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EFFICIENCY OF THE USE OF GRAPHIC PROGRAMS (AUTOCAD, COMPASS, CORELDRAW) IN HIGHER TECHNICAL EDUCATION

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ABSTRACT:

In connection with the widespread introduction of computer technologies into science and industry, the question arises of the need for students to acquire skills in this direction. The graphic training of students of technical directions forms the basis of engineering education. Professional competence in many disciplines involves the development of computer graphics by students. Teaching the computer graphics section is focused on using the AutoCAD graphic editor to form the professional qualities of future specialists. When conducting practical classes, the student's activities include the execution of the task in the manual version and the subsequent execution of drawings in the computer-aided design system using 2D and 3D modeling. The article presents some aspects of the work on the implementation of computer technologies in the educational process.

Keywords: Computer graphics; " AutoCad, Compass, CorelDraw" information and pedagogical technologies.

INTRODUCTION:

When Uzbekistan gained independence, broad paths of economic and social development, cultural and spiritual renewal were opened. Therefore, one of the topical issues is technical re-equipment, modernization of technologies and technologies in all areas of our country, as well as the development of telecommunication and computer communication systems that meet modern international requirements.

The growth of production capacity and the development of scientific technology creates great demands for engineers. One of the main tasks facing higher technical educational institutions is the development of deep theoretical knowledge and the provision of highly qualified practitioners.

The main task of higher educational institutions is to train competent specialists who are able to freely navigate in the modern information space and are ready not only to master the information culture, but also to constantly improve their professional skills. With the advent of new software tools, the study of graphic disciplines becomes especially interesting and relevant, as their content and teaching methods change.

Modern reality makes such a requirement for the younger generation as the ability to adapt to life in modern society. The effectiveness of learning is inextricably linked with the development of students' motivation to learn. This can be achieved through the transition to student-centered learning technologies that help to form the competencies necessary for the adaptation of young people in the modern world. Computerization in graphic education of university students is not an end in itself, but a means to an end.

The role of the computer is increasing in order to record and control the progress of students in individual subjects. Computer support of subject disciplines makes it possible to individualize work with students, stimulates

interest in the subject and makes education in higher education meaningful and effective.

The goal of teaching engineering graphics is to provide students with all kinds of graphical information such as drawings, diagrams and diagrams, from engineering and specialty subjects to 2D or 3D engineering graphics programs such as AutoCAD, Compass, and CorelDraw.

The means of three-dimensional computer modeling are now becoming the object of more and more attention of users, and this is not accidental. Their use allows you to efficiently carry out design and construction work, provides the user-designer with the ability to quickly and efficiently execute drawings with a high coefficient of accuracy and output drawings to paper. Descriptive geometry lectures are usually accompanied by presentations developed on all topics in the discipline. PCs allow you to qualitatively prepare methodological and didactic materials for the educational process and teaching materials. Lecture notes on descriptive geometry, practical exercises in engineering graphics, cards with individual options for performing independent work in various graphic disciplines, electronic teaching aids - this is not a complete list of teaching materials.

Teaching innovations have impacted on motivating students to learn our traditional disciplines. Using modern computer technology, we can:

- Show a large amount of graphic material in a limited time;
- Return to the previous material (as opposed to chalk and board);
- Show the main stages of solving labor-intensive tasks;
- Show 3D images of surfaces from any angle of view;
- use animation;
- Show the use of individual figures on real structures.

AutoCAD is the most widely used product made by Autodesk. It is an automatic universal design system that contains the necessary elements of two-level drafting and three-level modeling. Produced in 1982, the AutoCad automated system has deservedly received the widest distribution and popularity among designers in various industries of the industrial industry. Having received an indisputable advantage over other automated systems due to its relatively low price, this software product quickly gained deserved popularity.

AutoCad not only influences the time of engineering and design work, but also the quality of these works in terms of rigorous accuracy. Based on the design survey models, you can quickly perform projections, local sections, as well as create interconnected blocks of drawings and purposefully, depending on the tasks performed, they can be remotely controlled and grouped into appropriate categories, sections of the main project, archive engineering and project documentation, and timely organize cooperation various categories of specialists. In addition, the program is unique in that at the very early stages of design work it can identify inaccuracies and flaws, thereby preventing possible subsequent errors.

AutoCad uses the DWG format, which is the standard for engineering design in any industry today, but it is not the only option. The pdf file format, for example, is successfully used by various specialists when it is necessary to exchange data.

The constantly expanding capabilities of AutoCad testify to its relevance and popularity. In particular, in 2009 the program was updated, it became possible to identify and designate parametric internal links between objects, create, modify and edit objects of arbitrary shape. In addition, special Autocad programs have been created for some

industries: for road construction, mechanical engineering, land management, building architecture, and electrical engineering. To carry out engineering and design work not related to 3D graphics, a light version of the software product has been created, which is used to create two-dimensional drawings.

KOMPAS is a design automation program that provides the ability to draw up documentation in accordance with the requirements of the ESKD and SPDS standards. The well-known company "Ascon" (Russia) has become the registered publisher of the automated program "Compass". This program can be used to design drawings in both one and three planes. According to these goals, the program was developed and created in two versions. One of them is "KOMPAS-Graphic" (for one-dimensional space) and KOMPAS-3D (for three-dimensional space).

The use of an automated system for creating 3D models allows the student to check the correctness of reading the part and, in case of an error, independently understand and modify the model. The clarity of the presentation of information contributes to the rapid correction of errors and understanding of their nature. Interactive work on the sequential approximation of the created model to the real one also makes it possible to noticeably improve spatial thinking. The program allows the student to quickly master technical disciplines and get good training for a future specialist. Studying the KOMPAS 3D program in engineering graphics changes the attitude towards the discipline in a positive direction in more than 80% of students. And this is understandable, since the KOMPAS 3D program frees the student from routine work, for example, filling in the title block of a drawing. Analysis of the distribution of time when performing graphic work by students showed that the greatest costs are associated with the design of the drawing, repeated redrawing due to inaccuracies in the construction, and not due to a lack of knowledge. One of the clear advantages of CAD KOMPAS 3D over AutoCAD, when performing 2D drawings, is ease of assimilation and use of the program, a large technical library, ESKD support, constant updating of GOSTs, as well as the presence of good methodological developments that simplify the learning process.

According to the criterion "cost / efficiency", the KOMPAS system is one of the most acceptable computer technologies for PCs, which allows you to quickly obtain real results in the form of a qualitative improvement in the developed documentation, acceleration of design and release of new products, professional development of specialists. Since adaptation to all basic disciplines is important for students, the proportion of labor costs for independent work in graphic disciplines is currently commensurate with mathematics, physics, computer science, chemistry. Therefore, it is better to start mastering graphic programs with the KOMPAS 3D software product, which is simpler and faster to master, so that the main emphasis in training is not directed at mastering the program, but at its application to a specific discipline.

CorelDRAW is a vector graphics program, that is, objects created in it can be described by mathematical formulas. What does it do? First of all, such objects are perfectly scalable and editable. It usually does not take up much disk space. With proper preparation, they enable high-quality printing.
Compared to previous versions, Corel Draw has improved markedly. Old tools have new functionality, performance improvements and overall stability improvements. Vector graphics require a lot of RAM, but in the latest version the program was optimized so that now several applications can run on an average

performance machine. It is impossible not to mention the new possibilities of text editing, which is very important for publications and printing. The system of object blending and support for spot colors have been significantly improved, which help to achieve the desired result much faster. With each update, the program greatly improves the lives of both designers and artists, and customers who demand the quality and speed of completion of work from the designer. Despite the fact that you can endlessly write about the possibilities and goodies of Corel Draw, there are many small minor errors in it, although in the latest version their number has been very sharply reduced, but I hope that in the future the developers will pay attention to them as well.

Work on computers is structured so that students do not just study a graphic package - AutoCAD or KOMPAS, but continue to study engineering graphics. It is most effective to organize the learning process in parallel, combining manual graphics and the execution of drawings on computers. Some of the graphic works are done on paper and some on the computer. Paperwork is a must, as every technically competent person must be proficient with a drawing tool in order to achieve the professional creative thinking required when teaching traditional graphic sketching techniques.

Practice shows that it is difficult for students to assimilate so much new information, only a part is remembered, therefore, practical exercises are repetition of lectures, but at the same time students perform the same actions that the teacher showed in the lecture, independently, each at a separate computer.

In addition, in the curriculum for the study of AutoCAD, you can immediately include a section on 3D computer modeling. Working with three-dimensional models and auxiliary geometry (planes, axes required to build a model) will contribute to the development of spatial thinking and a better understanding of the principles of the formation of a projection drawing.

The use of an automated system for creating 3D models allows the student to check the correctness of reading the part and, in case of an error, independently understand and modify the model. The clarity of the presentation of information contributes to the rapid correction of errors and understanding of their nature. Interactive work on the sequential approximation of the created model to the real one also makes it possible to noticeably improve spatial thinking. The program allows the student to quickly master technical disciplines and get good training for a future specialist.

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