



MODERN PROBLEMS IN EDUCATION AND THEIR SCIENTIFIC
SOLUTIONS
FEATURES OF DRAWING GEOMETRY AND ENGINEERING
GRAPHICS

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Аннотация: *выполнение с использованием современных технологий, с целью формирования навыков самостоятельного обучения студентов по предмету инженерная графика в данной статье.*

Ключевые слова: *традиционный, независимый, электронный, формирование, задание, моделирование, выделение, визуальный, системный, идея, информация, навык.*

Annotation: *in this article, performing students using modern technologies, to form skills for independent education in the subject of engineering graphics.*

Keywords: *traditional, independent, electronic, formation, assignment, modeling, emphasis, vital, system, thought, information, skills.*

In today's modern education, there are many innovations and changes in the Independent Education of students due to the modern world and technologies. These innovations are aimed at making the learning process more efficient, personal and flexible. Below are the most important of them: open online courses (MOOCs) and online platforms: through platforms such as Coursera, edX, Khan Academy, FutureLearn, students can master courses prepared by the world's leading universities and experts. It provides an opportunity to develop oneself and master it in order to gain additional knowledge.

Virtual and augmented reality. In some disciplines (e.g. medicine, engineering, and architecture), students can experiment in virtual laboratories, simulate complex operations, or analyze objects in real-world environments.

The law of the Republic of Uzbekistan "on education" No. 637 of September 23, 2020, decree of the president of the Republic of Uzbekistan "on the strategy of Action for the further development of the Republic of Uzbekistan" No. 4947, decree of October 8, 2019 "on approval of the concept of development of the higher education system until 2030" No. PF-5847, decree of February 19, 2018 "on measures for further improvement of the information technology and communications on September 6, 2019, the decree of the president of the Republic" on additional measures for the further improvement of the professional education system "PF-5812, decree" on measures for the further development of the higher education system "of April 20, 2017 PQ-2909 and carried out the tasks set out in other regulatory legal acts related to this activity.





MODERN PROBLEMS IN EDUCATION AND THEIR SCIENTIFIC SOLUTIONS

Learning management systems: platforms like Moodle, Canvas, Google Classroom allow students to manage learning materials, assignments, grades, and contact with teachers in one place.

Changes in the pedagogical approach:

Individual study plans and resources are offered to suit each student's mastering speed, interests, and learning style. Algorithms analyze the student's activities and recommend suitable materials for him.

Students of traditional classes learn new material independently at home (through video lessons, online resources), while class time is devoted to asking questions, conducting practical classes, and solving complex issues together.

Students work independently or in groups on projects aimed at solving real-world problems. This is critical thinking in them, the problem creates endless possibilities.

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Students work independently or in groups on projects aimed at solving real-world problems. This is critical thinking in them, the problem creates endless possibilities. 1. Visual communication language: engineering graphics is an internationally recognized language for the visual conveyance of ideas, designs, and production information. It makes it possible to accurately describe the shape, size, material and Assembly Order of any object. This requires the reader to clearly understand the described object and think through drawings.

2. Development of spatial imagination and three – dimensional thinking: one of the most important features of engineering graphics is the development of the skill of visualizing three-dimensional (3D) objects through two-dimensional (2D) images and, conversely, converting 3D objects into 2D projections. This fosters the ability for students to think abstractly and analyze spatially.

3. Precise and high precision requirement: engineering drawings must be extremely accurate. Each line, each size and character has a clear meaning, and any mistake can ruin the project or negatively affect the quality of the product. It requires the reader to concentrate, pay attention to small details and be extremely responsible.

4. Standardized rules and conventions: engineering graphics have international and national standards for performing drawings (e.g. ISO, GOST). Compliance with these





MODERN PROBLEMS IN EDUCATION AND THEIR SCIENTIFIC SOLUTIONS

standards ensures uniform reading and understanding of drawings. Students learn to think systematically and follow established procedures by studying and following these rules.

5. Problem-solving orientation: engineering graphics often involve solving a particular engineering problem (e.g. drawing a complex detail, finding the intersection of two surfaces, creating an assembly drawing). In order to form in students the skills of Independent Education in the subject of drawing geometry and engineering graphics, a systematic approach is necessary, combining theoretical knowledge with practical skills. This process can be carried out through training aimed at solving problem situations, working independently and developing spatial thinking, combining modern and traditional educational technologies. The main means of independent education are independent educational materials. They are an inextricably linked system and differ from textbooks, teaching and methodological manuals and lecture texts. They include thoughtful and content methodological guidelines, a block of control over the cognitive activity of the learner, criteria for independent study in the process of professional training, a psycho for him to direct himself to independent study, control himself, self-expression and self-assessment in the process of personal cognitive activity.

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