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USE OF MULTIMEDIA TECHNOLOGIES IN THE EDUCATIONAL PROCESS

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Abstract.
This article describes how to effectively use multimedia software and hardware in higher education. There are also suggestions for rules for creating multimedia software.

Keywords:
multimedia, multimedia technologies, higher education, educational process, hypermedia technologies, multimedia hardware, multimedia software tools.

Introduction

Today, multimedia technology is one of the most promising areas of informatization of the educational process. Improvement of software and methodological support, material and technical base will allow to successfully using modern information technologies in education.

Multimedia technologies enrich the learning process, make the learning process more efficient, and involve many of the emotional components of the student in the process of perceiving learning information. Thanks to multimedia technologies, oral speech has shifted from static to dynamic, meaning that over time, it has become possible to follow the processes studied. Multimedia courses can be used for distance learning, with interactive knowledge management features, and in groups. Multimedia technologies allow you to link text, graphics, audio, video, animated slides in the presentation with the results of modeling the studied processes. This allows us to take the classical principle of didactics - the principle of clarity, to a higher level in terms of a new quality.

Multimedia and hypermedia technologies combine strongly distributed educational resources, which can create conditions for the formation and manifestation of key opportunities, mainly information and communication. Multimedia and telecommunication technologies are opening up completely new methodological approaches in the general education system.

Multimedia is the interaction of visual and audio effects using modern hardware and software, interactive programs that combine text, sound, graphics, images, and video in a single digital form.

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Hypermedia are computer files that are linked by hypertext links to provide a link between multimedia objects.

Multimedia teaching technologies are technical and didactic manuals on media. Multimedia technology provides the conversion of information (sound and image) from analog, ie permanent, digital (discrete) for storage and processing, as well as the reverse exchange of this information for human perception.

Technical multimedia tools include a multimedia computer equipped with devices such as a stereo sound card, DVD / CD-ROM drive, stereo speaker, microphone, video card. Also again:

- TV-tuners and radio tuners (TV and radio receiver cards) that allow you to receive TV and radio broadcasts;
- devices for entering digital images into a computer;
- board for working with a video camera;
- cameras and digital cameras;
- webcams for teleconferencing and visual communication;
- different screens;
- audit applications and display devices;
- audio production and video playback and data display devices;
- Remote control of technical means.

The Main Part

Multimedia has the potential for flexibility, interactivity, and integration of different multimedia educational information. Therefore, multimedia is a very useful and effective educational technology.

Multimedia technology is one of the fastest-growing areas of new information technology used in education. One of their features is interactive computer graphics. D. A. Pospelov, a well-known expert in the field of artificial intelligence, described three main functions of cognitive computer graphics.

- The first task is to create models for the demonstration of knowledge, in which both objects, which are characteristic of logical thinking, and graphic representations using a single means of figurative thinking;
- The second task is to visualize the knowledge of people who have not yet been able to find textual descriptions;
- The third is to look for ways to move from the observed graphic images to form some assumptions about those mechanisms and processes that are hidden behind the dynamics of the observed images.

Given that lectures are the basis of the educational process in full-time education, it should be recognized that multimedia lessons are conducted in

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specially equipped classrooms when they are organized by the level of development of information technology.

Available software products, including ready-made e-textbooks and manuals, as well as their developments, allow the teacher to increase the effectiveness of teaching. The Internet is becoming an indispensable tool for teachers to find and retrieve information and communicate with colleagues.

Use of multimedia technologies. The following are the main methodological features of the organization of education for the modern student:

- Classes using multimedia presentations are conducted in computer classrooms using multimedia projectors, electronic reference books, automated learning systems, video recordings of various programs, etc .;
- In practical classes, each student is assigned a separate computer, in which it is advisable to create a personal folder with the group code and the student's last name;
- Individual approaches, including individualized curricula, multi-level task bank (for practical training and laboratory work) should be widely used;
- It is advisable to spend a significant part of the training in the form of business games; tasks can include tasks that are common in real life and unresolved, especially problematic situations that graduates encounter in their professional careers;
- The project method can be widely used, which should follow the principles of consistency and continuity; that is, a single global task must be consistently completed, supplemented, and expanded in all practical (laboratory) and computational and graphical work, integrated into a coherent integrated system;
- provide opportunities for the parallel and concentric study of key sections of the program; this allows students to gain in-depth knowledge as they master the course without losing the integrity of the presentation of the entire material in each section;
- Rely on the following interrelated principles: motivation to learn; multifaceted perception; "input" system-information analysis;
- Widespread use of problem-based learning, the development of real programs (documents, tables, databases) that can be used by students in the learning process.

The use of multimedia technology in education has the following advantages over traditional teaching:

- allows the use of color graphics, animation, soundtrack, hypertext;

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- provides the ability to constantly update;
- low costs of publishing and processing;
- allows you to place interactive web elements, such as tests or workbooks;
- Allows copying and pasting parts for quotes;
- allows the passage of the material to be non-linear due to a large number of hyperlinks;
- Hyperlinks to e-libraries or additional literature on educational sites;
- Multimedia allows you to combine verbal and visual-sensory information, which helps to motivate students and create a real environment for learning.

Organizing classroom lessons using multimedia technologies can save time by activating the presentation of learning materials by using multimedia tools available to any student. It can create a visualized colorful learning and play environment that has a truly revolutionary impact on students' perception of the subject throughout the lesson.

Multimedia computer technology allows the teacher to quickly combine a variety of tools to help students master the material more deeply and consciously, saving class time and filling it with information.

The introduction of multimedia technology in the teaching of modern information technology courses reveals several advantages and several difficulties. In addition, the organization of lessons with the help of a special projector using multimedia technologies allows you to demonstrate the capabilities of the studied software and save time, thereby activating the presentation of educational material. At the same time, there are additional requirements for the preparation of multimedia materials and the organization of the lesson.

The introduction of information and multimedia technologies will make the learning process more technological and efficient. Yes, there may be some difficulties and mistakes along the way, but they can be avoided in the future. But there is a key success - it is the interest of the students, their readiness for creativity, the need to acquire new knowledge, and a sense of independent work. Computers allow taking different classes. A constant sense of novelty stimulates interest in learning.

So, the use of multimedia in the classroom through interactivity, structuring, and visualization of information increase the motivation of the student, his cognitive activity are activated both consciously and unconsciously.

Of all the information channels, the visual channel is the strongest, so its use in multimedia in education is growing. However, this does not negate the importance of other materials. For example, the effectiveness of mastering the material

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significantly increases the creation of a unique rhythmic framework for each multimedia textbook through the optimal selection of musical accompaniment.

The thoughtful interaction of keyboard and mouse in multimedia textbooks, along with other media, adds another advantage to this educational technology. This is based on the fact that manual exercises significantly improve memory.

Separate developments (text, image, sound sequence, video) related to the individual consciousness of the author are combined into a new system. At the stage of script development (calculation of all the functions expected from the product by its purpose), they interact with each other, and they lose their independence. As a result of this interaction, multimedia work acquires qualities that are not found in individual developments.

Many multimedia software products have been developed in recent years: encyclopedias, tutorials, computer presentations, and more.

Multimedia product:

The first is a software product that provides the user with interactivity, that is, a dialogue environment that allows the exchange of commands and responses between a person and a computer;

Second is the environment in which various video and audio effects are used.

Today, the development of the multimedia industry has made it possible to create a fake model of the real world. These are concepts that are described as virtual reality or virtual reality. Multimedia creates great opportunities for the user to create a fantastic world (virtual), in which the user does not play the role of a passive observer on the periphery, but actively participates in the events that take place there; however, communication in the user's usual language takes place primarily in the language of audio and video.

Design of multimedia applications. The content of the multimedia application is analyzed in detail by the author during the preparation of the script and is determined during the development of the technological scenario.

Beautifully decorated, equipped with illustrations, tables and diagrams, animation elements, and sound accompaniment, the multimedia application facilitates the reception of the studied material, helps to understand and remember, increases the student's activity in learning, clarifies the subject, and provides a more complete understanding.

There are different technological approaches to developing quality multimedia applications. Several key technological recommendations should be followed when creating and using these applications.

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The basis for the creation of multimedia applications can be a model of coverage of materials, which includes a method of systematization based on the division of material into elements and the hierarchical presentation of material.

The material coverage model at the initial stage of multimedia application design allows:

- clear definition of the content of the material;
- present content in a visual, clear, and concise manner;
- Determining the content of multimedia application components.

The need to take into account several general psychological achievements in the development of methods for visualizing information on a computer screen helps to formulate recommendations:

- the information on the screen must be entered into a system;
- visual information must be constantly replaced by audio information;
- color brightness and volume should be constantly changing;
- The content of the visualized material should not be too simple or too complex.

When designing and creating a screen frame format, it is recommended that you consider the purpose and relationship between the objects that define the viewing area. It is recommended to place objects as follows:

- Close to each other, ie the closer the objects are to each other in the field of view, the more likely they are to form a single, coherent image;
- The similarity of the processes, that is, the greater the similarity and integrity of the images, the more likely they are to coincide;
- taking into account the characteristics of continuity, that is, the more elements in the field of view that correspond to the continuation of an orderly sequence, the more likely they are to merge into a single image;
- the shape of objects, the size of letters and numbers, the completeness of colors, the location of the text, etc., taking into account the specifics of the subject and background;
- without decorating the visual information with extra details, bright and contrasting colors;
- Separate memory material by changing the color, underlining, and changing the font size and style.

When developing multimedia applications, it is important to take into account that people perceive objects depicted in different colors and backgrounds differently. The contrast of objects to the background plays an important role in the

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organization of visual information. There are two types of contrast: direct and inverse. In direct contrast, objects and their images are sharper than in the background, and in contrast, they are sharper. Multimedia applications typically use both types, separately in different frames and together in a single frame. In most cases, the opposite contrast prevails.

Developers of multimedia applications are advised to use logical emphasis to optimize the study of information from a computer screen. Logical emphasis is a method of focusing the learner's attention on a particular object. The psychological impact of logical emphasis is associated with a reduction in the amount of time the learner spends finding the main object and focusing on that object.

The following methods are often used to create logical accents: depict the main object in a brighter color, change its size, brightness, location, or highlight it with radiant color. Logical emphasis can be quantified by its intensity. The intensity depends on the color and brightness of the object relative to the background, as well as the relative size of the object relative to the size of the objects in the background. It is recommended to use brighter or more contrasting colors, as resizing or brightening will not work well.

When studying the technology of creating multimedia applications, a scenario is developed to describe how they are created. From this, we can logically conclude that each multimedia application consists of different components (different themes). The content of multimedia applications can be divided into selecting a theme for the created multimedia application, defining the workspace (scale and background), using frames, layers, creating symbols of different shapes, entering variables in the programming language and writing scripts, working with audio files, add text, create effects, use and import images, use ready-made components in the library, create navigation, use text marking languages and scripting languages. There are many technical tools for creating a multimedia product.

Undoubtedly, multimedia technologies enrich the learning process, make the learning process more efficient, and involve many of the emotional components of the student in the process of perceiving educational information. In particular, G. Kirmeyer noted that the use of interactive multimedia technologies in the educational process can be up to 75%. This may be a clear optimistic assessment, but increasing the effectiveness of learning material when the visual and auditory components are involved in the cognitive process was known long before the advent of computers.

CONCLUSION

Multimedia technologies have transformed educational visualization from static to dynamic, meaning that it is possible to follow the processes being studied promptly. Previously, only educational TV shows had this opportunity, but this type of field is not as interactive. Modeling evolving processes over time, interactively changing the parameters of these processes is a very important didactic advantage of multimedia learning systems. In addition, there are so many learning tasks that it is not possible to present the events being studied in the classroom, and multimedia tools are the only option for such problems today.

Based on the experience of using multimedia technologies, the following can be concluded:

- students interest and activity in working on themselves increases dramatically;
- develops an algorithmic style of thinking, the ability to make optimal decisions, to change;
- The teacher is freed from the mass of constant work, the opportunity for creative activity is provided based on the obtained results.

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