METHODS OF DEVELOPMENT AND APPLICATION IN THE EDUCATIONAL PROCESS OF COMPUTER TECHNOLOGY IN TEACHING GRAPHIC DISCIPLINES

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ABSTRACT

This article deals with the problem of conducting lessons in descriptive geometry and drawing in higher educational institutions using an automated drawing program such as AutoCAD.

Keywords: Graphic discipline, descriptive geometry, knowledges, skills, positional and metric problems.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

The main purpose of automated programs is to improve the learning process based on the user's dialogue with a personal computer. The main goal is the use of such technology, which would provide didactic efficiency of the learning process and affect the productivity of students and teachers.

Computer technology, compiled taking into account the use of the computer program "AutoCAD", is designed for the development of the discipline "descriptive geometry" and "Drawing", studied in pedagogical universities.

"Descriptive geometry" and" Drawing " refer to the academic disciplines that form the ability and skills of the basics of graphic engineering. Graphically disciplines in the curriculum begins with the study of descriptive geometry, followed by the study of drawing. Descriptive geometry is a complex discipline, the process of its study is difficult, due to the period of adaptation of students in high school. Teaching descriptive geometry is conducted by traditional methods, half of the teaching time is devoted to the study of projections of geometric primitives, solving positional and metric problems. Methods of their decision are fulfilled. Own long-term experience of teaching shows that any problem of descriptive geometry (including the most difficult to build a line of intersection of surfaces) can be solved accurately, simply and quickly using modern computer graphics systems, for example "AutoCAD" the solution of the problem does not allow the student to imagine in space the method of its solution, and gives only the final result.

The organization of educational process on the basis of new technology demanded development of the computer graphics providing the following stages of structuring of the contents:
- preliminary methodical study of educational material;
- algorithmization of the system of organization of the educational process and management of the student's actions;
- building a control system;
- preparation of the logical structure of the educational process with the submission of programmed educational material;

- experimental evaluation of the didactic effectiveness of the course for operational feedback and content adjustment.

When developing the content of computer graphics we were guided by the following principles of selection of educational material:
- the maximum possible variant of the lesson;
- purposeful structural composition of educational material;
- methods of introduction of timely control of students ' knowledge;
- unification of the wording of the replicas of the program for correct and incorrect answers of students;
- form of timely assistance to the student at any stage of work;
- the identity of the symbols of the training information, the keyboard and the reference information of the training manual;
- the ability to carry out the current and final assessment of the quality of students ' work. The main purpose of providing variability of occupations-approximation of the contents of computer graphics to requirements of preparation of this or that expert, with performance of requirements of the state educational standard. Possible variants are determined in advance to developers. The choice of this or that option depends on the purposes and purpose of discipline "descriptive geometry" and "Drawing" in training. In the learning process, the most effective are multivariate tasks, as they create the most favorable conditions for independent activity of the student. Knowing that the tasks are multivariate, the student, without wasting time, begins to perform his task. Of course, the development of computer graphics for the implementation of multivariate classes is much more difficult. In General, 2 variants have been developed for technical and pedagogical specialties. The task conditions for all variants remain the same, only the initial data change.

At the first stage of preparation of computer graphics for classes the purpose of a course is defined, the model of actions of the trained is made, selection of educational material is made, the list offered to studying of subjects is specified, the mode of use of system is defined.

The content, title of each training and final window is defined. The titles of the training Windows contain the name of the discipline (or section), and the Windows themselves-the presentation of the training material, instructions for the use of audio - visual material.

The summary window contains information about the results of the course. The student on the computer is given an assessment and recommendations for his further actions. For example: "You poorly have learned this subject. Prepare yourself. The computer invites You to meet again."
The course material is divided into two parts, each of which contains the following fragments:
- elements of the theory;
- questions for pre-test control;
- tasks on the studied topic;
- diagnosis of the level of knowledge of the student.
The teaching of graphic disciplines should combine traditional and new forms of education. The staff of the Department created automated training courses on separate sections of the course of descriptive geometry and drawing, helping the student to master the theoretical provisions, to learn the step-by-step solution of typical problems, to verify the knowledge gained.

Computer lectures have been developed to achieve better clarity in the presentation of theoretical material. A Bank of visual computer three-dimensional models and their

corresponding flat projections is created. They will allow the student to learn how to transform a visible flat image into a virtual image of a three-dimensional object.

Currently, in the teaching of engineering graphics, priority should be given to 3D modeling. Three-dimensional modeling methods change the methodology of design and production preparation. The main primary carrier of information about the projected object becomes its 3D-model, and the drawings created on this model represent a secondary form of display of the object. Execution of drawings of technical products on 3D models is more productive and less time-consuming compared to when the graphics system is used only as an "electronic flagship". It is advisable to redistribute the training time of descriptive geometry and drawing to increase the number of training hours used in 3D modeling with the use of modern graphics systems.

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