

MODERN EDUCATIONAL APPROACHES IN TEACHING TECHNICAL DRAWING

Sadatov Chori Kholmurodovich

Associate Professor, Termiz State Pedagogical Institute

Uralova Oypopuk Ulug'bek qizi

Termiz State Pedagogical Institute

Annotation: This article explores the theoretical and practical aspects of modern educational approaches in teaching the subject of technical drawing. It analyzes the role and significance of innovative pedagogical technologies, digital tools, and interactive methods in organizing effective drawing lessons. In particular, it discusses visualization, modeling, opportunities of distance and blended learning, and the integration of the STEAM approach with technical drawing. The research results demonstrate the effectiveness of modern approaches in developing students' spatial imagination, engineering thinking, and practical skills. The article offers valuable theoretical insights and practical recommendations for educators, instructors of engineering graphics, and education methodologists.

Keywords: Modern education, pedagogical technology, interactive methods, visualization, modeling, distance learning, blended learning, STEAM, engineering thinking, education, spatial imagination.

Аннотация. В данной статье рассматриваются теоретические и практические аспекты современных образовательных подходов в преподавании черчения. Проанализированы роль и значение инновационных педагогических технологий, цифровых инструментов и интерактивных методов в организации эффективных уроков черчения. Особое внимание уделено визуализации, моделированию, возможностям дистанционного и смешанного обучения, а также интеграции STEAM-подхода с дисциплиной черчения. Результаты исследования демонстрируют эффективность современных методов в развитии пространственного воображения, инженерного мышления и практических навыков студентов. Статья предлагает полезные теоретические положения и практические рекомендации для педагогов, преподавателей инженерной графики и методистов образования.

Ключевые слова: Современное образование, педагогические технологии, интерактивные методы, визуализация, моделирование, дистанционное обучение, смешанное обучение, STEAM, инженерное мышление, образование, пространственное воображение.

Annotatsiya: Ushbu maqolada chizmachilik fanini o'qitishda zamonaviy ta'lim yondashuvlarining nazariy va amaliy jihatlari yoritilgan. Unda innovatsion pedagogik texnologiyalar, raqamli vositalar va interaktiv metodlarning chizmachilik darslarini samarali

tashkil etishdagi o‘rni va ahamiyati tahlil qilingan. Xususan, vizualizatsiya, modellashtirish, masofaviy va aralash ta’lim imkoniyatlari, hamda STEAM yondashuvining chizmachilik fani bilan integratsiyasi haqida fikr yuritilgan. Tadqiqot natijalari talabalarda fazoviy tasavvur, muhandislik tafakkuri va amaliy ko‘nikmalarni rivojlantirishda zamonaviy yondashuvlarning samaradorligini ko‘rsatadi. Maqola pedagoglarga, muhandislik grafikasi o‘qituvchilariga va ta’lim metodistlariga nazariy va amaliy jihatdan foydali tavsiyalarni taklif etadi.

Kalit so‘zlar: Zamonaviy ta’lim, pedagogik texnologiya, interaktiv metod, vizualizatsiya, modellashtirish, masofaviy ta’lim, aralash ta’lim, STEAM, muhandislik tafakkuri, ta’lim, fazoviy tasavvur.

Introduction. Today, the deep reforms in the education system and the implementation of innovative technologies demand a renewal of teaching methods, especially in practical and engineering-related subjects like technical drawing. This subject plays a key role in developing technical thinking and forming graphical skills essential in engineering and architecture. Hence, technical drawing not only teaches depiction methods but also enhances spatial thinking and problem-solving abilities in students.

The rapid development of modern educational technologies, widespread use of digital tools, and application of interactive methods provide broad opportunities for improving the effectiveness of teaching technical drawing. Technologies like visualization, 3D modeling, virtual and augmented reality (VR/AR) help boost students’ interest and motivation toward the subject.

This article highlights the theoretical foundations, application methods, and practical effectiveness of modern educational approaches in teaching technical drawing, analyzing their role in developing students’ creativity and engineering competencies.

Literature Review and Methods. The Concept for Developing the Education System of the Republic of Uzbekistan until 2030 emphasizes the integration of innovative forms and methods into the educational process. A particular focus is placed on forming a strong and healthy motivation for learning, individualizing the process, and equipping educators with the competencies to apply student-centered and innovative approaches.

The educational-methodological guide “Designing and Planning Pedagogical Technologies” by L. Golish and D. Fayzullayeva presents the main categories and concepts of technological approaches in teaching, especially in economics education. It describes the technological structuring of lectures and seminars, providing co-authored educational technologies that can serve as models for planning and implementing instruction in specific topics of technical drawing.

The guide “Innovative Educational Technologies” by N. Muslimov, M. Usmonboyeva, D. Sayfurov, and A. To‘rayev discusses the essence and types of various innovative methods, including modular, cooperative, interactive, problem-based, distance, computer-based, project-based, differentiated, individual, and independent learning. It also addresses the role of game technologies in enhancing student engagement and teaching efficiency.

The manual “Applied Foundations of Pedagogical Technologies” by O‘. Tolipov and M. Usmonboyev outlines the historical development, core principles, and effectiveness evaluation of pedagogical technology, as well as its application to specific subjects.

Discussion. Research and practical experience show that using modern educational approaches in teaching technical drawing significantly improves not only students’ knowledge but also their creativity, analytical thinking, and technical skills. Through visualization, modeling, and interactive methods, students gain the ability to both create and analyze drawings for practical use.

Distance and blended learning formats expand opportunities for self-study and revision, helping bridge gaps in understanding among students. The STEAM approach, in particular, fosters multidisciplinary knowledge and skills, preparing students for future careers in engineering, technology, and design.

Modern pedagogical technologies in teaching technical drawing enhance educational quality and prepare students for the demands of the modern labor market. Teachers must therefore master and effectively apply these approaches in the classroom.

Conclusion. In conclusion, utilizing modern educational approaches in teaching technical drawing greatly enhances the efficiency of the learning process. With visualization, modeling, interactive methods, and distance and blended learning formats, students not only acquire knowledge in the traditional way but also gain deep analytical and practical skills based on modern technologies.

Furthermore, integrating the STEAM approach ensures interdisciplinary learning, nurturing engineering thinking, creativity, and critical thinking in students. This creates a solid foundation for both theoretical understanding and practical application of technical drawing.

Educators must therefore master and apply innovative technologies effectively in their pedagogical practice, aiming to improve the comprehension of technical drawing and prepare students for professional activity. Ongoing research and practical work in this direction will continue to refine teaching methodologies in technical drawing.

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