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The role of graphics programs in improving the learning process using information technology

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Abstract

Advances in science and technology have transformed our society into an information society. Given the demands of today and the times, it is clear that the science of "Computer Graphics" is inextricably linked with each field, and the demand for it is growing. The scope of application of computer graphics is very wide, and first of all, the visualization of this field is remarkable. That is, in computer graphics, the image is the main factor. When choosing a graphics program, you must first take into account its capabilities. In most cases, you will need to learn another program or science before using a graphics program. This makes graphics programs more complex.

Keywords: Computer graphics, science, image, information technology, graphics software, opportunity, mastery, complex, computer, virtual.

Introduction

The very rapid development of modern information and communication technologies and the means of their implementation predetermines the formation of the information society. In such a society, the vast majority of people working in all spheres of human activity are engaged in the development, storage, processing of information and its highest form, the dissemination of knowledge. Internet technology plays an important role in this area.

Information technology models are mastered in the conscious and planned implementation of certain actions. This process includes:

-computers, as well as printers, modems, microphones and audio devices, scanners, digital video cameras, multimedia projectors, drawing tablets, music keyboards, etc. and their software;

- hardware software;

-virtual text constructors, animations, music, physical models, geographical maps, etc .;

-information set - directories, encyclopedias, virtual museums, etc .;

-technique trainers (input of information from a set of keys regardless of the keys, initial mastering of software, etc.).

Advances in science and technology have transformed our society into an information society. The vast majority of those working in this society are engaged in the storage, processing, and implementation of information. [1]. It is difficult to do such work without modern computers. Processing the data in them using machine graphics is very convenient for the user.

In computer graphics, the creation of information focuses on the human sense of sight and hearing, and in simple terms, images and sound are widely used to convey information. The main goal is to convert information into image and sound.

Computer graphics is the science of creating, storing, and processing models and images using a computer.

Computer graphics usually refers to the automation of the process of preparing, processing (building), storing and displaying graphic information on a computer, while graphic information

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refers to object models and images. Given the demands of today and the times, it is clear that the science of computer graphics is inextricably linked with each field, and the demand for it is growing. The scope of application of computer graphics is very wide, and first of all, the visualization of this field is remarkable. That is, in computer graphics, the image is the main factor.

It is known that in the exchange of information, the information received by the human sense of sight is the most effective, and it leaves a deep mark on memory. In particular, the information provided by voice has a positive effect. The least effective medium is written information, which takes more time to receive and process in the brain, and due to the physiology of each person, a certain amount of information is lost and stored in memory. [2]

Computer graphics is a new fundamental science in the world, which appeared in the 90s of the last century and has played a unique independent role in the training of personnel in all areas of science and industry. With the help of special software, it was possible to draw with a mouse on a computer screen, that is, to create, edit and move images, just like drawing various pictures on a sheet of white paper with a pen or pen. These programs are drawing programs or graphic editors that control the elements of an image. The rapid development of computer graphics and the updating of its hardware and software require constant improvement of this course, the constant study of new directions in this field. In recent years, there have been significant changes (shifts) in this area, ie in the field of displays that can display more than 16 million colors and shades, graphics scanners, and in the field of software, the real computer world. applications that can be explored have emerged.

There are many types of computer graphics programs available today, and they vary in the areas in which they are used. Experts in each field choose a graphics program that is convenient for their work. The capabilities of the program will also be focused on a specific area. Therefore, when choosing a graphics program, you must first take into account its capabilities. In most cases, you will need to learn another program or science before using a graphics program. This makes graphics programs more complex.

The program we are going to study is AutoCAD graphics program developed by the American company Autodesk. Autodesk has a wide range of software products (AutoCAD, ArchiCAD, AutoCAD Electrical, 3ds Max, Design Review…), which incorporates the latest technologies that are popular all over the world. AutoCAD is one of the company's software products. It's basic, and the rest of the software is based on it. Graphics capabilities are very high and can perform both simple and complex tasks at the same time.

Two-dimensional and three-dimensional modeling programs are useful for design and engineering developments. In addition, these programs can be supplemented with three-dimensional animation, printing, presentation packages. Among the modeling programs, the most powerful automated design system used in the WINDOWS environment is AutoCAD from Autodesk. Typically, AutoCAD is accepted as the graphical core of an automated design system (CAD). The program allows you to create and edit various lines, arcs, texts, create 2D and 3D models, automate the solution of many problems that arise in the design process, create custom scripts and macros, customize and adapt the system to specific problems and applications.

Because AutoCAD graphics software is concerned with drawing, it also requires knowledge of specific disciplines, such as drawing, geometry, and drawing geometry, which are theories of the science of drawing. It is required to know simple geometric constructions (division of a circle into equal parts, arc of a circle, jig, vatar, angular bisectors, perpendicularity and parallelism…). Otherwise, it would be inappropriate for us to give the wrong set of commands and ask the program to do something. In short, the study of AutoCAD graphics software requires first computer science, then

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drawing and drawing geometry.

AutoCAD, CoralDraw is a graphics program. In addition to drawing, the Corel Draw vector package can perform various graphics and raster image editing. The program is equipped with file management, slide show on a computer screen, "manual" drawing and working with image layers, the application of three-dimensional special effects, text processing. There are also Barco Creator, LivePicture, Scitex Blaze, Linotype Da Vinci, Eclipse, and Pixelfx for Adobe Photo Styler, SGI, and Macintosh computers running Windows. Barco Creator is known for its speed and functionality.

Another graphics program is ArchiCAD. ArchiCAD is a graphics software program for CAD created by Graphisoft. It is a program designed for the design of architectural and building structures and solutions, as well as landscape elements, furniture, etc. [3]

The ArchiCad graphic editor has the following features:

- facilitates comprehension by conveying the material being studied through an inductive approach to traditional textbooks, through exposure to auditory and emotional memory;
- adapted to the needs, level of training, intellectual capabilities of students;
- eliminates complex calculations and substitutions, allowing you to review a large amount of information and assignments and solve more practical problems, focusing on the essence of the subject;
- provides ample opportunities for self-examination at all stages of learning;
- allows the work to be neatly and clearly written and handed over to the teacher in the form of a file or paper;
- performs the task of an experienced teacher, providing unlimited explanations, countless repetitions, reminders. [4]

An electronic software product that teaches you how to work with objects in the graphics editor ArchiCad provides the following convenient opportunities for practical training in specialized classrooms:

- free of time required to perform a large number of tasks using computer support, to analyze solutions and their graphical interpretation;
- allows the teacher to participate in the form of independent work in front of a computer, participating as a guide and consultant
- It is possible to provide the teacher with theoretical and practical lessons, materials that are small in size but very important in content, and can be studied outside the classroom. they will have the opportunity to work independently in solving problems;
- Relieves the teacher from hard work such as homework, checking various calculations and control tasks;
- Allows you to personalize work with students, especially on homework and supervision.

It is worth noting that the use of information technology is directly related to the exact sciences. It can also be considered as an integral continuation of them. [5]

Nowadays, it is difficult to find an industry that does not include computer graphics and animation tools. Computer graphics and animation tools can be divided into the following groups according to the field of application:

- computer graphics programs for printing;
- Presentation programs;
- two-dimensional animation programs;
- three-dimensional animation programs;
- Programs for scientific visualization.

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Computer graphics and animation programs are of great interest to artists and designers, printers and cinematographers, computer game and training software developers, clipmakers and scientists, as well as all professionals who use images in various formats in their work. [6]

Therefore, the use of information technology in the educational process shows not only high mastery rates of students, but also high educational efficiency. Classes with the help of information technology increase the student's interest in the lesson, as well as skills and level. The advantages of educating students with the help of information technology in the field of education are as follows: In the process of learning, students observe invisible processes with the help of information technology, that is, perform visual vision. There will be an opportunity for a deeper and more complete mastery of the materials provided in the educational process. The fact that a lot of work is done by technical means during the course saves time as a result of the reduction of learning time. The acquired knowledge will be stored in a person's memory for a long time and the possibility of applying it in practice will increase. The following modern technical means can be included in the information hardware: overhead projector, audio and video tape recorders, television, computer, scanner, microphone, speaker, video eye, video projector and copiers, etc.

In short, improving the quality of lessons using electronic textbooks and technical aids, programs in every lesson process of every teacher is a requirement of today. The use of information technology in the educational process not only increases the comprehensive knowledge of students, but also allows them to think independently and learn independently.

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