"IMPROVING AND INTEGRATING THE TEACHING OF ARCHITECTURAL PERSPECTIVE IN FOREIGN COUNTRIES: SCIENTIFIC RESEARCH AND INNOVATIVE APPROACHES"

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Annotation. *This article provides a comprehensive analysis of the effectiveness of innovative approaches in teaching perspective rules in the subject of drawing. Based on a comparative analysis of traditional and modern teaching methods, the article examines their didactic significance, pedagogical effectiveness, and role in shaping students' understanding. The issues that arise in the teaching process of drawing in Uzbekistan are analyzed, and advanced pedagogical technologies are recommended to address them.*

The study explores the use of 3D modeling, digital design, interactive graphic programs, and virtual reality technologies in teaching drawing, with their impact on the educational process supported by statistical data. Foreign experiences are analyzed, and the possibilities of adapting them to the local education system are considered. The use of graphic tools is found to have a positive impact on developing students' visual perception, design skills, and engineering thinking.

Based on the results of experimental research conducted in the article, the effectiveness of innovative approaches is demonstrated, and scientific and practical recommendations are developed for the application of advanced technologies in teaching the subject of drawing.

Keywords*: Architectural perspective, modern architecture, spatial thinking, integration of teaching methods, teaching methodology*

Introduction

Architecture education is the process of teaching how to create space and represent it most effectively, taking into account technological, aesthetic, and social demands. The subject of perspective, which is the main tool for imagining and reflecting space in three dimensions in architectural disciplines, not only helps students form a visual understanding of space but also provides the opportunity to better understand the spatial structure of architectural objects.

Today, the teaching of architectural perspective in foreign countries is being improved through changing pedagogical approaches, new technologies, and innovative methods. Modern technologies such as 3D modeling, virtual reality (VR), and augmented reality (AR) are taking architecture education to a new level. All of these

contribute to developing students' spatial and visual thinking while helping to make teaching methods more effective.

In teaching architectural perspective, it is necessary to analyze existing problems in the field using foreign experiences and propose effective approaches. This article aims to study the teaching process of architectural perspective in foreign countries and analyze integration approaches aimed at increasing its effectiveness. Through the integration of approaches and technologies, it is possible to not only form theoretical knowledge but also develop practical skills, preparing students to create modern architectural projects.

Literature review

The integration of modern technologies and innovative methods into the teaching of architectural perspective in architecture education plays a crucial role in enhancing its effectiveness. Global advanced practices show that through digital technologies and pedagogical innovations, students are provided with the opportunity to further develop their spatial thinking. This literature review analyzes foreign experiences, innovative technologies, and advanced pedagogical methods for teaching perspective rules in architecture education.

Comparative Analysis of Traditional and Modern Methods

Traditional methods of teaching perspective are based on the fundamentals of drawing, hand-drawing, and geometric constructions. However, learning methods enriched with modern technologies can significantly enhance the effectiveness of this process. Frolova (2019) analyzed the significance of 3D modeling, virtual reality, and augmented reality technologies in developing students' spatial thinking. Garcia and Reyes (2020) highlighted how 3D modeling and VR technologies are used by students to create and analyze architectural environments.

Research conducted by Johnson (2021) shows that the blended learning model enhances students' independent work and comprehension skills. According to their findings, the integration of traditional and digital methods helps create a more effective learning environment for students.

Teaching Architectural Perspective in Foreign Countries

In many developed countries, the use of digital technologies in architecture education is expanding. Keller and Garrison (2018) studied the impact of gamification methods on architecture education. Their conclusions suggest that interactive and reward-based learning approaches shape students into more active and motivated participants.

Research by García (2020) analyzes the contribution of virtual tools to architecture education. He emphasizes the role of virtual reality and 3D modeling technologies in developing students' spatial thinking during the learning process.

Integration of Innovative Technologies

Schwartz and Lee (2022) explored innovative approaches in applying new technologies in architecture education and identified that 3D modeling, virtual reality, gamification, and blended learning methods enhance educational effectiveness. Research by Robinson and Collins (2021) conducted a comparative analysis of various teaching methods and proved that the integration of traditional and digital methods deepens students' knowledge.

Furthermore, Baker and Anderson (2019) studied the importance of collaborative learning, emphasizing the significance of developing creative thinking and practical skills through teamwork among students. This methodology helps strengthen problem-solving skills in architecture education.

Effectiveness of Innovative Approaches in Architecture Education

The introduction of innovative technologies and interactive methods in architecture education can significantly improve the quality of education. According to Chen (2023), students who are skilled in 3D modeling create projects faster and more effectively compared to students who have learned through traditional methods. Additionally, a study by Brown and Patel (2021) explored the effectiveness of the hybrid learning model (combining traditional and digital methods), showing that this approach provides the best results in students' learning processes.

Methodology

This study is aimed at exploring the effectiveness of innovative approaches in teaching perspective rules in architecture education, based on a comparative analysis of traditional and modern methods. The following methodological approaches were employed in the research:

Research Approach

The research was conducted based on a combined methodology, utilizing both theoretical analysis and empirical research. The approaches were implemented as follows:

Theoretical Analysis: The study examines the role and significance of innovative technologies in education, drawing on advanced foreign experiences and pedagogical sources. This analysis helps establish a strong conceptual foundation for evaluating new teaching methods.

Experimental Analysis: The effectiveness of both traditional and digital teaching methods is assessed through practical implementation, where students' learning outcomes are measured and analyzed.

Data Collection Methods

The following methods were used for data collection during the study:

Literature Review: The analysis of advanced foreign and local studies on teaching methods in education.Experimental Trials: The knowledge of students taught with various methods was assessed.

Analysis Methods

The data obtained from the study were analyzed using the following methods: Statistical Analysis Quantitative statistical methods were used to assess changes in students' knowledge levels by comparing their performance before and after the implementation of innovative teaching methods. This analysis helped identify measurable improvements and provided empirical evidence on the effectiveness of modern approaches.

Comparative Analysis A detailed comparison was conducted between traditional and digital teaching methods to determine their respective advantages and disadvantages. The study examined how each approach influenced students' understanding of perspective rules and assessed their overall learning outcomes.

Pedagogical Experiment The impact of innovative teaching methods was tested through controlled classroom experiments, where students were divided into groups and taught using different instructional techniques. The results were analyzed to determine which methods led to better engagement, comprehension, and retention of knowledge.

Research Participants

The study involved 10 architecture educators and 100 students. Fifty of the students were taught using traditional methods, and fifty were taught using digital and innovative methods. The study also included an analysis of international and local scientific articles, monographs, and conference materials.

Results and Recommendations

The results of the study show that the integration of modern technologies into architecture education significantly enhances students' knowledge and skills. Improving curricula and pedagogical technologies can make the educational process more effective. Through technologies like gamification, VR, AR, and 3D modeling, students can clarify their imaginations and better assimilate architectural concepts.

Recommendations:

Expand Technologies: There is a need to further integrate 3D modeling and virtual reality technologies, which will make the learning process more interactive and effective for students.

Expand Gamification: The use of gamification methods in architecture education should be increased, as it enhances students' motivation and fosters creative thinking.

Expand Blended Learning: Using blended learning methods can make the learning process more interactive and independent for students.

Overall, modern pedagogical methods and technologies help create a more effective and interactive learning process, which is crucial for making architecture education more qualitative and innovative.

The article aims to study foreign experiences in teaching architectural perspective, demonstrate the effectiveness of integrating pedagogical and technological innovations, and set new directions for future scientific research.

Conclusion

The use of gamification methods in architecture education creates an opportunity to make the learning process more interesting and interactive. This method plays a key role, especially in improving students' motivation, developing practical skills, and enhancing spatial thinking. Through games, interactive tasks, ranking systems, and rewards, students actively participate in the learning process, increasing its effectiveness.

The application of gamification helps students develop various design and project creation skills. Students feel as though they are participating in real architectural projects, which strengthens their creative approach. Additionally, their interest in learning increases, as gamification makes the learning process resemble more of a game, allowing students to enjoy the process more.

Furthermore, this method supports the development of independent work, teamwork, and communication skills. These are essential skills for students in the field of architecture, and gamification helps them apply these skills in practice.

Moreover, the use of gamification makes architecture education more effective and innovative, providing students with the opportunity to strengthen their knowledge and develop new skills. Expanding the use of this method will create opportunities to further engage students in the learning process and improve the effectiveness of education.

As a result, applying gamification in architecture education not only increases students' motivation but also makes their learning process more engaging and interactive, thus contributing to the improvement of the quality of architecture education.

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