Published Date: - 01-05-2025

Page No: - 20-24

FACTORS OF ORGANIZING INDIVIDUAL LEARNING IN THE SUBJECT OF TECHNICAL DRAWING

Boburmirzo Bakhodir ogli Ko'kiyev
Head of the Department of Engineering and Computer Graphics, Chirchik State Pedagogical University, Candidate of Pedagogical Sciences (PhD), Uzbekistan

ABSTRACT

This article provides detailed information on the pedagogical technologies for organizing individualized learning in the subject of technical drawing, along with their advantages and practical aspects.

KEYWORDS: Technology, creativity, design, projection, model.

INTRODUCTION

Considering the rapid development of technology and production, it is essential to have knowledge of technical drawing, especially in the preparation of competitive specialists. The most encouraging aspect is that all schools in our country are now equipped with modern computers. These computers are not only simple technical devices but also computing machines equipped with software that can be adapted to many fields. Among these, computers have successfully automated the tedious manual work of drawing and formalizing designs, tasks that were traditionally carried out by designers and engineers.

At present, it is difficult to imagine the process of creating and formalizing technical drawings without the assistance of computers. Drawing programs that can be installed on computers have been widely developed and are easy to use. Using these programs does not require specialized computer knowledge. Another important aspect is that once students develop certain skills, they can independently search for and creatively use the necessary commands. For example, in higher education, after providing students with basic information on how to create drawings using computers, they can independently continue their learning. This phenomenon, where students develop their skills through independent exploration, is embedded in the software used for technical drawing. Therefore, students not only find the necessary commands independently from the service menu but also begin to use them creatively.

Organizing individualized learning in the subject of technical drawing is one of the key directions of the modern education system. This approach allows for the effective organization of the learning process, taking into account students' individual abilities, interests, and learning paces. This article provides detailed information on the pedagogical technologies for organizing individualized learning in the subject of technical drawing, their advantages, and practical aspects. Additionally, useful recommendations for teachers and innovative methods are presented..

The Main Principles of Individualized Learning in the Subject of Technical Drawing..

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Person-centered approach.	Flexible curriculum.	Regular monitoring and assessment.	Justification of the solution.
This principle involves taking into account each student's individual characteristics, abilities, and needs. In the subject of technical drawing, this means adapting the learning material based on the student's drawing skills, spatial imagination, and level of technical understanding.	In individualized learning, the curriculum can be adjusted based on the student's pace of learning. This allows for the opportunity to study complex topics in greater depth or allocate additional time for practical exercises in the subject of technical drawing	The student's achievements and challenges are continuously monitored. In the subject of technical drawing, this includes evaluating the quality of the student's drawings, adherence to standards, and their technical knowledg	In individualized learning, the active participation of the student is crucial. In the subject of technical drawing, this may include the use of 3D modeling software, virtual laboratories, and practical projects

Let's consider the methods of individualized learning in the subject of technical drawing..

Project-based learning: Students work on individual projects that align with their interests. For example, a student in the architecture field might design a building, while a student in the engineering field might create a mechanism drawing.

Independent learning modules: A set of learning materials and tasks specifically tailored for each student is developed.

Personal consultations: The teacher holds individual discussions with each student, answering their questions and providing guidance. This is particularly effective for explaining complex concepts in technical drawing.

Use of digital technologies: By using software such as AutoCAD, Swethome, 3D Max, students can work on their ideas. These programs assist in completing individual assignments and self-assessment.

Assessment methods in individualized learning:

Portfolio assessment: Students create a portfolio of their work. This method is especially effective in technical drawing, as it shows the student's development over time. The portfolio may include drawings of varying complexity, 3D models, and project documentation.

Self-assessment: Students analyze their work based on established criteria. This method develops critical thinking and self-reflection skills, which are important in technical drawing. Students learn to evaluate the accuracy, compliance with standards, and aesthetic aspects of their drawings.

Project presentation: Students present and defend their projects. This process evaluates not only the quality of the drawings but also the student's communication skills, technical knowledge, and creative approach. Presentations can be held individually or in small groups. Using Technologies in Individualized Learning..

CAD software (Computer-Aided Design software).

Programs such as AutoCAD, Swethome, and 3D Max allow students to work at their own pace and tackle complex projects. Through these programs, students can create 2D and 3D drawings, edit them, and visualize their designs

Electronic learning platforms.

Platforms such as Moodle and Google Classroom enable teachers to assign individual tasks, monitor students' work, and provide prompt feedback. Through these platforms, video lessons, interactive tests, and online discussions can be conducted.

3D printers.

3D printers allow students to print their projects as real models. This method is very useful for developing spatial imagination and understanding the practical aspects of designs. Students can analyze their models and make necessary modifications.

Virtual Reality (VR) technologies.

VR technologies allow students to view their projects in a virtual environment and interact with them. This can be especially useful when studying complex mechanisms or large architectural projects.

Based on the above, the following conclusions and recommendations can be made:

Flexible approach: Being flexible is crucial in implementing individualized learning in the subject of technical drawing. The learning process should be continuously improved, considering the unique needs and learning styles of each student.

Effective use of technology: The use of modern CAD software, 3D printers, and virtual reality technologies increases students' interest and enhances their practical skills. However, traditional drawing methods should not be neglected.

Regular assessment and support: Students' achievements should be regularly assessed, and constructive feedback should be provided. This will increase students' motivation and assist in their development.

Focus on professional development: Students should continuously enhance their knowledge and skills. Special attention should be given to staying updated on new pedagogical technologies and the latest advancements in the field of technical drawing.

The role and responsibilities of the teacher:

- **Development of personalized learning plans**: The teacher creates an individual plan for each student. This plan is developed based on the student's initial knowledge level, interests, and future goals. In technical drawing, this may include projects of varying complexity and both theoretical and practical exercises.
- **Continuous support and guidance**: The teacher provides regular consultations, answers students' questions, and helps them overcome difficulties. In this process, the teacher focuses not only on technical knowledge but also on developing motivation and self-confidence.
- **Assessment and feedback**: The teacher regularly assesses students' work and provides constructive feedback. In this process, the student's strengths are highlighted, and directions for further development are suggested. Assessment focuses not only on the final result but also on the entire learning process.
- **Implementing innovative methods**: The teacher continuously learns about modern pedagogical technologies and teaching methods and applies them in their practice. This may include new software, teaching methods, and assessment techniques in technical drawing. This helps engage students through individualized learning.

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