The Importance of Multimedia for Professional Training of Future Specialists

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Summary

For high-quality education of the modern generation of students, forms of organizing the educational process and the latest methods of obtaining knowledge that differ from traditional ones are necessary. The importance of multimedia teaching tools is shown, which are promising and highly effective tools that allow the teacher not only to present an array of information in a larger volume than traditional sources of information, but also to include text, graphs, diagrams, sound, animation, video, etc. in a visually integrated form. Approaches to the classification of multimedia learning tools are revealed. Special features, advantages of multimedia, expediency of use and their disadvantages are highlighted. A comprehensive analysis of the capabilities of multimedia teaching tools gave grounds for identifying the didactic functions that they perform. Several areas of multimedia application are described. Multimedia technologies make it possible to implement several basic methods of pedagogical activity, which are traditionally divided into active and passive principles of student interaction with the computer, which are revealed in the article. Important conditions for the implementation of multimedia technologies in the educational process are indicated. The feasibility of using multimedia in education is illustrated by examples. Of particular importance in education are game forms of learning, in the implementation of which educational elements based on media material play an important role. The influence of the game on the development of attention by means of works of media culture, which are very diverse in form and character, is shown. The importance of the role of multimedia in student education is indicated. In the educational process of multimedia students, a number of educational functions are implemented, which are presented in the article. Recommendations for using multimedia are given.

Keywords:
multimedia, multimedia technologies, professional training, future specialists, latest methods, multimedia training tools, advantages of multimedia.

1. Introduction

Effective functioning of the modern education system is impossible without high-quality information support, the content and nature of which are regulated by the purpose of the educational process, the direction of future professional activity of students, the subject, means and results of training. One of the possible ways to improve the effectiveness of the learning process is to unify and combine tools and technologies into the information educational environment of an educational institution.

Now there is a noticeable increase in attention to assessing the impact of the latest information and communication technologies in education on the process of mastering knowledge, as well as to the possibilities of using new tools and sources for learning that contribute to cognitive activity. To teach the modern generation of students, forms of organizing the educational process and the latest methods of obtaining knowledge that differ from traditional ones are necessary. Realizing this feature and the need to teach current students, many prestigious foreign and domestic higher education institutions began to practice teaching lecture material in the form of presentations hosted on university servers, and use visualization tools for educational material during classroom learning [11].

"Multimedia learning tools" is a promising and highly effective tool that allows the teacher to present an array of information in a larger volume than traditional sources of information; in a visually integrated form, include not only text, graphs, diagrams, but also sound, animation, video, etc.; select types of information in the sequence that corresponds to the logic of cognition and the level of perception of a particular contingent of students.

The purpose of the article: to show the importance of multimedia for professional training of future specialists.

2. Analysis of recent research and publications

O. Danilova reveals the feasibility of using multimedia in the professional training of future specialists [3].

S. Thompson describes the directions of multimedia application [16].

V. Imber presents a comprehensive analysis of the possibilities of multimedia learning tools and identifies the didactic functions that they perform [6].

O. Krivonos speaks about the disadvantages in the professional training of modern specialists, in particular, the lack of professionalism in the use of information and communication technologies, which primarily affects a significant decrease in the effectiveness of training [8].

Kotiash, I., Shevchuk, I., Borysonok, M., Matviienko, I., Popov, M., Terekhov, V., Kuchai O. In the article light up that the use of multimedia technologies in the educational process of higher education institutions allows to move from a passive to an active way of implementing educational activities, in which the student becomes the main participant in the learning process. When choosing multimedia teaching aids, the teacher must take into account the uniqueness of a particular subject, to provide for the specifics of science, the conceptual apparatus, the peculiarities of methods of studying its laws. Multimedia technologies must meet the goals and objectives of the course and be an integral part of the learning process. [7].

Shunkov, V., Shevtsova, O., Koval, V., Grygorenko, T., Yefymenko, L., Smolianko, Y., Kuchai, O. reveals the pedagogical objectives of multimedia learning technologies: intensification of all levels of the educational process, improving its efficiency and quality; implementation of the social order caused by the informatization of modern society (training of specialists in the field of informatics and computer technology; training of the user of multimedia technologies); construction of an open education system that optimizes the dynamics of the trajectory of self-education; systematic integration of subject areas of knowledge; development of creative potential of the student, his ability to communicative actions; formation of skills in organizing and conducting experimental research activities; culture of educational work; development and formation of information culture of students The effectiveness of the use of network and multimedia technologies in the training of future teachers depends on the level of conceptual development of pedagogical tools used in the organization of educational and cognitive activities of students; from the degree of adaptability of the educational and information environment of training a modern specialist to his professional environment; from the level of readiness of students to perform professionally-oriented tasks with the help of network and multimedia technologies. [14].

Kuchai, O., Skyba, K., Demchenko, A., Savchenko, N, Necheporuk, Y., & Rezvan, O. analyze the role of multimedia education in the formation of the information society. The information sphere is qualified both as a separate sector of the economy and as a factor in the modernization of education [10].

M. Zhaldak, M. Shut, J. Zhuk, N. Dementievskaya, O. Pinchuk, O. Sokolyuk, P. Sokolov analyze the development of modern educational computer programs based on multimedia technologies that have emerged on the border of many branches of knowledge [13].

A. Krivonos draws attention to the development of modern multimedia tools, which helps to implement educational technologies at a fundamentally new level, using for this purpose the most progressive technical innovations that optimize the provision and processing of information of various types [8].

3. Research methods

To solve research problems, a set of mutually complementary methods was used: system-historical (to consider the historical prerequisites and evolution of multimedia learning tools), logical-historical (to consider the scientific foundations of multimedia learning tools), component-structural and system-structural analysis to consider multimedia learning tools and their components as a system containing various subsystems; systematization and generalization of processed materials to formulate conclusions, recommendations and determine ways to further develop information support for education.

4. Results and discussion

There are several approaches to classifying multimedia learning tools. Most often, such tools are classified according to their functional or methodological purpose. The effectiveness of using multimedia consists in saving time (by an average of 30%) required for studying specific material, which can be used to repeat and consolidate the acquired information, to acquire additional knowledge, skills and abilities. Thus, the principle of reliability and fundamental training is implemented.

The advantages of multimedia include the heterogeneity of information, an increase in its volume, relatively greater visibility of information, the ability to sort and store information on media, and the expansion of interactive resources.

A. Petrenko refers to the special features of multimedia:
- integration of multi – valued types of information in one software product-both traditional (text, tables, illustrations, etc.) and original (speech, music, videos, animations, etc.); integration takes place using a computer, using various information playback devices (microphone, audio system, CD-ROM player, TV, electronic musical instruments);

- work in real time, because unlike text and graphics, which are static in nature, audio and video signals appear only in real time;

– a new level of interactive communication "human – computer", when in the process of dialogue the user receives extensive and diverse information that contributes to improving the conditions of study, work or recreation [12].

A comprehensive analysis of the capabilities of multimedia learning tools provides grounds for identifying the didactic functions that they perform: strengthening visibility; developing students' cognitive interests; improving the quality of students' knowledge; individualizing learning; intensifying education; promoting better memorization of educational material.

Multimedia tools are used during lectures, practical classes, and extra-curricular activities. This opens up new opportunities for teachers and students in creating educational multimedia products [6].

A. Danilova, V. Manako, D. Manako justify the expediency of using multimedia, guided by three educational goals:

- cognitive (the use of visual and video stimuli helps to perceive the presented material);
- psychomotor skills (a tool for diversifying the worldview);
- emotional (the power of a vivid image and dialog participation of the subject of training increase its usefulness in the emotional sphere).

A. Danilova differentiates the following groups of multimedia resources: for children of preschool and primary school age; general education institutions of various levels; resources of special education for beginners and specialists [3].

S. Thompson describes several areas of multimedia application:

- education – multimedia can be used as an effective learning tool;
- reference books – in addition to text, a computer with multimedia can play music, speech, movies, and videos;
- entertainment direction – individual users use multimedia for games that can be informative and educational;
- simulators – created multimedia applications that improve professional skills [16].

Multimedia technologies optimize the implementation of most teaching methods, control and activate students' cognitive activity at a qualitatively new level. The practical use of multimedia tools contributes to the improvement or even partial replacement in the educational process of such classical teaching methods as methods of oral presentation of educational material (lecture, story, explanation, etc.), methods of visual and practical training, methods of consolidating the acquired knowledge, methods of independent work. So, the expediency of using multimedia

technologies in the pedagogical process is motivated by the importance of multimedia for the training system, the development of multimedia educational products, methodological recommendations, and application in the professional training of future specialists. When using multimedia in education, it is necessary to take into account a number of aspects, in particular, to take into account that, despite the spread of multimedia tools in the modern world, the availability of educational materials for students varies widely. Multimedia contributes to the realization of pedagogical goals by integrating into the educational process and interacting with its components – content, forms and methods of teaching. The use of multimedia in the educational process creates conditions for more complete achievement of the pedagogical goals of the educational process.

The use of multimedia technologies in the educational process modifies the ratio of methods, forms, teaching tools, and the entire methodological apparatus. This leads to a change in the volume and content of educational material; the introduction of algorithmization of problem solving; deepening the subject sphere by modeling or imitating phenomena and processes through dialog interaction, information compression, logical and stylistic processing; the use of instrumental software tools for the development of logical, visual-imaginative thinking, as well as the formation of verbal-communicative and practical skills; variability in the choice of types of educational activities and ways to present educational material, the organization of individual and differentiated work on educational material; expanding the scope of independent work with elements of research activity [1].

In the educational process, multimedia technologies increase the flow of information perceived by the subject of training. Now a person does not assimilate all the information, some of it is not fixed in those logical structures of the subject, the formation of which is the main goal of the educational process. Planning of the educational process, which provides for the active use of visual images presented by means of multimedia technologies, should be based on the teacher's understanding of the concept of "information". The complexity and ambiguity of the concept of "information" is the subject of discussion that has been going on for many years in a row on the pages of various scientific and popular science publications, in textbooks for secondary and higher schools.

Currently, Ukraine has developed training programs, a considerable number of textbooks, educational standards, concepts of informatization of the educational process, software and methodological complexes for computer support of teaching Computer Science, Mathematics, Physics, Chemistry, Geography, Foreign languages and other academic disciplines, a course of methods of teaching Computer Science for university students-future specialists. The government program of informatization of educational

institutions and computerization of schools has been adopted [13].

The use of multimedia technologies in the educational process is a fact of daily practice of modern education. The possibilities of using them are unlimited [17]. Multimedia technologies make it possible to implement several basic methods of pedagogical activity, which are traditionally divided into active and passive principles of student interaction with the computer. Passive multimedia pedagogical software tools are developed to manage the process of presenting information (lectures, presentations, workshops). Active interactive means of multimedia technologies predict the active role of the student, who independently chooses divisions within the topic, finding out the sequence of their study.

Multimedia tools attract almost all students' senses, combining printed text, graphic images, moving video, animation, static photos and audio recordings, creating a "virtual reality" of real communication. Scientists prove that the use of multimedia technologies and computer networks reduces learning time by almost three times, and the level of memorization of knowledge, skills and abilities through the simultaneous use of images, sound, and text increases.

An important condition for the implementation of multimedia technologies in the educational process is specially equipped classrooms with a multimedia projector, computer for the teacher, screen or interactive whiteboard, as well as an accessible information educational environment in which the educational process takes place (computer classes, electronic libraries, media libraries, internet access, etc.) [5]. The informatization of modern society and the closely related informatization of education is characterized by the improvement and mass distribution of information and telecommunications technologies used to transmit information and establish interaction between teachers and students in the modern education system.

A significant disadvantage in the professional training of modern specialists is rightly considered to be the lack of professionalism in the use of information and communication technologies, which primarily affects a significant decrease in the effectiveness of training. In this regard, the teacher should not only have knowledge in the field of information and telecommunications technologies, but also be a specialist in their application and professional activities. Training and retraining of teachers in the field of informatization of education should contribute to achieving this goal. It is important to convince future practitioners that informatization of education makes it possible to achieve two strategic goals. The first of them is to improve the effectiveness of all types of educational activities based on the use of information and communication technologies; the other is to improve the quality of training of specialists who demonstrate a new type of thinking that meets the requirements of the information society. With the help of

methods and means of informatization, the future specialist should learn to get answers to questions about what information resources are, where they are located, how to access them and apply them to improve the effectiveness of their professional activities [8].

Computer technologies are constantly improving, becoming richer, more capacious, more flexible, more productive, and focused on the diverse needs of users. Industry and mass media are the first "user areas" of multimedia developments. Training using multimedia tools was also held for the first time in the field of production to improve the skills of personnel. The analysis of scientific sources suggests that the use of multimedia technologies in the process of teaching students helps to significantly increase the indicators of semantic understanding and memorization of the proposed material. Among the reasons, most often mentioned are the possibility of syncretic learning (both visual and auditory perception of the material), active participation in managing the presentation of the material, and easy return to those sections that require additional analysis.

Modern educational computer programs (electronic textbooks, computer problem books, textbooks, hypertext information and reference systems-archives, catalogs, reference books, encyclopedias, testing and modeling programs – simulators, etc.) are developed on the basis of multimedia technologies that have emerged on the border of many branches of knowledge. At new stages of progress, the distance between the latest technical developments and education is reduced [13].

Multimedia is an effective educational technology that is characterized by interactivity, flexibility, integration of various types of educational information, and also takes into account the individual characteristics of students, helps to increase their motivation. Thanks to these features, most teachers can use multimedia as the basis of their activities in informatization of education. Informatization of education belongs to the sphere of scientific and practical human activity, based on the use of technologies and means of collecting, storing, processing and distributing information, provides systematization of existing and formation of new knowledge in the field of education to achieve psychological and pedagogical goals of training and upbringing. Multimedia technologies allow you to meaningfully and harmoniously integrate many types of information, present information in various forms: images, in particular scanned photos, drawings, maps and slides; voice recordings, sound effects and music; videos, complex video effects; animation and animation simulation.

The feasibility of using multimedia in education can be illustrated by many examples. Usually, presentations accompanied by beautiful images or animations that are visually more attractive than static text can maintain an appropriate emotional level, helping to improve the effectiveness of learning. With the help of multimedia

technologies, you can "move in space", show students exhibits of museums or archaeological monuments that are studied in the course of natural disciplines, without leaving the classroom.

Multimedia technologies can be applied in the context of a wide variety of learning styles. Their perception is not the same: some people consider it appropriate to learn by reading, others – by listening, some – by watching videos, etc. The use of multimedia allows students to work with educational materials in different ways: the student decides for himself how to study the material, how to apply the interactive capabilities of informatization tools, how to implement joint work with their friends. Consequently, students become active participants in the educational process.

Working with multimedia tools, students can influence their own learning process, adapting it to individual abilities and preferences. Students study exactly the material that interests them, repeat the educational information as many times as they need which contributes to a more correct and perfect perception. The use of high-quality multimedia tools makes the learning process flexible in terms of social and cultural differences between students, individual style and pace of learning, interests [9].

The use of multimedia can have a positive impact on several aspects of the educational process at the University at once. Multimedia stimulates such cognitive aspects of learning as perception and awareness of information; increases students' motivation to learn; develops skills of joint work and collective knowledge of the material by students; contributes to a deeper approach to learning, and therefore to the formation of a comprehensive understanding of the material by students.

In addition, the advantages of using multimedia in education include:
- simultaneous use of several channels of perception of the material by the student in the learning process, which ensures the integration of information provided by several different senses;
- modeling complex, expensive, or dangerous experiments that cannot be performed in an educational institution;
- visualization of abstract information through dynamic representation of processes;
- demonstration of objects and processes in micro- and macro-worlds;
- extrapolation of educational material into a broad educational, social, and historical context.

Multimedia tools can be used to improve the learning process both in specific subject areas and in disciplines that are on the border of several subject areas of study. The effectiveness of the education system is also significantly affected by the environment in which the educational process takes place. This concept includes the structure of the educational process, its conditions and accessibility

(society, libraries, multimedia resource centers, computer laboratories, etc.) [4].

In such conditions, multimedia tools can be used as one of the many learning environments in various educational projects, in which students talk about the subject area, participate in a dialogue with their peers and teachers, discussing the progress and results of their training [8].

Of particular importance in education are game forms of learning, in the implementation of which educational elements based on media material play an important role. Games for the development of attention by means of works of media culture are very diverse in form and character. It is advisable, for example, to draw students' attention to sounds, voices, objects, the emotional state of characters in the film, program, etc.; changes that occur simultaneously with the change of frames.

Media-related gaming activities combine the real reality and imagination of the audience. So, in the course of a role-playing game, the roles of "directors", "actors", "presenters" of a TV program, etc. are distributed among its participants. Playing a certain role, the student "gets along" into a certain image, for example, the image of a strong, cheerful, brave or cunning character – a wizard, a king, a hero, a beautiful princess, etc. In such a game, each student realizes his creative potential, shows imagination, offers his own performance options, etc. In such a game, the student becomes omnipotent, learns to manage the situation, protect the weak, defeat the evil. Gradually, during the game, its participants become more confident in themselves, willingly demonstrate the image-role. In the process of complicating the plot or rules, players are less focused on the host; more actively use the accumulated experience, and begin to add many new creative elements to the game.

Multimedia plays an important role in the education of students. Modern multimedia technologies transport diverse, multi-faceted information. The modern family actively equips their life with video equipment, which has a variety of information capabilities, turns to various magazines, which contain a large number of photos and multidimensional information.

In the educational process of students, multimedia implements a number of educational functions, in particular:
- recreational, which involves spending free time both in groups of students and individually;
- relaxation, which neutralizes the feeling of loneliness, is a means of distraction in communication difficulties;
- informational and educational, orienting students to get a variety of facts about interesting phenomena and public events through print media, television, radio, cinema;
- normative – with the help of mass media, they promote norms and patterns of behavior in society, approve a system of values, and in this regard, the media become an important public regulator of students' life;

- integration - mass media unite students around ideas, which contributes to the formation of common views, positions, assessment of certain events, creates a psychological tone in society;

-entertainment and compensatory – rest in front of a TV screen, in a movie, with a magazine in your hands helps to relax after a school day, change the emotional background, and at the same time get a positive psychological charge, vivid feelings, impressions that were not enough in real life; this function of multimedia technologies is especially important for youth;

- background – radio, television, sound recording allow many students to avoid loneliness [15].

Multimedia is a useful and effective educational technology, as it is characterized by interactivity, flexibility and integration of various visual information, and also takes into account the individual characteristics of students, increases their motivation. Interactivity is one of the most significant advantages of multimedia in comparison with other media. Interactivity is the process of presenting information as a response to user requests, which helps manage information within separate limits: users can individually change the goal, study the results, and respond to program requests about their specific preferences. They also adjust the rate of presentation of the material, the number of repetitions according to their educational needs and preferences. In addition, providing the ability to interact with the user aimed at meeting their needs distinguishes a multimedia product from any other means of presenting information.

Multimedia in learning contributes to the emergence of a new rich field not only of communication, information transmission, but also the emergence of new understanding, new intersections, new problems and solutions that have taken their place in modern culture, in contrast to traditional and well-known means of transmitting information and teaching tools. The peremptory advantages of multimedia technologies as teaching tools include: a combination of logical and imaginative ways of mastering information; activation of the educational process by increasing visibility; interactive cooperation, communication in the information and educational space. A student who is included in the educational process where multimedia technologies are used becomes not an object, but a subject of communication with the teacher. This is a fundamentally important point in the pedagogy of cooperation.

Among the negative aspects, it is advisable to name the curtailment of social contacts, reduction of social interaction and communication, individualism, the difficulty of moving from a sign form of presenting knowledge on the pages of a textbook or on a display screen to a system of practical actions that have a logic different from the logic of organizing a system of signs. In the case of comprehensive use of multimedia technologies, teachers and students become unable to process a large amount of information provided by modern multimedia and telecommunications tools. Complex ways of presenting information distract students from the material they have learned. It should be remembered, when a student is shown different types of information at the same time, they are distracted from some types of information to follow others, skipping important information [9].

Using multimedia, teachers should take into account two possible areas of introduction of informatization tools in the educational process. The first of them is related to the fact that multimedia technologies are used in the educational process as "auxiliary" tools within the traditional methods of the historically formed general education system. In this case, they serve as a tool for intensifying the educational process, individualizing training and partially automating the routine work of teachers related to accounting, diagnostics and evaluating students' knowledge.

The introduction of multimedia in line with the second direction changes the content of general education, contributes to rethinking the forms and methods of organizing the educational process, building holistic courses based on the use of the content of informatization tools in individual academic disciplines. Knowledge, skills and abilities in the analyzed case appear not as a goal, but as a means of developing the student's personality. Consequently, information and communication technologies will be justified and increase the effectiveness of learning when they meet the specific needs of the education system [2; 8].

Currently, information technologies, in particular multimedia technologies, are used to a greater or lesser extent in the educational, organizational, and pedagogical activities of almost all educational institutions. Students' work in computer and internet classes in the process of studying computer science and other subjects, planning training sessions using a computer, and electronic computer testing of students' knowledge has become widespread. Teachers develop and actively use electronic learning tools, manuals, computer problem books, workshops, laboratory work, and pedagogical software. Most scientific and methodological developments have been translated into electronic format. New forms of educational activities based on the advantages of the latest multimedia technologies, which primarily include distance education, are gaining further development.

The use of multimedia technologies in the educational process makes it possible to move to a qualitatively new level, positively affects the motivation of students to study, increases the level of their ability and activity in choosing methods of performing tasks that they face. Testing and other methods of measuring the level of knowledge, skills and abilities of students make up a complex of information processes, in the automation of which computer equipment

and multimedia technologies are increasingly used in higher educational institutions.

Among the numerous positive aspects of the use of information and telecommunications technologies in education, which, of course, include multimedia, are distinguished: improving methods and technologies for selecting and forming the content of education; introducing and developing new specialized academic disciplines and areas of study related to computer science and information technologies; making changes to the teaching systems of most traditional school disciplines that are not related to computer science; improving the effectiveness of learning by individualization and differentiation, using additional motivational levers; organizing new forms of interaction in the learning process; changing the content and nature of students' and teacher's activities; modernizing the mechanisms for managing the education system.

The described problems and contradictions show that the use of multimedia tools in teaching on the principle of "the more, the better" can not really increase the effectiveness of the education system. When using multimedia resources, you need a balanced and clearly reasoned approach [9].

To find out the place of multimedia learning tools in the system of learning tools and in the educational process, it should be taken into account that their pedagogically appropriate use contributes to the development of students' visual and imaginative thinking; stimulates attention (involuntary and arbitrary) at the stage of presenting educational material; activates the educational and cognitive activity of students; helps to link theoretical questions with practice; increases the possibilities of showing practical applications of phenomena that can not directly manifest themselves on a pair; creates opportunities for modeling processes and phenomena; allows in the most accessible form to systematize and classify phenomena using diagrams, tables, specially formatted text, etc.; motivates to training, increases interest in it, creates a guide to effective learning; helps to quickly and easily assess the level of assimilation of educational material by the subjects of training and the group as a whole [18].

It is known that in the case of oral presentation of the material, the listener perceives in a minute and is able to process up to one thousand conventional units of information, and in the case of involving the visual organs up to 100 thousand such units. The high efficiency of perception of educational material in the form of multimedia resources is quite obvious [8].

Conclusions

Multimedia technologies are used in all areas of educational activity, which are increasingly penetrating our lives and education in particular. This situation is facilitated by both external factors that are associated with informatization and the need for high-quality training of students, and internal factors that depend on the number of modern computer technology, software, and training of informatization teachers in universities. With this approach, the use of multimedia tools will have a positive impact on the intensification of teachers' work, and therefore on the effectiveness of students' learning. Therefore, in the article we show the importance of multimedia training tools, which are promising and highly effective tools for training specialists and their further work. The analysis of the capabilities of multimedia learning tools allowed us to identify didactic functions, methods and directions of multimedia application. Great importance in education is attached to game forms of learning. Therefore, the influence of the game on the development of attention by means of works of media culture is shown.

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