sword.

Cut No. 1 was taken from the area of the sword's handle, and No. 2 from its cutting part.

The sword has an elongated willow blade and a diamond-shaped cross-section. Only the diamond-shaped plate at the transition between the blade and the handle has been preserved from the handle. On it there are traces of three rivets for attaching the lining.



Picture 1.a/handle-Ro image



b/blade

III. Metallographic analysis

Section No.1-Slag inclusions are observed, gray in color, of different shape, size and orientation /Fig. 1/ [3].

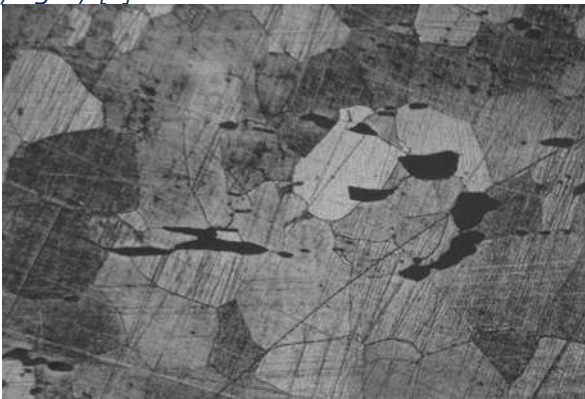


Fig.1 Grouped slag inclusions x100

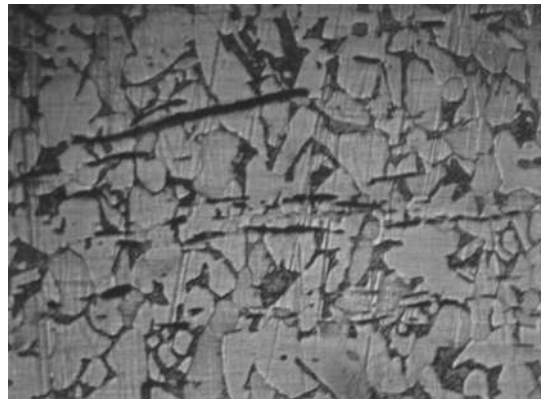


Fig.2 Vidmanshtet structure x100

In the middle of the section, several very coarse slag inclusions are observed, which are visible even with the naked eye. Some of them have impaired integrity / microcracks are observed in them - Fig. 1 and Fig. 2 and it cannot be said whether they were in the inclusions and were obtained during the manufacture of the sword or were obtained during the preparation of the section /. The total contamination of section No. 1 with point-shaped oxides is up to 3.0 points, oxides in rows - 1.0 points on scale A and 1.0 points on scale B. The determination of the structure is based on BDS EN 3326:1975/Amendment 1:1985-Steel. Metallographic method for determining non-metallic inclusions.

The examined structure is ferrite-pearlitic with a uniform distribution of ferrite and pearlite, without pronounced striation. In some areas of the surface, a ferrite structure with a larger pearlite grain size /2.3 points according to BDS 11174:1982/ BDS EN ISO 2624:1997/Methods for determining grain size/ shown in Fig. 2 is often observed, while in the middle of the section the ferrite grain is smaller.

In a small area of the surface, a Widmanshtet structure up to 2.0 points according to scale A of the above-mentioned standard is also observed, shown in Fig. 2.

This type of structure is like that of meteorites, for which there are numerous analyses and publications.

Section No.2 - Non-metallic inclusions and slag inclusions of the same nature are present, but here the rows of strongly elongated slag and other inclusions are in greater quantity and smaller, which is evidence of the presence of deformations - Fig. 3 [3].

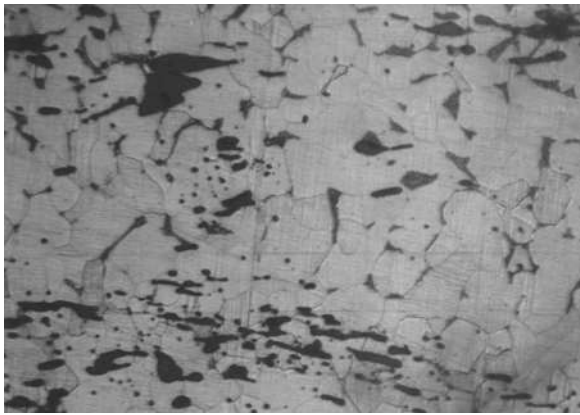


Fig.3 Longitudinal drawn non-metallic inclusions x100

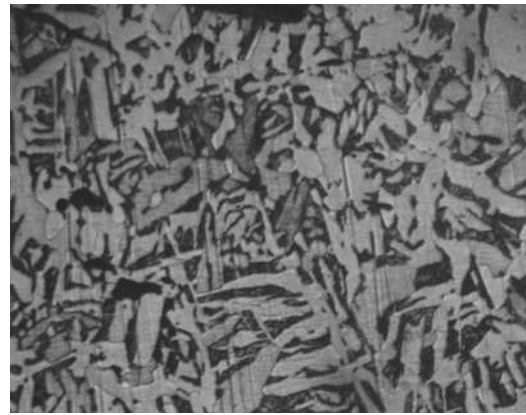
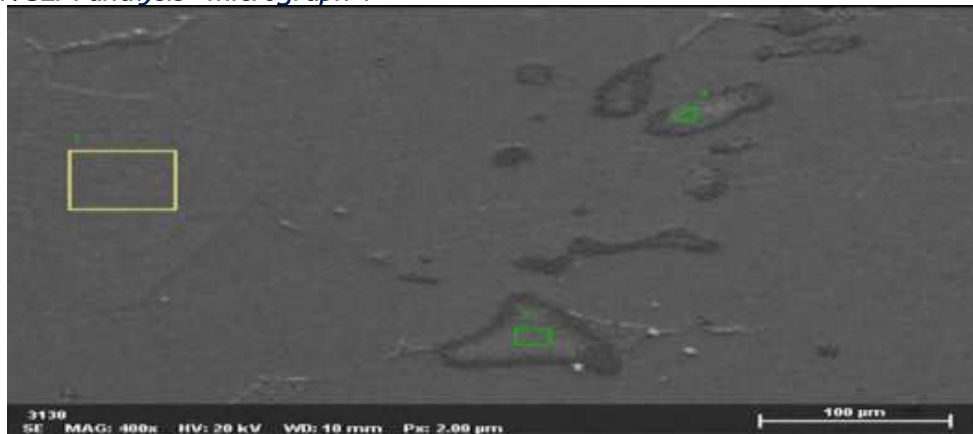


Fig.4 Clearly expressed cuff type structure and non-metallic inclusions

Dotted oxides are observed - 4.0 points in volume and 3.0 points in rows on scale A and 2.0 points on scale B in total.

IV. SEM analysis - micrograph 1



1- Area with ferrite – about 90%; 2- Probable ferrosilicates Fe-Si-Ca and traces of Al and K; 3- Area with predominant Si

1

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	11381	82.60	97.53	89.45	2.38	2.88
C	6	62	2.10	2.47	10.55	1.30	62.02
		Sum	84.70	100.00	100.00		

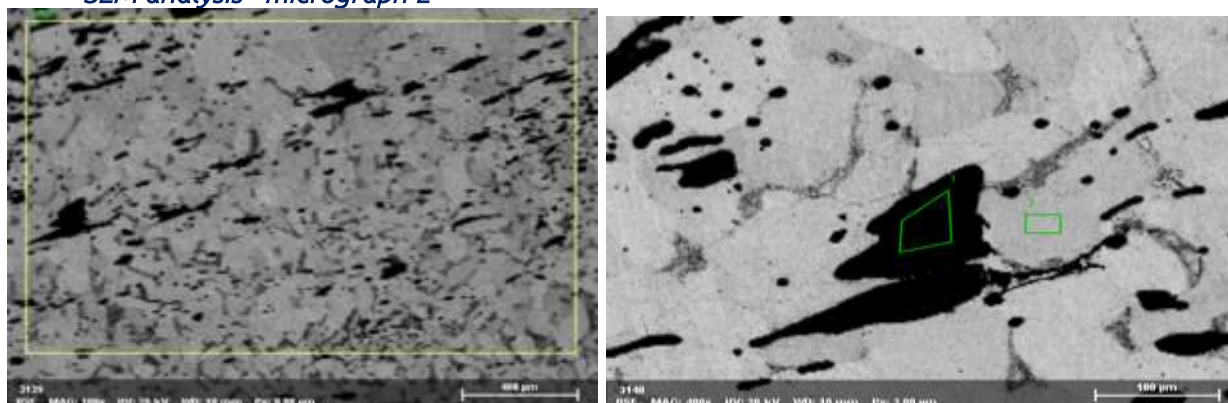
2

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	6481	35.36	47.03	24.22	1.09	3.07
Si	14	3509	11.44	15.21	15.58	0.58	5.09
O	8	818	10.64	14.15	25.45	2.58	24.22
C	6	249	7.56	10.05	24.07	2.70	35.70
Ca	20	2112	7.30	9.71	6.97	0.31	4.21
Al	13	419	2.04	2.71	2.89	0.19	9.27
K	19	271	0.85	1.13	0.83	0.09	10.35
		Sum	75.19	100.00	100.00		

3

Element	At. No.	Netto	Mass [%]	Mass Norm. [%]	Atom [%]	abs. error [%] (1 sigma)	rel. error [%] (1 sigma)
Fe	26	10299	68.03	78.96	52.34	1.98	2.91
C	6	280	8.69	10.08	31.08	2.97	34.20
Si	14	743	3.75	4.36	5.74	0.27	7.10
O	8	224	2.55	2.96	6.85	0.96	37.73
Ca	20	502	1.94	2.25	2.08	0.14	7.09
Al	13	154	1.20	1.39	1.90	0.16	13.15
		Sum	86.16	100.00	100.00		

SEM analysis - micrograph 2



In zone 1, silicate lichen is definitely established, while in zone 2 almost pure Fe predominates. The Widmannstedt structure is clearly outlined.

CONCLUSIONS

- 1. In the area of the sword handle, coarse slag inclusions are observed, as well as microcracks. The slag inclusions are parallel to the forging direction.*
- 2. The total contamination of section No. 1 with point oxides is up to 3.0 points on scale B /BDS ISO 3326:1975 Steel. Metallographic method for determining non-metallic inclusions / Amendment 1:1985/.*
- 3. The structure of section 1 is ferrite-pearlitic with a uniform distribution of ferrite and pearlite, without pronounced striation.*
- 4. In small areas of the surface, a Widmanshtet structure is also observed up to 2.0 points on scale A of the above-mentioned standard.*
- 5. For section No. 2, the non-metallic and slag inclusions present are of the same nature as for section No. 1, but the rows are strongly elongated in the longitudinal direction, which is evidence of the presence of deformations.*
- 6. On both sections, a larger ferrite grain is observed on the surface compared to the middle of the specimen.*
- 7. On section No. 2, a clearly expressed ferrite structure is observed in the area of the blade.*
- 8. For section No. 3, there is granular pearlite on the surface, and in the middle, granular lamellar pearlite, with the granular one having a smaller grain than that on the surface.*

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UDC 637.525

PREPARATION OF SEA BUCKTHORN MEAT PRODUCTS

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Abstract

The development of technology of whole-piece meat product from lamb and study of the influence of the inclusion of plant components in the technology of production of meat products from lamb on the quality indicators of the finished product.

Keywords: *lamb, whole-piece meat dish, multi-component brine, vegetable components.*

The meat processing industry in the Republic of Kazakhstan is one of the priority directions. Reducing the cost of meat production is the most important condition for expanding the assortment and increasing production volumes.

In the modern world, the desire for healthy food and quality products is gaining more and more importance. Consumers pay more and more attention to the naturalness and ecological purity of products, including meat products. In this context, the demand for lamb with unique nutritional properties and unique taste is growing. Lamb is a common type of meat in the diet of the Republic of Kazakhstan. The peculiarity of the chemical composition of lamb is the increased content of phosphorus, copper, and zinc compared to other types of meat. The vitamin composition of lamb is characterized by an increased content of nicotinic acid, biotin and vitamin B12. Lamb contains more thiamine and riboflavin than beef.

Before the research, the task is to balance the shortcomings of lamb to expand the possible resources of meat raw materials and the assortment of the national meat production.

Preparation of brines and salting options

Search experiments were carried out on the basis of a full factorial experiment with possible combinations of determining factors. In the course of establishing the optimal composition of brine with the addition of sea buckthorn juice and powder, the following factors were varied: X_1 - mass of sea buckthorn powder (1%, 2%, 3%), X_2 - mass of sea buckthorn juice (25%, 50%, 75%). The number of experiments to realize possible combinations of factors is determined by the formula:

$$N = mk$$

where, N is the number of experiments;

k - number of factors;

m - number of levels.

After finding the required number of experiments ($32 = 9$ experiments), the PFE scheduling matrix was constructed (Table 1).

Table 1

Planning matrix for the TFE

	Coded values		Natural values	
	X_1	X_2	Sea buckthorn juice	Sea buckthorn powder
Sample 1	-1	-1	25%	1%
Sample 2	-1	0	25%	2%
Sample 3	-1	1	25%	3%
Sample 4	0	-1	50%	1%
Sample 5	0	0	50%	2%
Sample 6	0	1	50%	3%
Sample 7	1	-1	75%	1%
Sample 8	1	0	75%	2%
Sample 9	1	1	75%	3%
Control	-	-	0	0

After, for the experiment, a lamb neck was purchased from a local vendor and the neck meat was separated from the neck bone. The obtained meat samples were cut into fillets weighing about 120 g and transferred into sterile glass jars.

To prepare the brine, we first prepared the brine base. For this purpose, 50 g of salt and 0.2 g of sodium nitrite were added to 1 liter of water. Then, according to the experimental matrix, sea buckthorn juice and sea buckthorn powder were added to the brine base in different variations. The resulting brine was poured over the meat samples in a sterile jar, total volume of 200 ml (Table 2). The samples were then stored at 4°C for 24 hours. The sample treated with brine base only was used as a control sample.

Conclusion

This study found that sea buckthorn products have the potential to be used in marinating meat (changing product quality parameters). Sea buckthorn juice and sea buckthorn powder showed a strong inverse correlation with pH values, and a strong positive correlation with thiobarbituric acid (TBA) values of meat samples. The correlation between the values of sea buckthorn products and weight loss of meat samples was not confirmed at the significance level of 0.05. The marinating process was found to significantly improve the flavor quality of meat. An area of future research should be to evaluate the microbiological quality of various oven-cooked marinated lamb shakes to identify potential microbial entities of interest. (When such information is obtained(also), it would be useful to subject the marinated lamb neck to different storage conditions in the refrigerator/packaging. This would help to establish the preserving efficacy of the marinades/marinade variants.)

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EFFICIENT DRYING OF DISPERSED MATERIALS WHILE MINIMIZING ECO-DAMAGE BY MEANS OF EXERGY ANALYSIS

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ЭФФЕКТИВНАЯ СУШКА ДИСПЕРСНЫХ МАТЕРИАЛОВ ПРИ МИНИМИЗАЦИИ ЭКОУЩЕРБА СРЕДСТВАМИ ЭКСЕРГЕТИЧЕСКОГО АНАЛИЗА

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Abstract

The paradigm of sustainable development assumes the evolution of the nature-transforming technosphere into a nature-like one. The transformation of the technosphere in Russia is seriously hampered by global economic sanctions. The Russian Engineering Academy is recommended as an executor and coordinator of work to minimize industrial damage, as a partner capable of providing full scientific and engineering support for innovations in production. It has been proven that drying in a suspended layer is the most effective. A method for assessing the efficiency by exergy efficiency is proposed. A strategy has been developed for the rational selection of equipment for the drying section based on the critical pore diameter and the rank of adhesive-autohesive interaction for the material being dried. At the same time, the minimum possible emissions of heat and dust into the environment are guaranteed.

Аннотация

Парадигма устойчивого развития предполагает эволюцию природопреобразовательной техносферы в природоподобную. Трансформация техносферы в России серьёзно затруднена мировыми экономическими санкциями. В качестве исполнителя и координатора работ по минимизации промышленного ущерба рекомендуется Российская инженерная академия, как партнёр, способный обеспечить полноценное научно-инженерное сопровождение новаций в производстве. Доказано, что наиболее эффективна сушка в взвешенном слое. Предложен метод оценки эффективности по эксергетическому кпд. Разработана стратегия рационального выбора аппаратного оформления отделения сушки по критическому диаметру пор и рангу адгезионно-аутогезионного взаимодействия для высушиваемого материала. При этом гарантируются минимально возможные выбросы тепла и пыли в окружающую среду.

Keywords: drying, hydrodynamics, particle, layer, fluidization, efficiency, exergy

Ключевые слова: сушка, гидродинамика, частица, слой, псевдооживление, эффективность, эксергия

В 1983 году Генеральная Ассамблея ООН констатировала, что экологические проблемы носят глобальный характер и выразила озабоченность «по поводу быстрого ухудшения состояния окружающей среды, человека и природных ресурсов, и последствий ухудшения экономического и социального развития». А значит, в общих интересах всех стран объединить усилия по разработке и реализации концепции устойчивого развития. Для координации усилий была создана Всемирная комиссия по окружающей среде и развитию (WCED), получившая своё название (Комиссия Брундтланд) по имени первого председателя Комиссии Гру Харлем Брундтланд (в течение трёх сроков руководившей Норвегией в качестве премьер-министра). Именно Комиссия дала наиболее цитируемое определение устойчивого развития: «удовлетворение потребностей нынешнего поколения, без ущерба для возможности будущих поколений удовлетворять свои собственные потребности».

Нет сомнений, что устойчивое развитие важно, поскольку оно объединяет экономический прогресс, социальную справедливость и охрану окружающей среды, то есть способствует долгосрочному экономическому росту за счет сохранения природных ресурсов, поощрения инноваций в области зеленых технологий, создания новых рабочих мест и обеспечения экономической стабильности.

Вместе с тем, нам представляется, что в основе устойчивого развития лежат два взаимоисключающих понятия: с одной стороны, удовлетворение основных, наиболее важных, жизнеобеспечивающих потребностей человечества; с другой – самоограничение человечества в части своих потребностей, исходя из возможностей окружающей природной среды их удовлетворить. Кроме того, очевидно, что реализация устойчивого развития требует самых серьезных финансовых затрат, необходимых для внедрения устойчивых практик (например, «зеленой» инфраструктуры и возобновляемой энергетики). К слову, производство недорогой и экологически чистой энергии, повышение эффективности добычи полезных ископаемых, ликвидация голода и борьба с изменением климата изначально не относятся к целям устойчивого развития (всё перечисленное регулируется в рамках отдельных программ, например, в части борьбы с изменением климата - Киотским Протоколом).

Из трёх аспектов устойчивого развития (экономический, социальный, экологический) остановимся подробнее на проблеме снижения биоущерба. Промышленное производство наносит серьёзный вред экологии. Страны мира (193 страны) в 2015 году поддержали Повестку ООН устойчивого развития до 2030 года, обязавшись применять самые решительные меры в части сохранения экологии и минимизации биоущерба.

Существующая техносфера создавалась для удовлетворения всё возрастающих потребностей человечества [1]. В этой парадигме хозяйствования сопутствующий биоущерб «выносится за скобки» и воспринимается неизбежным последствием. Нам представляется, что одновременно демонтировать существующие производства (по определению загрязняющие биосферу) невозможно. Следовательно, можно говорить лишь об эволюции существующей природообразовательной техносферы в новую экологически безвредную и технологически совершенную техносферу. То есть необходим протяжённый во времени период поэтапной замены современного промышленного оборудования, требующий гигантских финансовых вложений.

Повестка ООН до 2030 года по проблеме устойчивого развития, принятая всеми 193 членами ООН, воспринимается (по крайней мере, в части создания природоподобной техносферы) скорее, как некая декларация о намерениях, нежели дорожная карта усилий, ведущих к принятой цели. К примеру, в России значительная часть городов и посёлков городского типа изначально создавалась как инфраструктура градообразующего промышленного предприятия. Значит, непродуманные действия в отношении таких предприятий могут пагубно сказаться на социальной сфере (которая, к слову сказать, определяет суть значительного числа глобальных целей устойчивого развития (ЦУР) составляющих Повестку ООН-2030). Численность постоянного населения Российской Федерации по состоянию на 1 января 2023 г. составляет 146,4 млн человек (девятое место в мире). По своей территории Российская Федерация (17, 125 млн. км²) занимает первое место в мире (идущие следом Канада, США и Китай имеют территорию до 10 млн. км²).

Чтобы определить действительный пул участников-интересантов, уточним, что в ООН в 2024 году представлено 193 страны-члена и 2 страны-наблюдателя из 266 стран мира, в общее число которых кроме стран - членов ООН, входят несколько десятков не признанных или частично признанных, а также около 70 стран со спорным статусом.

В порядке частного мнения, поделимся опасением, что несбалансированные и весьма финансово затратные действия по срочному и всеобщему переходу на природоподобные технологии могут усилить имеющиеся последствия мирового финансового кризиса (эти последствия уже проявились эскалацией напряжения в ряде регионов мира). В рамках Повестки-2030 предлагается, не больше и ни меньше, сменить уклад хозяйствования с природообразовательного на природоподобный. Понятно, что это желание должно быть подкреплено (кроме политической воли государств-членов ООН) формированием международного фонда под эгидой ООН с филиалами в странах «преобразовательного пула». Однако, в ближайшей перспективе возможностей даже для формирования рабочих организационных структур не просматривается (Повесткой-2030 занимаются сотрудники Департамента ООН по экономическим и социальным вопросам, деятельность которых

ограничивается посильным содействием и сбором информации). Финансирование сверхамбициозной программы мероприятий (а значит, и контроль за исполнением) делегировано государствам-участникам и международным инвесторам. В порядке ремарки отметим, что складывается впечатление, что абсолютное большинство стран-членов ООН изначально не верило и сейчас не верит в реальную возможность выполнения Повестки ООН по устойчивому развитию, по крайней мере, в принятые сроки.

По данным Департамента ООН по экономическим и социальным вопросам [2], ежегодные потребности в инвестициях для достижения 17 (единогласно принятых голосованием Повестки-2030) глобальных Целей Устойчивого Развития (ЦУР) в области устойчивого развития во всех секторах оцениваются в 5-7 триллионов долларов США. Нынешние объёмы финансирования далеки от требуемого, хотя профильные эксперты ООН, оценивая глобальные финансовые активы в более чем 200 триллионов долларов США, утверждают, что финансовые ресурсы имеются. Однако большая их часть не направляется на цели устойчивого развития в тех масштабах и теми темпами, которые необходимы для достижения ЦУР и целей Парижского соглашения об изменении климата [2].

По заключению Департамента ООН по экономическим и социальным вопросам [2], интерес к Целям в области устойчивого развития и инвестиции в них растут, при этом инвестирование в Цели приносит экономическую выгоду. Достижение ЦУР способно открыть рыночные возможности, эквивалентные 12 триллионов долларов США, и обеспечить к 2030 году создание 380 миллионов новых рабочих мест.

Анализ доступной информации показывает, что трудно ожидать серьёзного роста инвестиций в ЦУР по причине устойчивого дефицита государственных бюджетов ведущей семёрки стран мира (Таблица 1 [3]).

Таблица 1.

**Государственный (не консолидированный) бюджет (по данным
Международного валютного фонда [3]) ведущей семёрки стран мира,
ранжированных по показателю доходов бюджета**

№	Страна	Доходы, (млн \$)	Расходы, (млн \$)	Дефицит/Профицит, (млн \$)	Год
1	США	5 036 000	6 883 000	-1 847 000	2024
2	Китай	3 622 313	5 388 814	-1 788 501	2020
3	Германия	1 729 224	2 038 247	-309 203	2020
4	Япония	1 666 454	2 362 676	-696 222	2020
5	Франция	1 334 944	1 609 710	-274 666	2020
6	Великобритания	966 407	1 400 776	-434 369	2020
7	Италия	863 785	1 103 721	-239 936	2020

В России указом Президента РФ №474 от 21 июля 2020 года утверждены национальные цели развития страны на период до 2030 года, которые соответствуют ЦУР Повестки ООН по устойчивому развитию до 2030 года, в частности, предусматривают переход на экологически чистые технологии.

Промышленность является крупной отраслью государственной экономики России. Так ещё в 2016 году доля занятого в промышленности населения составляла 27,6%, а доля промышленности в ВВП РФ – 32,4%. Число государственных компаний в промышленности России планомерно сокращается (Таблица 2) [4].

Таблица 2.

Число государственных компаний в России (2020-2025 годы (по данным [4])).

Год	2020	2021	2022	2023	2024 (прогноз)	2025 (прогноз)
Число госкомпаний	1465	1319	1187	1068	867	661

Доля химической отрасли в структуре ВВП России снижается. Так она в 2006 году составляла около 6 % (в структуре экспорта — около 5 %), и в отрасли было сосредоточено почти 7 % основных фондов промышленности. А уже в 2019 году доля химической промышленности в ВВП РФ снизилась до 1,1 %, а доля выручки химического комплекса в общей выручке реального сектора экономики составила лишь около 2,6 %.

По мнению куратора химической промышленности России статс-секретаря – замминистра промышленности и торговли В.Л. Евтухова (в июне 2024 года назначенного начальником управления администрации президента РФ по государственной политике в сфере

оборонно-промышленного комплекса) инвестиции в химическую отрасль растут, однако, анализ им же представленных данных (Таблица 3) [4, 5] такого впечатления не оставляет.

Таблица 3.

Общий объём инвестиций в химическую отрасль РФ (пояснения в тексте)

Годы	2008		2016	2017	2018	Всего в 2014-2019
Объём инвестиций в химическую отрасль, млрд руб. [4]	140		380,5	430	503,1	2000
Курс доллара в рублях [5]	24,86		67,00	58,34	62,74	38,48 (2014); 64,72 (2019)

В 2020 году в рамках реализации Стратегии развития химической и нефтехимической промышленности на период до 2030 года и Плана мероприятий по импортозамещению в отрасли химической промышленности планируется запущено 16 инвестиционных проектов с общим объёмом инвестиций более 14 млрд руб.

В 2023 году химическая промышленность РФ объединяла более 1000 крупных и средних предприятий (Таблица 4 [4]).

Так в 2009 году было экспортировано 3,1 млн тонн аммиака на сумму 626 млн долларов, 814 тыс. тонн метанола на сумму 156 млн долларов, 22 млн тонн минеральных удобрений на сумму 5,6 млрд долларов, 702 тыс. тонн синтетического каучука на сумму 1,2 млрд долларов.

Два самых крупных направления химической промышленности — производство полимеров и выпуск минеральных удобрений. По данным Росстата, производство пластмасс в России в первом квартале 2019 увеличилось на 3,1 % до 4,3 млн тонн, минудобрений — на 2 % до 12 млн тонн.

Таблица 4.

Финансовые показатели крупных компаний химической промышленности России на мировом рынке (по данным [4])

Компания, штаб-квартира	Оборот, млрд. руб. (год)	Специализация
Сибур Холдинг, Москва	531,3 (2019)	Нефтехимия
Еврохим, Москва	459,3 (2019)	Производство удобрений
Салаватнефтеоргсинтез, Салават, Башкортостан	246,7 (2019)	Нефтехимия
Нижнекамскнефтехим, Нижнекамск, Татарстан	174,1 (2019)	Синтетические каучуки
Акрон, Великий Новгород	115 (2019)	Минеральные удобрения
Казаньоргсинтез Казань, Татарстан)	72,4 (2019)	Полиэтилен и поликарбонаты
Уралкалий, Березники, Пермский край	2,8 (2019)	Калийные удобрения

В 2024 г. ожидаемый экспорт химической промышленности должен составить 34 млрд долл. в год.

Можно отметить, что за последние 5 лет с 2019 года наблюдается устойчивый рост химической промышленности России. Тем сложнее проводить мероприятия, связанные с выполнением Повестки ООН-2033, особенно в период действия целого ряда санкций в отношении России и очевидного самоустранения мирового сообщества от финансовой поддержки России. Надо констатировать, что, с разрушением централизованной системы отраслевых научно-исследовательских институтов и специализированных конструкторских бюро, реальным исполнителем и координатором работ по снижению промышленного биоущерба в России может стать Российская инженерная академия во главе с президентом Б.В. Гусевым, членом РАН, профессором, сопредседателем Высшего инженерного совета РФ, лауреатом семи государственных премий СССР и РФ в области науки и техники.

В химической и ряде смежных отраслей наиболее неблагоприятным в отношении экологической безопасности является процесс сушки в силу затрат энергии, составляющих 85% от всего энергопотребления химическим предприятием, и пыления высушиваемого материала. Нами в рамках авторитетной международной научной школы Б.С. Сажина разработана стратегия рационального выбора аппаратного оформления процесса сушки дисперсных (и

диспергируемых) материалов в взвешенном слое. Нами с Б.С. Сажиным доказано, что только взвешенный слой (с входящими в него, десятками отдельных видов гидродинамических режимов) обеспечивает решающую интенсификацию процессов тепло-массообмена при. Сушке. При этом из номенклатуры в 200 тысяч различных подлежащих сушке материалов более 80% приходится именно на дисперсные (и диспергируемые) материалы [6-10].

Процесс сушки большинства материалов во многом определяется гидродинамической обстановкой в сушильном аппарате. Нами разработан метод сравнительной оценки эффективности гидродинамических режимов с использованием эксергетического анализа по величине эксергетических коэффициентов полезного действия [6-9; 11-17]. Сразу поясним, что традиционную опору расчёта процесса сушки на тепловые балансовые уравнения мы со временем вынужденно отвергли в силу того, что такой расчёт даёт погрешность минимум в 40% по сравнению с эксергетическим анализом.

Наш с Б.С. Сажиным метод позволяет правильно (с точки зрения минимизации тепловых выбросов в атмосферу) выбрать гидродинамический режим сушки. Нами показана необходимость сопоставления полезного эффекта, получаемого в результате использования эффективных гидродинамических режимов, с затратами на их реализацию.

В качестве показателя, характеризующего термодинамическую эффективность используемых методов активизации гидродинамической обстановки в аппарате, целесообразно использовать отношение эксергетических коэффициентов полезного действия до и после применения указанных методов или для альтернативных технических решений различных авторов. В этом случае эффективным (применительно к конкретному материалу и аппаратному оформлению) следует считать гидродинамический режим, для которого указанный показатель достигает наибольшего значения.

Эксергетический КПД является комплексным показателем для оценки гидродинамического режима и степени загрязнения окружающей среды тепловыми выбросами, которые характеризуют экологическую чистоту сушильной установки [6-11; 15-25].

Уравнение, связывающее эксергетические характеристики взаимодействующих материальных потоков, может быть получено на основе балансовых соотношений:

$$G_m \Delta h_m + W r_n = \alpha F \Delta t_{cp} \quad (1)$$

$$G_m \Delta u_m = \beta F \Delta x_{cp} \quad (2)$$

Для сушильного агента (как смеси абсолютного сухого газа и пара), по закону аддитивности:

$$\Delta h_c = c \Delta t_c + h_n \Delta x_c \quad (3)$$

Из уравнений (1) - (3) получим:

$$\Delta h_c = G_m \Delta h_m \frac{c}{\delta \alpha F} + \frac{c \beta}{\delta \alpha} \Delta x_{cp} h_n + \Delta x_{cp} h_n \quad (4)$$

Введем безразмерные комплексы (5) Le, g, n:

$$Le = c \beta / \alpha, \quad (5)$$

$$g = G_c / G_m,$$

$$n = \beta F / G_c$$

Комплекс Le характеризует соотношение тепловых потоков при теплообмене между сушильным агентом и влажным материалом, и теплотой, транспортируемой парами влаги. Безразмерную переменную процесса g можно рассматривать как относительную скорость сушильного агента, n - как аналог числа единиц переноса по газовой фазе.

Уравнение (4) с учетом безразмерных переменных (5) преобразуем к виду

$$\Delta h_c = \frac{Le}{gn} \Delta h_m + \left(1 + \frac{Le}{\delta}\right) \Delta x_{cp} h_n \quad (6)$$

где: Δx_{cp} - средняя движущая сила процесса массопереноса; Δh_c - изменение влагосодержания сушильного агента; α - коэффициент теплоотдачи, Вт/(м²·град); β - коэффициент массопереноса, кг/(м²·с), $\delta = \Delta t_{cp} / \Delta t_c$.

Учитывая, что в сушильной установке с активным гидродинамическим режимом наибольшим изменениям подвергается термическая составляющая эксергии взаимодействующих потоков, можно воспользоваться эксергетической температурной функцией для перехода от тепловых характеристик этих потоков к эксергетическим. Тогда из уравнения (6) получим:

$$\frac{\Delta e_n}{\Delta e_c} = \eta_e = \frac{\frac{1 - Le \Delta e_m}{gn \Delta e_c}}{(1 + Le / \delta) \Delta x_{cp}} \quad (7)$$

Входящие в соотношение (7) безразмерные переменные Le , n связаны с кинетическими коэффициентами теплоотдачи α и массопереноса β , которые определяются степенью активности гидродинамической обстановки в аппарате.

Соотношение (7) позволяет путем сопоставления значений эксергетического КПД для различных вариантов активных гидродинамических режимов сделать вывод о целесообразности произведенных энергозатрат, тем самым выбрать оптимальный вариант, соответствующий наибольшему значению этого показателя.

Для более полной характеристики сушильной установки необходимо ввести в показатель η_e составляющую, учитывающую энергозатраты, обусловленные выделением высушенного продукта из газовой фазы или на пылеочистку, независимо от того, проводится это процесс непосредственно в сушильном аппарате или вне его.

Тогда получим

$$\eta_{\Sigma} = \frac{K_1 \eta_e + K_2 \eta_{cen}}{2} \quad (8)$$

Коэффициенты K_1 , K_2 характеризуют относительный уровень ущерба, наносимого окружающей среде тепловыми и пылевидными загрязнениями.

$$\eta_{cen} = \frac{\eta_z + \eta_{yl}}{2} \quad (9)$$

$$\eta_z = \frac{\ln(p^{6x} - \Delta p) - \ln p_0}{\ln p^{6x} - \ln p_0} \quad (10)$$

где p^{6x} , p_0 , Δp - давление соответственно: на входе в аппарат; окружающей среды и гидравлическое сопротивление аппарата.

Результаты эксергетического анализа показывают, что эффективные гидродинамические режимы являются ресурсосберегающими не только в отношении металла и производственных площадей (за счет малых размеров аппаратов), но и в отношении удельного расхода энергии. Разработке этого метода предшествовал многолетний этап теоретических и экспериментальных исследований нескольких десятков гидродинамических режимов и аппаратов для их осуществления.

Нами с Б.С. Сажиним создана новая классификация гидродинамических режимов взвешенного слоя (в специальной литературе – Классификация Б.С. и В.Б. Сажиных), куда вошли и ранее неизвестные (открытые и изученные нами) гидродинамические режимы [6-9; 12; 25-31].

Нами создана новая классификация материалов как объектов сушки (в специальной литературе – Классификация Б.С. и В.Б. Сажиных), повсеместно благожелательно принятая сушильным сообществом сушильщиков, не имеющая современных аналогов и согласующаяся с наиболее авторитетными классификациями, но дающая существенно более широкие теоретические и практические возможности [6-9; 12; 27-35].

В её основе величина критического диаметра пор и ранг адгезионно-аутогезионного коэффициента, характеризующего эффекты комкования влажных материалов в процессе сушки и налипания на стенки аппарата [6-10; 12; 35-39]. Классификация предусматривает в зависимости от свойств материала и характера технологической задачи разделение материалов на шесть классов, охватывающих весь диапазон размеров пор (от 100 до 2 нанометров).

Нами для каждой группы материалов рекомендованы типовые сушилки с эффективными (для данных материалов и поставленной технологической задачи) гидродинамическими режимами [6-14; 17]. Так, например, для широкопористых материалов с критическим размером пор $d_{кр}$ более 100 нанометров (нм) рекомендованы в зависимости от величины показателя адгезионно-аутогезионных свойств высушиваемых материалов сушилки с режимами пневмотранспорта, циклонным и аэрофонтанным режимом. Для тонкопористых материалов ($d_{кр}$ 6-4 нм) рекомендованы дисковые вихревые сушилки, а для микропористых материалов ($d_{кр}$ 4-2 нм) рекомендованы сушилки с виброкипящим слоем [6-9; 12-18; 40-41].

Кроме основных аппаратов нами для каждого класса и подгруппы материалов рекомендованы вспомогательные аппараты (калориферы, теплообменники, тяго-дутьевое и топочно-печное оборудование, питатели-дозаторы, пылеулавливающее оборудование и др.), наилучшим образом соответствующие типу материала, характеру технологической задачи и виду рекомендованной сушилки. Попутно нами с сотрудниками и учениками разработаны методы эксергетического расчёта для каждой технологической единицы рекомендованного оборудования [6-8; 12-18; 24-27; 38-41].

Изложенное позволяет утверждать, что для процессов сушки дисперсных и диспергируемых материалов есть приемлемые решения для обеспечения эффективной сушки с минимальным экологическим ущербом от тепловых и пылевых выбросов в атмосферу [1; 6-8; 12; 36-42].

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RESEARCH OF THE INTELLIGENT LIGHTING SYSTEM CONTROL ALGORITHM ON THE BASIS OF THE INSTITUTE

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ИНСТИТУТ БАЗАСЫНДА ЗИЯТКЕРЛІК ЖАРЫҚТАНДЫРУ ЖҮЙЕСІН БАСҚАРУ АЛГОРИТМІН ЗЕРТТЕУ

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Abstract

"Smart home" is an important field of research when it comes to environments adapted to help people in their daily lives. This article addresses issues that are used to refer to any environment created to help people in their daily activities, with the aim of supporting an independent lifestyle, and include sensors and executive devices to monitor the internal environment of the home, sometimes residents, as well as providing support or assistance to the tenant in their daily activities. The relevance of the chosen topic is due to the high cost of these systems and their inability to automatically adapt to human needs, the study of ways to effectively use electricity. The purpose of the work is to increase the efficiency of the lighting system by implementing a context – dependent control algorithm. The article presents the following research tasks: to analyze existing commercial solutions in the field of managing the parameters of the smart home system, to develop an algorithm for controlling the lighting system based on an artificial neural network, to perform the hardware implementation of the intelligent lighting control system. This publication touches on the topic of an important aspect of automation – control of residential lighting with the ability to adapt to the user's activities. The article provides a comprehensive analysis of the object of research – an intelligent lighting control system that monitors the level of illumination by analyzing incoming information. In this work, a comparative analysis of the functions of the smart home system was carried out, the method of justifying the acceptable color temperature of lighting was used, the method of constructing a script for the algorithm of operation of the lighting control system was used.

Аңдатпа

"Ақылды үй" – бұл адамдарға күнделікті өмірде көмектесуге бейімделген ортаға қатысты маңызды зерттеу саласы. Бұл мақалада адамдарға күнделікті іс – әрекетте, тәуелсіз өмір салтын қолдау мақсатында көмектесу үшін жасалған кез – келген ортаға сілтеме жасау үшін қолданылатын және үйдің ішкі ортасын, кейде тұрғындарды бақылау үшін сенсорлар мен атқарушы құрылғыларды, сондай – ақ жалға алушыға күнделікті іс – әрекетте қолдау немесе көмек көрсетуді қамтитын мәселелер қарастырылған. Таңдалған тақырыптың өзектілігі осы жүйелердің қымбаттығына және олардың адамның қажеттіліктеріне автоматты түрде бейімделе алмауына байланысты, электр энергиясын тиімді пайдалану жолдарын зерттеу болып табылады. Жұмыстың мақсаты – контекстке тәуелді басқару алгоритмін енгізу арқылы жарықтандыру жүйесінің

тиімділігін арттыру. Мақалада келесідей зерттеудің міндеттері көрсетілген: ақылды үй жүйесінің параметрлерін басқару саласындағы қолданыстағы коммерциялық шешімдерге талдау жасау, жасанды нейрондық желі негізінде жарықтандыру жүйесін басқару алгоритмін жасау, жарықтандыруды басқарудың интеллектуалдық жүйесін аппараттық іске асыруды орындау. Бұл жарияланымда автоматтандырудың маңызды аспектісі – пайдаланушының қызметіне бейімделу мүмкіндігімен тұрғын үйді жарықтандыруды басқару тақырыбы қозғалған. Мақалада зерттеу нысаны – кіретін ақпаратты талдау арқылы жарықтандыру деңгейін бақылайтын интеллектуалды жарықтандыруды басқару жүйесі бойынша жан-жақты талдауы жасалынған. Бұл жұмыста ақылды үй жүйесінің функцияларына салыстырмалы талдау жасалды, жарықтандырудың қолайлы түс температурасын негіздеу әдісі қолданылды, жарықтандыруды басқару жүйесінің жұмыс алгоритмі үшін сценарий құру әдісі қолданылды.

Keywords: smart home system, lighting control system, sensors, operation algorithm, automation.

Түйін сөздер: ақылды үй жүйесі, жарықтандыруды басқару жүйесі, сенсорлар, жұмыс істеу алгоритмі, автоматтандыру.

Ақылды үйді жақсарту технологиясының тұжырымдамасы бірнеше ондаған жылдар бойы дамып келеді. Ақылды үйлер, бұл жағдайда, қарттар мен мүгедектерге арналған үй күтіміне қол жетімділікті жақсартудың сенімді және үнемді әдісі болып табылады. Бірнеше университеттер мен ғылыми-зерттеу жобалық топтары ақылды үйдің прототиптерін немесе ақылды үйге бейімделу үшін жеке құрылғыларды ойлап тапты. Бұл ақылды үйлер негізінен мотор, көру, есту немесе танымдық сияқты кез-келген бұзылулары бар қарт адамдарды байқауға арналған.

Адамдар күнделікті өмір салтындағы белгілі бір заңдылықтарды ұстануға бейім. Ақылды үй жағдайында пайдаланушының күнделікті әрекеттері ақылды үйдегі болашақ оқиғаларды болжауда маңызды рөл атқаратын заңдылықтарды тудырады. Ақылды үй ортасының мақсаты-қолданушыға күнделікті өмірде көмектесу; осылайша, ақылды үй пайдаланушының іс-әрекетінде қайталанатын заңдылықтарды тауып, көмек алу үшін пайдаланушының әрекетін болжауы керек [1]. Пайдаланушының іс-әрекетін бақылау ақылды үй ұсына алатын "жайлылық пен тиімділік мақсатына" жету үшін адамның іс-әрекетін бақылау және бекіту үшін қолданылады. Пайдаланушының мінез-құлқы пайдаланушы жасаған әрекеттер мен жауаптар ауқымын білдіреді. Сондықтан ақылды үй үйді пайдаланушының мінез-құлқына бейімдеу үшін алған білімдерін үйреніп, қолдана білуі керек. Пайдаланушы үлгіні жасайтындықтан, пайдаланушының қалыпты емес мінез-құлқын пайдаланушының қалыпты мінез-құлық үлгісін құру арқылы анықтауға болады.

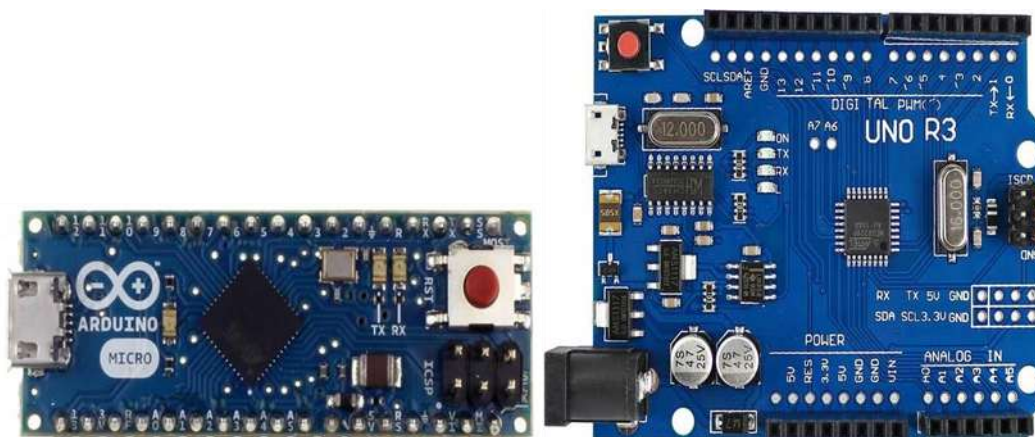
Әдетте, ақылды үйдегі сенсорлар мен камералар пайдаланушының әрекетін бақылау немесе анықтау үшін қолданылады және адамның мінез-құлқына талдау жасайды. Пайдаланушының мінез-құлқын пайдаланушылардың болашақ әрекеттерін болжау және анықтау үшін пайдалануға болады. Сонымен, ақылды үй жүзеге асырған әрекетті тану әдісі жүйені басқару үшін мүмкіндігінше дәл болуы керек [10]. Пайдаланушының мінез-құлқын модельдеу және болжау үшін жасанды интеллект алгоритмдері, машиналық оқыту алгоритмдері және деректерді іздеу әдістері қолданылады.

Қашықтан жарықтандыруды басқаруды жүзеге асыру үшін сенсорлардан немесе камерадан келетін сигналды өңдейтін, содан кейін атқарушы құрылғыларға сигнал беретін аппараттық және бағдарламалық құралдар қажет. Осындай аппараттық және бағдарламалық жасақтама ретінде біз Arduino Software және Raspberry Pi Foundation әзірлеушілерінің өнімдерін қарастырамыз.

Arduino тақталары нарықтағы ең танымал микроконтроллерлердің біріне айналды. Кейбір Arduino тақталары белгілі бір қосымшалар үшін жақсы. Arduino жасаған ең танымал тақталар – Uno, Mega және Mega 2560, 1 және 2 суреттері.



Сурет 1 – Плата Arduino Mega 2560



Сурет 2 – Тақталар Arduino Микро және Arduino Uno R3

Жарықтандыру жүйесінің автономиясын арттыру үшін жарықтандыруды қосу, өшіру, жарықтылықтың өзгеруі және жарықтың түс температурасының өзгеруі функцияларын орындау тұрғысынан ішкі жарықтандыруды сипаттайтын негізгі факторларды алдын-ала анықтау қажет. Бұл факторға орындалған іс-әрекетке тән жарықтандыру формалары, пайдаланушының тиімділігін арттыруға ықпал ететін және сонымен бірге оның биологиялық процестерін қолдауға ықпал ететін жарықтандырудың қолайлы түс температурасы кіруі керек. Үй-жайларды жарықтандыру әдістерін жалпы жарықтандыру әдісіне және жергілікті жарықтандыру әдісіне жіктеуге болады. Жалпы жарықтандыру әдісі бөлменің әр түрлі бөліктеріндегі жарықтың теңгерімсіздігін азайту, бөлменің бүкіл кеңістігінде бірыңғай жарықтандыруды орнату арқылы ішкі жарықтандыруды жақсарты алады. Екінші жағынан, жергілікті жарықтандыру әдісі жұмыс бетіне қажетті жарықтандыруды орнатуға мүмкіндік береді, осылайша жалпы жарықтандыру әдісімен салыстырғанда жарықтандыру тиімділігін арттырады. Алайда, бұл әдіс жарықтың біркелкі болмауына байланысты мұндай кеңістіктегі жайлылықты төмендетуі мүмкін. Осыған байланысты, жұмыс бөлмедегі адамдардың санын, олардың позаларының мәртебесін, бөлмедегі жарық пен тәулік уақытын анықтау технологиясын қолдана отырып, жалпы жарықтандырудың жарықтығын басқаруды қарастырады, осылайша жарықтандыру энергиясын үнемдейді және жалпы Жарық ортасын жақсартады.

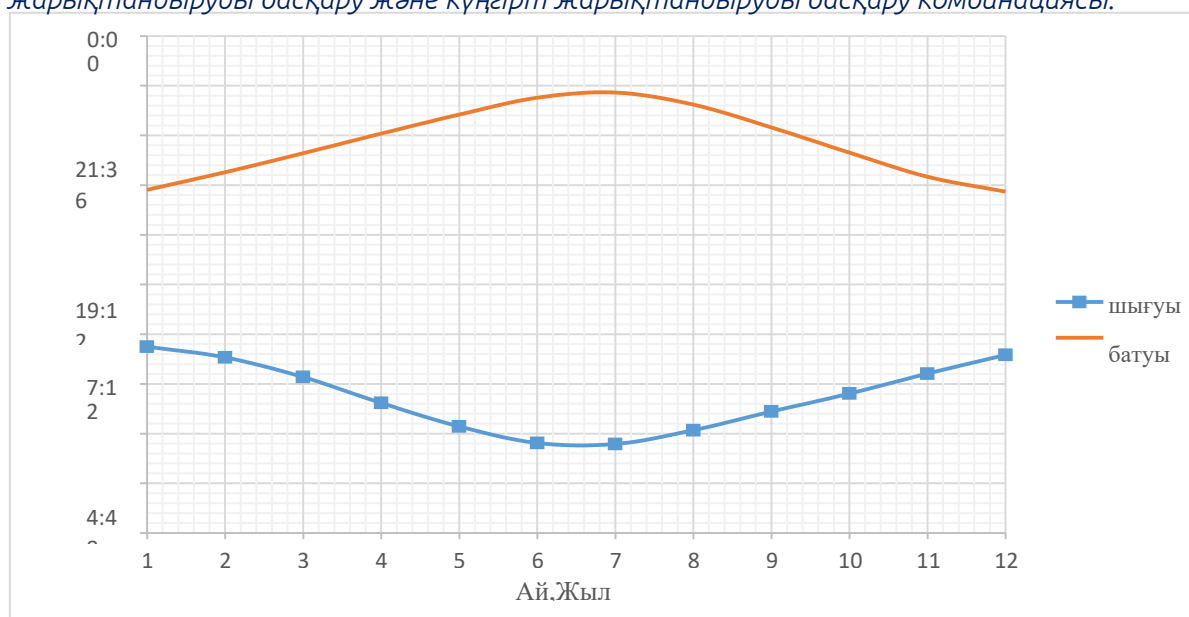
Бөлмедегі жасанды жарықтандыруды басқару әдістерін жарықтандыруды басқару, басқару деп бөлуге болады.

1-кестеде көрсетілгендей, сенсорларға негізделген жарықтандыру, күңгірт жарықтандыруды басқару және аралас жарықтандыруды басқару сипаттамалары келтірілген.

Классификация басқару жарықтандыру	Формат басқару	Сипаттама
Қосылған-өшірілген	Нұсқаулық	Бақылау жарықтандыру бірге кем дегендеқұны, орнатудың қарапайымдылығы және ауысу
Сенсорлар	Автоматты	Жарықтандыруды басқару негізінде қозғалыс жалға алушы
Күңгірттену	Нұсқаулық Автоматты	Жарықтандыруды басқару – қондырғылар оңтайлы жарықтандыру және тақырыптар көпшілігі тұтыну электр энергиясы
Аралас	Нұсқаулық Автоматты	Көмегімен жарықтандыруды басқару сенсорларды пайдалану және күңгірттену

Шамдарды қосу – өшіру әдісі арзан және оңай орнатылады, қарапайым қосқышпен басқарылады, ал сенсорға негізделген жарықтандыруды басқару жалға алушының қозғалысын, сондай-ақ бөлменің ішіндегі және сыртындағы жарықтандыруды автоматты басқаруды қамтамасыз етеді. Күңгірт жарықтандыруды басқару тұрғындардың көрнекі жайлылығын жақсартатын және тиімді энергия үнемдеуді қамтамасыз ететін жарықтандыруды кезең-кезеңмен реттеуді қамтамасыз етеді.

Сонымен, аралас жарықтандыруды басқару – бұл алдыңғы үш әдісті біріктіру арқылы жарықтандырудың тиімділігін арттыру әдісі өйткені ол бұл сенсорға негізделген жарықтандыруды басқару және күңгірт жарықтандыруды басқару комбинациясы.



Сурет 3 – 2022 жылы Алматы қаласында күннің шығуы мен батуының диаграммасы

Зияткерлік жарықтандыру жүйесінің архитектурасын таңдаған жағдайда жарықтандыру сенсорын пайдаланбай, жүйе күннің шығуы мен бату уақытын ескеруі керек (3-сурет). Сонымен, күннің орналасуы, яғни күннің шығуы, батуы немесе күндізгі уақыттың ұзақтығы туралы сенсордан ақпаратты салыстыра отырып, 3-сурет, жүйе күн батқанға дейін жарықты қамтымайды, содан кейін – қатысу сенсорының деректері негізінде қарастыру қажет.

Инженерлік жарықтандыру қоғамының мәліметі бойынша, "күндізгі жарық күн сәулесінің сәулелерін, шашыраңқы жарық ағынын және сыртқы жағынан шағылысқан жарықты қабылдау өнері мен практикасына қатысты, бұл электр жарығын басқару элементтерін қолдану арқылы жарықтандыру мен энергияны үнемдеу талаптарына ықпал етеді" [5]. Табиғи жарықпен салыстырғанда жасанды жарық қамтамасыз етедіжай қосуға немесе өшіруге болатын тұрақты жарық мөлшері. Спектрлік сапа – бұл жарықтың қаншалықты жылы немесе суық екенін көрсету үшін қолданылатын күрделі термин және ол екі ұғыммен өлшенеді, атап айтқанда жарықтың корреляцияланған түс температурасы (Correlated Color Temperature, CCT) және түс беру индексі (Color Rendering Index, CRI). Әдетте, жарық көзінің жоғары CRI күндізгі

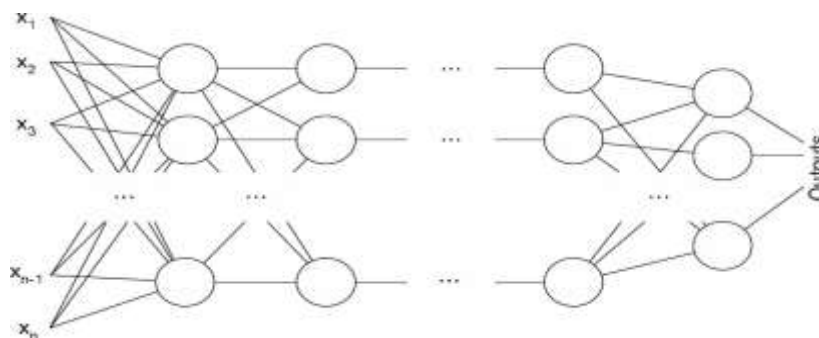
жарықта байқалатын табиғи түске немесе сол түс температурасындағы таусылмайтын жарық көздеріне жақын болып көрінетін объектінің түсіне сәйкес келеді. Күн толқын ұзындығын қамтамасыз ету үшін жарықтың кең спектрін шығарады, сондықтан барлық адамдар түстердің көпшілігін тани алады. Демек, күн сәулесінің CRI 100 бар деп саналады, ол жарықтың қол жеткізе алатын максималды мәні түрлі зерттеулер күндізгі жарықтың спектрлік қасиеттері бойынша, мысалы, тері арқылы D дәрумені өндірісі сияқты көптеген артықшылықтарын көрсетті. Шын мәнінде, бұл күн сәулесінің жарық спектрінің табиғаты, оны адам денсаулығын жақсартуда ерекше етеді және оны электр жарығынан табуға болмайды [2].

Контекстке бағытталған жарықтандыруды басқару алгоритмін жасау үшін бағдарламалау тілін қарастыру. Python қарапайым және тұтас құрылымы арқасында жасанды интеллект дамыту тілдерінің тізімінде бірінші орында. Қарапайым синтаксис және кеңейтілген мәтінді өңдеу құралы оған NLP мәселелерін шешуге мүмкіндік берді. Әзірлеушілер Python-да нейрондық желілерді және Python-мен машиналық оқытуды әлдеқайда аз күш жұмсай алады. Ерекшеліктері:

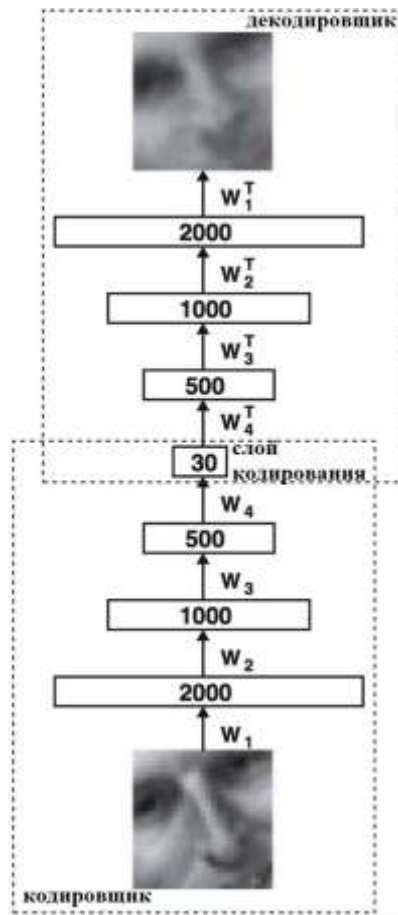
- қысқа даму уақыты (Lips, Java немесе C ++ тілдерімен салыстырғанда);
- кітапханалардың алуан түрлілігі;
- синтаксистің жоғары деңгейі;
- объектіге бағытталған, Функционалды және процедуралық бағдарламалау стильдерін қолдайды;
- алгоритмдерді оларды жүзеге асырмай тестілеу үшін жақсы.

C ++ - тің AI үшін басты артықшылығы-оның жылдамдығы, ал с ++ - ті әлемдегі ең жылдам бағдарламалау тілдерінің ішінен табуға болады. Өйткені әзірлеу ТАН үлкен санын талап етеді есептеулер, тез әсер ететін бағдарламаның маңызы зор. C ++ Машиналық оқыту және нейрондық желілерді құру үшін өте ұсынылады.

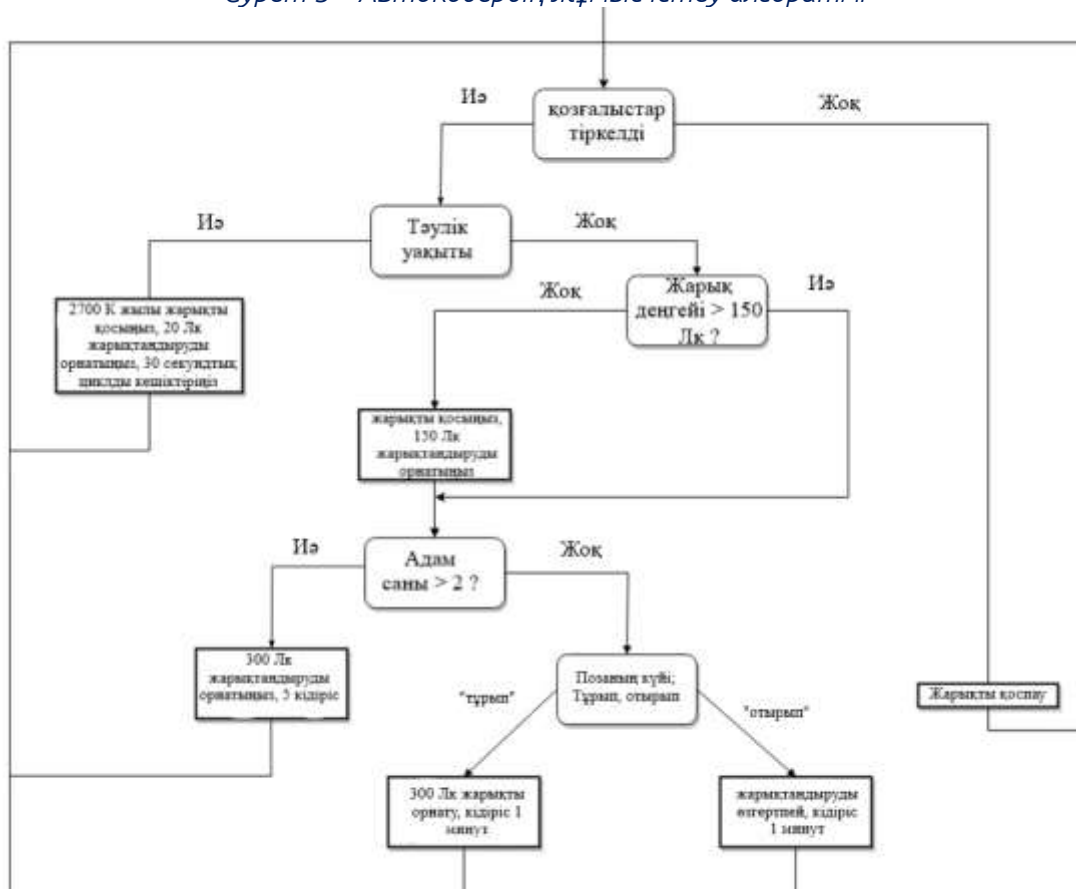
Машиналық оқытудағы әртүрлі тапсырмалар үшін жасанды нейрондық желілердің әртүрлі архитектуралары қолданылады, бұл тапсырмада қажетті дәлдікке қол жеткізуге мүмкіндік береді. Жалпы жағдайда, жасанды нейрондық желі архитектурасы кіріс түріне байланысты, күтілетін нәтижелер және ақпаратты өңдеу мақсаты. Мұны істеу үшін төменде машиналық оқытуда кеңінен қолданылатын ИНС негізгі архитектураларын қарастырамыз.



Сурет 4 – Көп қабатты перцептрон сәулеті



Сурет 5 – Автокодердің жұмыс істеу алгоритмі



Сурет 6 – Контексттен хабардар жарықтандыру жүйесінің алгоритмін басқару

Бұл үйдегі шамдарды, жарықтандыруды оңтайландыру процесін әлдеқайда жеңілдететін жұмыс жасау алгоритмі. Іске асырылған коммерциялық шешімдер мен ғылыми-зерттеу жобаларында Ақылды үйді басқару тұжырымдамаларына салыстырмалы талдау жасалды, пайдаланушыны қолдау функцияларының жіктелуі сипатталды:

- Қолдау;
- Бақылау;
- Емдеу, терапия көрсету;
- Жайлылық.

Қозғалыс датчиктерінен түсетін мәліметтерге, жарықтандыруға, тұрғын үй-жайларға арналған сапалардың талаптарын ескере отырып, жарықтандыруды басқару жүйесінің және екі филиалы бар көп сатылы конвульсиялық нейрондық желінің шығыс ақпаратына негізделген оңтайлы контекстке байланысты алгоритм жасалды. Тұрғын үйде суық және жылы түсті жарықтандыруды пайдалану теориялық тұрғыдан адамның көз торына қысқа толқындық жарықтың әсер етуімен негізделген. Raspberry Pi 3 бір тақталы компьютер негізінде жарықтандыруды басқарудың интеллектуалды жүйесінің аппараттық жиынтығы OpenHAB серверлік Java қосымшасымен бірге жасалды. Жүйенің қолданылатын аппараттық бөлігі оның модульділігін кейіннен кеңейту мүмкіндігімен және IEEE сымсыз желілерінің екі сипаттамасын қолданумен қамтамасыз етеді. Ақылды үйдің бөлігі ретінде жарықтандыруды интеллектуалды басқару жүйесінің перспективалы дамуы – бұл Пайдаланушының мінез-құлқының заңдылықтарын бөліп көрсету немесе жедел жәрдем жағдайларын тану арқылы көмек функционалдығын кеңейту.

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ECONOMIC EFFECT FROM THE INTRODUCTION OF AN EXPANDER-GENERATOR UNIT DURING THE UTILIZATION OF SECONDARY ENERGY RESOURCES**Mukolyants Arsen***Tashkent State Technical University named after Islam Karimov***Ergasheva Dilbar***Tashkent State Technical University named after Islam Karimov***ЭКОНОМИЧЕСКИЙ ЭФФЕКТ ОТ ВНЕДРЕНИЯ ДЕТАНДЕР-ГЕНЕРАТОРНОГО АГРЕГАТА ПРИ УТИЛИЗАЦИИ ВТОРИЧНЫХ ЭНЕРГЕТИЧЕСКИХ РЕСУРСОВ****Мукольянц Арсен***Ташкентский государственный технический университет им. И. Каримова***Эргашева Дильбар***Ташкентский государственный технический университет им. И. Каримова***Abstract**

The results of the study of the problem of energy saving and energy supply show that at present, along with non-traditional energy sources, much attention is paid to the use of secondary energy resources in the form of excess pressure on main pipelines. The article discusses the expander-generator technology at the stations for lowering the pressure of main natural gas, which makes it possible to produce electricity with a high, in comparison with thermal stations, ecological indicator. An expander-generator set is a device in which the energy of the transported natural gas stream is converted first into mechanical energy in an expander and then into electrical energy in a generator. The calculation of the power of the expander - generator set at various values of the flow rate and the pressure difference was carried out, according to the results of which the payback period of the installation was determined and a comparative analysis of the economic effect from the introduction of this technology was given. On the basis of the results and analysis, the rational capacities of the expander - generating units were determined, at which the payback period of the installation would be minimal.

Аннотация

Результаты исследования проблемы энергосбережения и энергообеспечения показывают, что в настоящее время наряду с нетрадиционными источниками энергии, большое внимание уделяется вопросам использования вторичных энергетических ресурсов в виде избыточного давления на магистральных трубопроводах. В статье рассматривается детандер-генераторная технология на станциях понижения давления магистрального природного газа, позволяющая производить электроэнергию с высоким, по сравнению с тепловыми станциями, экологическим показателем. Детандер-генераторный агрегат представляет собой устройство, в котором энергия потока транспортируемого природного газа преобразуется сначала в механическую энергию в детандере, а затем в электрическую энергию в генераторе. Произведён расчёт мощности детандер – генераторного агрегата при различных значениях расхода и разности давления, по результатам которого определены сроки окупаемости установки и дан сравнительный анализ экономического эффекта от внедрения данной технологии. На основании результатов и анализа определены рациональные мощности детандер – генераторных агрегатов, при которых срок окупаемости установки будет минимальным.

Keywords: main gas pipeline, transported natural gas, gas distribution station, process differential pressure, expander-generator, heat pump installation, power generation.

Ключевые слова: магистральный газопровод, транспортируемый природный газ, газораспределительная станция, технологический перепад давления, детандер-генератор, установка теплового насоса, выработка электроэнергии.

Энергоэффективное управление магистральным транспортом и распределением природного газа является одним из приоритетных направлений устойчивого развития и оптимизации затрат в газовой промышленности. В настоящее время на газотранспортных

предприятиях уделяют серьезное внимание проблемам рационального использования природного газа на собственные технологические нужды при соблюдении условий обеспечения промышленной безопасности и оптимального управления газотранспортной системой, повышения энергетической эффективности производственных процессов.

Электроэнергетика Узбекистана является базовой отраслью народного хозяйства республики и, обладая значительным производственным и научно-техническим потенциалом, оказывает весомое воздействие на развитие всего народнохозяйственного комплекса. Единая электроэнергетическая система республики полностью обеспечивает потребность объектов экономики и населения в электрической энергии. Узбекистан является крупнейшей энергетической державой в Центрально-Азиатском регионе.

В настоящее время, в условиях роста цен все возрастающего спроса на энергоресурсы, особое значение приобретает проблема энергосбережения и использования нетрадиционных источников энергии.

Использование вторичных энергоресурсов в виде энергии, определяемой избыточным давлением транспортируемого природного газа, стало одной из приоритетных направлений энергосбережения, поскольку позволяет более рационально использовать энергетические ресурсы, снижать выбросы загрязняющих веществ в окружающую среду, повышать эффективность промышленного производства. Использование технологического перепада давления транспортируемого природного газа в системе добычи и транспортировки газа связано с применением детандер - генераторных агрегатов (ДГА) на газораспределительных станциях (ГРС) [1-3].

Применение детандер - генераторных агрегатов позволяет не только снижать давление транспортируемого природного газа, но и генерировать электроэнергию [4,5]. Существует также принципиальная возможность одновременного с выработкой электроэнергии производства и полезного использования тепла и холода [6,7].

Эффективность производства электроэнергии по технологиям с применением детандеров в два раза выше, чем на современных электростанциях.

Прогнозная оценка показывает, что в период до 2030 года ежегодный рост потребления электрической энергии по Республике Узбекистан (РУз) будет составлять порядка 6- 7 %, в связи с чем основной целью Концепции обеспечения электрической энергией на 2020-2030 годы является удовлетворение растущей потребности в электрической энергии по конкурентоспособным ценам и динамичное развитие электроэнергетической отрасли [8].

Детандер - генераторный агрегат представляет собой устройство, в котором теплосодержание транспортируемого потока природного газа сначала преобразуется в механическую энергию в детандере (рис. 1), а затем в электричество в генераторе [9,10].

Когда газ расширяется в детандере, температура потока падает намного больше, чем при дросселировании. Без предварительного подогрева перед детандером температура газа может быть ниже температуры, при которой эксплуатация газопроводов невозможна. По этой причине, помимо детандера и подключенного к нему электрогенератора, ДГА включает в себя теплообменник для подогрева газа перед детандером.

Во многом, в качестве подогревателя природного газа используют теплонасосную установку, которая потребляет до 25% от выработанной электроэнергии с использованием ДГА [11,12].

Для масштабного внедрения ДГА на ГРС на территории Республики Узбекистан необходим технико-экономический расчет и анализ окупаемости установки.

При анализе газотранспортной системы Республики Узбекистан, была изучена работа ГРС в летние и зимние периоды. Было выявлено, что из 396 ГРС максимально высокие расходы газа и перепады давления получены на 42, где выработка электроэнергии при использовании ДГА могла быть от 350 кВт до 1500 кВт. Возможно, использование ДГА на теплоэлектростанциях и других производственных объектах, которые работают круглогодично с одинаковым потреблением объема природного газа, а также с высокими перепадами давления.

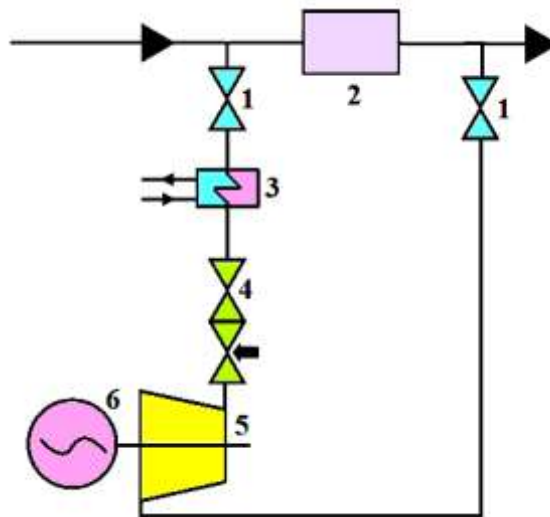


Рис. 1. Схема ГРС с детандер - генераторным агрегатом

1 – шаровой кран, 2 – редуктор, 3 – теплообменник, 4 – защита и регулирование, 5 – турбодетандер, 6 – электрогенератор

Как показывает международный опыт, внедрение ДГА эффективно при больших потенциальных мощностях, то есть при больших расходах природного газа и высоких перепадах давления, что влияет на окупаемость установки ДГА. Схема зависимости сметной стоимости электроэнергии 1 кВт от мощности детандер - генератора представлена на рисунке 2.

Как видно из графика, с увеличением мощности ДГА цена за 1 кВт установленной мощности снижается.

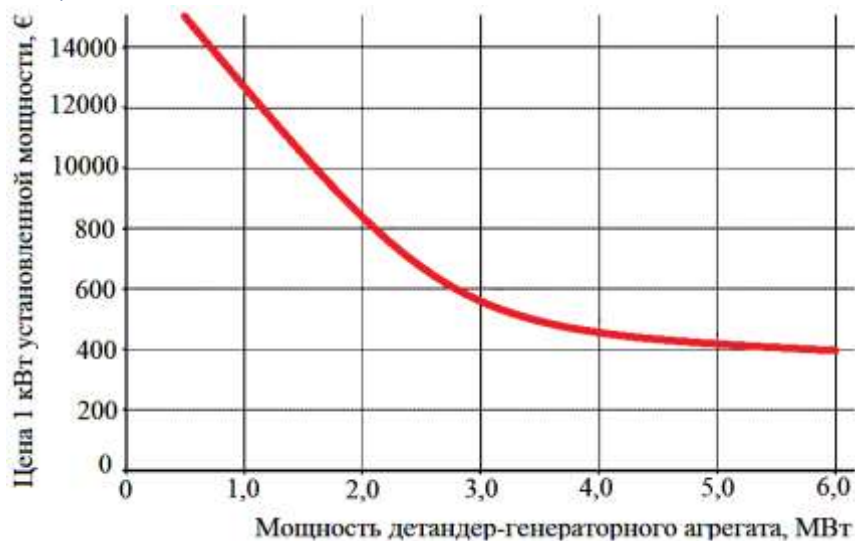


Рис.2. Зависимость стоимости электроэнергии 1 кВт от мощности ДГА

Были проведены расчёты для определения окупаемости ДГА в Узбекистане, учитывая цены на оборудования и электроэнергию.

Расчет мощности турбодетандера производился при определенных допущениях, принимаемых для упрощения расчета без существенного снижения его достоверности.

Срок окупаемости $CO_{ДГА}$, год:

$$CO = \frac{C_{ДГА}}{\Delta P_{ДГА}}, \quad (1)$$

где $C_{ДГА}$ – цена детандер - генераторного агрегата, сум.

Снижение затрат, сум/год:

$$\Delta P_{ДГА} = W_{ДГА} \cdot C_{э}, \quad (2)$$

где $C_{\text{ээ}}$ – среднегодовой тариф на покупную электроэнергию, €/кВт·ч.

Годовая выработка электроэнергии ДГА $W_{\text{ДГА}}$, кВт · ч/год:

$$W_{\text{ДГА}} = N_{\text{ДГА}} \cdot 24 \cdot \tau, \quad (3)$$

где τ – продолжительность работы ДГА сут./год.

Номинальная располагаемая мощность $N_{\text{ДГА}}$, кВт, которая может быть получена при помощи ДГА:

$$N_{\text{ДГА}} = G \cdot H_{\text{АД}} \cdot \eta, \quad (4)$$

где G – массовый расход природного газа, кг/с;

$H_{\text{АД}}$ – перепад энтальпии, кДж/кг;

η – общий КПД ДГА.

Перепад энтальпии при адиабатическом процессе расширения газа, $H_{\text{АД}}$, кДж/кг, в детандер–генераторе:

$$H_{\text{АД}} = \frac{k}{k-1} \cdot z \cdot R \cdot T \cdot \left(1 - \left(\frac{p_{\text{ВЫХ}}}{p_{\text{ВХ}}} \right)^{\frac{k-1}{k}} \right), \quad (5)$$

где z – коэффициент сжимаемости, принятый в зависимости от температуры и давления;

k – объемный показатель адиабаты в зависимости от температуры и давления;

R – индивидуальная газовая постоянная, Дж/кг·К;

T – температура газа на входе в ДГА, °К;

$p_{\text{ВХ}}$ – давление газа на входе в ДГА, МПа;

$p_{\text{ВЫХ}}$ – давление газа на выходе из ДГА, МПа.

Массовый расход природного газа G , через ГРС, кг/с:

$$G = \frac{Q \cdot \rho_{\text{см}}}{3600}, \quad (6)$$

где Q – расход газа по нитке, м³/ч;

$\rho_{\text{см}}$ – плотность газовой смеси, кг/м³.

Для определения экономической эффективности, был проведён расчёт сроков окупаемости при разных мощностях ДГА при условии, что ДГА работает на постоянной мощности круглый год (рис.3).

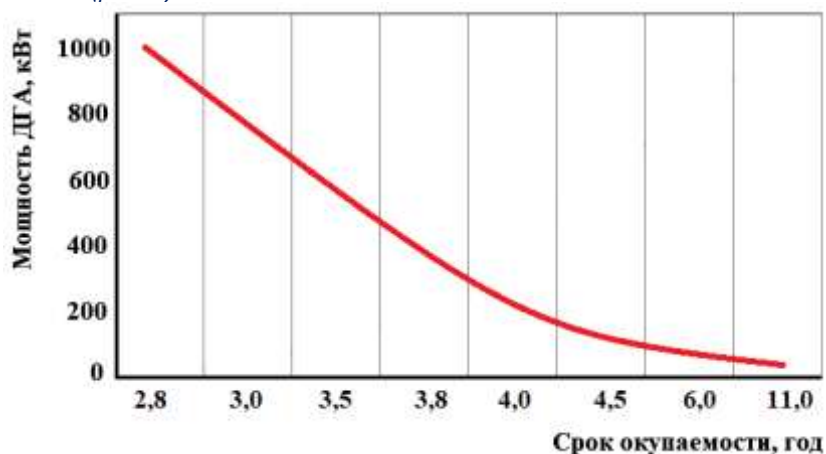


Рис.3. Зависимость срока окупаемости от мощности ДГА

Таким образом, срок окупаемости снижается с повышением мощности ДГА. Внедрение ДГА мощностями ниже 30 кВт не даёт нужного экономического эффекта, а наиболее эффективным является внедрение ДГА больших мощностей и, следовательно, представляется возможным сделать вывод о высокой экономической эффективности инвестиционного проекта по

внедрению ДГА на предприятиях электроэнергетической промышленности. В настоящее время проекты по внедрению ДГА демонстрируют минимальные сроки окупаемости капитальных вложений при сравнении с любыми иными типами энергетического оборудования как в традиционной «большой» энергетике, так и для установок малой и нетрадиционной энергетики. Высокие показатели экономической эффективности инвестиционных проектов по внедрению ДГА обеспечиваются минимальными капитальными затратами и минимальными издержками при эксплуатации энергоустановок при использовании оптимальных моделей тарифообразования и налогообложения в соответствии с действующим законодательством Республики Узбекистан.

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