

IMPROVING THE METHODOLOGY OF USING GRAPHIC SOFTWARE BASED ON A DIFFERENTIAL APPROACH IN TECHNICAL DRAWING LESSONS

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Abstract: This article is dedicated to the topic “Improving the methodology of teaching technical drawing using graphic software based on a differential approach.” In the education system of Uzbekistan, the subject of technical drawing holds a significant place, and teaching it using modern graphic software requires providing students not only with traditional methods but also with deep theoretical knowledge and practical skills through digital technologies.

Keywords: differential approach, technical drawing, graphic software, teaching methodology, digital technologies, pedagogical technologies, geometric shapes, drawing creation, educational process, pedagogy, modern teaching methods, developing students’ creative thinking.

Technical drawing is a technical subject in which students or specialists use drawing tools to depict the shapes and structures of objects. This subject is widely used not only for creating accurate and high-quality representations but also in engineering, architecture, mechanics, and other fields. The use of graphic software in teaching technical drawing plays a vital role in modern educational processes. Especially, teaching based on a differential approach significantly contributes to improving the quality of education and developing students’ creative and analytical thinking skills. This article discusses effective ways to improve the methodology of using graphic software and teaching technical drawing through a differential approach.

Teaching technical drawing is important not only for developing skills but also for teaching students technical thinking and engineering methods. Today, traditional teaching methods are losing their effectiveness because they often lead to ambiguity, errors, and wasted time. In contrast, with the help of graphic software and digital technologies, students can develop their knowledge and skills more quickly and effectively. Therefore, it is important to use a differential approach and modern software in teaching technical drawing.

The essence of the differential approach lies in organizing the educational process by considering each student’s individual characteristics. Each student should study according to their own pace, abilities, interests, and personal attributes. In this approach, the teacher strives to understand the individual needs of each student and provides appropriate instruction. Using graphic software supports the implementation of the differential approach, as it allows the assignment of tasks at different difficulty levels, quick analysis of results, and the development of individualized teaching.

Using graphic software in technical drawing lessons offers students the following advantages:

Visualization: Graphic software helps create 3D models and technical drawings of objects, allowing students to better understand and visualize real-world objects.

Speed and efficiency: Software tools allow students to quickly create, edit, and analyze drawings, enabling them to complete more practical work.

Error checking: Automated checking systems in graphic programs help easily identify errors in drawings, ensuring that students produce accurate and high-quality work.

Interactive engagement: These programs operate in interactive modes, encouraging students to actively participate and make independent decisions.

The main methodology for using graphic software in technical drawing consists of step-by-step instruction. Initially, students should be introduced to basic tools and features. Each function should be explained step-by-step and reinforced through practical exercises. For example, students can start with 2D drawings, followed by 3D modeling and complex geometry. Regular hands-on exercises are necessary to allow students to apply their knowledge. Increasing the complexity of the exercises encourages students to master each stage thoroughly.

Every student should study at their own pace and based on their abilities. Graphic software enables students to quickly identify and correct mistakes, which makes the individualized learning process more effective.

Students should be assessed regularly when using graphic software. This can be done using automatic assessment systems or through teacher analysis. This allows for monitoring progress and providing appropriate guidance.

Effective methods for implementing a differential approach in teaching technical drawing with graphic software:

Assessing students' knowledge levels: Identifying students' initial knowledge and individual characteristics is essential for implementing a differential approach. Using graphic software to test students with various tasks helps determine their starting abilities and tailor future lessons accordingly.

Encouraging independent work: Graphic software enables students to work independently. Engaging them in projects, tasks, and exercises fosters creativity. For example, students can create 3D models on topics of their own choosing.

Error identification and correction: Software tools help students identify and correct their mistakes quickly. Teachers should closely monitor each student's progress and provide support when necessary. This helps students learn from mistakes and gain experience.

Using graphic software in teaching technical drawing expands the possibilities of implementing a differential approach and allows students to quickly acquire practical skills. Graphic tools help develop students' creative and analytical thinking, making the educational process more effective, interactive, and engaging. This methodology strengthens students' knowledge and skills.

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