



TOOLS FOR STUDYING ENGINEERING GRAPHICS

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ABSTRACT

It should be achieved through the harmonious development of learners, the pursuit of moral action, the development of the will, and the nurture of an active life position subject to humanity and nature. In this case, engineering education should be a priority, because the world in which man lives is increasingly striving not for simplicity, but for complexity.

KEYWORDS: *harmonious development, the main task of education, engineering-technical education, organization of engineering-technical education.*

INTRODUCTION

In the second half of the twentieth century, the industrial revolution solved the biggest problem facing humanity, namely the need of mankind for food. Engineers were the connecting link between science and manufacturing. It was they who ensured the material well-being of mankind. With the emergence of an abundance of food, clothing, household appliances, humanity has entered a new industrial era of its own development.

As prosperity increases, so do people's needs. The education paradigm has also changed. Education has emerged as a means of personal wealth, property, a means of self-expression in life, a means of achieving a personal career. This changes the purpose of education and upbringing, its cause, norms and forms, methods, the place of the educator. The position of the engineer in modern society is increasing. Approaches to the organization of engineering and technical education will change. It is becoming increasingly utilitarian and profit-seeking. They are trying to make an engineer, an entrepreneur, a manager, a humanitarian.

METHODOLOGY

The main task of higher education is the formation of a creative person capable of independent development, independent learning, innovative activity. It is impossible to solve this problem only by transferring knowledge from the teacher to the student in a ready state. It is necessary to move the student from a passive receiver of knowledge to an active creator-creator who can formulate the problem, analyze the ways to solve it, find the optimal solution and prove its correctness. Reforms in higher education are closely linked to the transition from the teaching paradigm to the education paradigm. It should be noted that the independent work of students should not only be an important form of the educational process, but also its basis.

The main task of any educator in any practical training, in addition to teaching his subject, is to teach the student to

think, reason, imagine. Pedagogical experience shows that the period of practical training is not limited to the formation of practical skills and the ability to solve problems, build graphs and so on. Students should always be able to see the main idea of the course and how it relates to future practical professional activities. The purpose of the lesson should be clear not only for the teacher but also for the students. It gives a vital description of the learning process, confirms the need for professional experience, and integrates them with life practice. In such circumstances, the teacher's task will be to demonstrate more the practical significance of advanced scientific concepts and scientific ideas.

RESULTS

A comprehensive approach to solving the set tasks, which serves the common goal of training qualified specialists in each science, will be associated with the development of creative potential of engineers, at the level of modern development of future engineers. This approach is considered one of the optimal solutions of modern technical education, increases interest in science and knowledge, develops independence and self-esteem in their work.

The training of future technical specialists on engineering graphics to a new level of quality curricula, under the guidance of a teacher, especially in small courses, manifests itself in a reorientation of students to independent use of their independent work. At the present stage of our society, there is an unprecedented social need for non-standard-minded, creative individuals. The use of information technology in the process of indirect interaction between students and teachers can greatly contribute to the formation of relevant values and rules and norms of behavior accepted in society [1].

There is also a need for creative activity of the specialist and advanced thinking, the ability to construct, evaluate, come up with proposals for rationalization. Currently, the number of undergraduate students majoring in



engineering is growing day by day. Now there is a growing demand for personal qualities of these graduates, such as high level of culture, discipline, independence, responsibility for their actions.

The most important task of education is to achieve the self-development of this person. His ethics in society should be goal-oriented. Describing the human personality, such as instinct (innate emotion, intuition), spirituality, intuition (the notion that one can know the truth in a complex way without experience) it will be necessary to combine psychological categories into a single model. There is no doubt that engineers will create the future.

The most basic condition for human development is to create conditions for human self-development. The main goal of the Engineering Graphics course is to provide students with the knowledge, skills and competencies necessary for any specialty engineer to express their technical ideas and ideas using drawings and to understand the principles of working from drawings to constructions, described technical products. The theoretical part of engineering graphics is based on the laws of descriptive geometry. In the process of studying engineering graphics, students get an idea of the details, assembly units and their drawings, as well as get acquainted with the design elements of details and elements of their processing. Engineering graphics is the first stage in the study of the basic rules of design documentation.

For the scientific and cognitive development of students, modern technological universities have ample opportunities to design, develop and compile detailed programs for the intellectual and technologically effective development of students. It should be noted that the purpose and content of science, in a sense, does not depend on time [3].

They have not changed since the time of Gaspar Monj. G. Monj, Brief: In 1770, at the age of 24, Monj held two professors at the same time: mathematics and physics. In addition, he conducts classes on cutting stones.

While dealing with the issues of precise cutting of stones according to the sketches given in relation to architecture and fortification (military-engineering science), G.Monj later developed methods that were generalized in a new science-drawing geometry. He is truly the person who created this science. The name of Gaspar Monge, located on the first floor of the Eiffel Tower, is included in the list of 72 great scientists of France [4].

In ancient Greece, a sharpened wand-style was used for writing. At the other end of the styler, a shovel is mounted to correct errors. Our ancestors wrote with a device mounted on a pat. In some countries, indelible lines are drawn using silver sticks (pins). In the fifteenth century in France - Parisian pen or - sauce was created. The sauce is prepared as follows: charcoal is mixed with charcoal powder and weak glue.

In 1565, in Cumberland, England, graphite was discovered by chance. The soft stone left a mark on the man's hand. When the graphite was run over the surface of a cloth or paper, it left a similar mark on them. The first graphite pencils consisted of a graphite rod wrapped in paper or tape, and they were wrapped around the graphite rod as it was removed.

From the eighteenth century to the present day, the most popular and enumerated is a mixture of this powder with clay (clay soil). Changing the proportions of the mixture of powder with clay (clay soil) allows you to change the hardness of the pen (it will be hard, medium hard and soft pencil). The tools used to complete the drawings will change, and the process will accelerate over time. It has been a drawing tool for decades and hundreds of years, serving goose feathers and ink along with pencils. Later, they were replaced by metal pens, and then the use of gotovalnya was introduced (gotovalnya-drawing tool set, in which the compass and reysfeder is the central drawing tool). The modern student is always - what gotovalnya? can not answer the question, because in modern schools and higher education institutions this set of drawing tools has not been used [2].

These examples illustrate one important case. Even if the content of engineering graphics has evolved over time, only radical changes will not occur. By its very nature, this science is sufficiently conservative. Alternatively, the tools are changing almost in principle

At present, professors and teachers of higher education institutions do not use the opportunities of pens and flyers in the design of their educational and methodological developments in various disciplines. They prefer to use personal computers for this purpose.

The introduction of the computer into the learning process not only frees the teacher from the regularity in the organization of the learning process, it gives the ability to create a variety of reference and illustrative material; presented in various forms: text, graphics, animation, audio and video elements. Interactive computer programs activate all types of human activities: mental, verbal, physical, accelerating the process of mastering this material. Computer simulators contribute to the acquisition of practical skills. Interactive test systems provide knowledge quality analysis.

CONCLUSION

Students and professors of the Andijan Institute of Mechanical Engineering use the capabilities of graphics programs such as KOMPAS and AutoCAD for this purpose. Students draw and submit homework using these graphic programs. Regardless, these options save time and labor to get the desired result. The Skills Component defines the quantity and quality of professional knowledge and skills an engineering graphics teacher must have to solve problems in the field of education [5].

Of course, just writing texts on a computer breaks a person's handwriting, and drawing pictures and shapes on a computer leads to a loss of skill in using drawing tools. Indeed, rather than striving to preserve traditions, it would be expedient to study the new computer technologies of engineering graphics, so to speak. The content of this subject does not change, and students need to understand what and how to describe in any situation. From this perspective, mastering graphics systems does not negatively affect students' knowledge, as the work is not just about pressing buttons, but rather making students think no less than when working with a



pencil and ruler. At the same time, personal computers are familiar and fun for the modern student.

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