Educational Multimedia and Methodological Features of Teaching its Development

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ABSTRACT

In connection with the introduction of computer multimedia technologies in many areas of human life, including education, the concept, distinctive features, didactic potential of multimedia technology and multimedia visualization of educational information are revealed, which allows visual and accessible presentation of educational content; reveals the distinctive features of the new educational multimedia visibility and aspects of the implementation of the principle of visibility in teaching at a qualitatively new level. The problems and author's approaches to the methodology of teaching future teachers to design and develop educational multimedia tools (primarily means of interactive multimedia visualization of educational information) are also considered; the main issues of the program of the special course "Multimedia teaching aids" (the program, which is one of the results of the research of the authors of the content of various courses in the study of educational multimedia).

Keywords: multimedia, educational multimedia, multimedia visualization, multimedia teaching aids, multimedia visualization, visualization principle, students - future teachers.

Modern society is characterized by qualitative socio-economic and cultural changes associated with the introduction of information technology in all areas of education and science, production, management, business, culture. At the same time, the information environment often uses the concepts of "multimedia", "multimedia technologies" (or "multimedia technologies"), "multimedia resources", "multimedia products", "educational multimedia", "multimedia learning tools", "multimedia visualization". information", etc.

Let us first consider one of the main concepts of this article - the concept of "multimedia", its nature and distinctive features, what is its role and value for educational purposes. We will also reveal the features of our study aimed at developing a methodological system for teaching future teachers the use of information technology, primarily multimedia. Indeed, at present there is a problem of improving the preparation of future teachers for the design, development of modern teaching aids - teaching multimedia tools.

The term "multimedia" is Latinism, which came from English sources in the original transcription; comes from the combination of English words - "multy" (folding, consisting of many parts) and "media" (environment, means). From here, literally, "multimedia" means "multiple environment", "polyenvironment".

We will define the term "multimedia" as a computer technology that allows the presentation of content through a combination of different types of information - both through traditional static information (text, graphics) and through dynamic information (animation, speech, music, video). Multimedia is a single digital space, syncretic representing different ways and types of information presentation.

The term “multimedia” also refers to the final product made on the basis of multimedia technology, and multimedia tool programs and shells, and modern computer equipment (the presence of a DVD-ROM drive in the computer; , monitor resolution, etc.).

Let us note the important features of multimedia resources (including educational resources) in contrast to non-multimedia ones:

- information in them is presented in digital form and can be contained in various forms (in the form of text, sound, graphics, animation, video) and in various combinations of these types in one resource;
- information in them is organized on the basis of hypertext technology and hypermedia technology;
- the information in them is presented interactively, which provides the possibility of active interaction between the resource, program, service (on the one hand) and the human user (on the other hand), their mutual influence. This is an essential feature of multimedia resources.

Due to the simultaneous impact on the user of graphic, sound and visual information, multimedia tools have a great emotional, spectacular charge, therefore they are actively used in educational practice [2, 3]. At the same time, due to the ability to visually, spectacularly present information, educational multimedia allows you to implement the fundamental principle of visibility in learning at a qualitatively new level.

Multimedia is also actively used in other information institutions, in business and advertising, in the entertainment and leisure industry, i.e. where it is necessary to efficiently transfer large amounts of information per unit of time. It can be concluded that in the conditions of the emerging information society, both the educational and cultural and social role of multimedia is increasing, the age of multimedia digital culture is coming, in which people gain knowledge, learn in a new form - through a multimedia resource. In general, “the fundamental difference between the information society and the industrial one is that the main thing in it is not the desire to get enough of the production of a commodity mass from all available raw material sources, but the wealth of knowledge drawn from information multimedia resources in order to maximize the use of highly developed technology to meet material and spiritual needs. society” [6, p.18].

Multimedia technology qualitatively changes the ways of forming visual information based on the synthesis of media (graphics, animation, video, sound, text), dynamics, interactive, modeling. At the same time, for educational purposes, multimedia allows you to create a more progressive, nature-friendly, ergonomic environment for displaying educational content, its visual interactive modeling and research (after all, a person, by nature, perceives more than 90% of information about the environment visually). The mechanism of multimedia visualization is based on a syncretic combination of emotional, informative and aesthetic components, which together set the educational impact; this makes the performance exciting, arouses increased interest and attention from the audience. Hypermedia construction of educational multimedia provides a student-oriented, developing nature of learning.

Extraordinary expressiveness and entertainment of multimedia are important when working with the new video generation, which easily absorbs knowledge through the works of screen computer culture. After all, just as oral primitive culture gave way to handwritten, later printed, so the latter loses its dominance with the development of screen computer culture in the era of mediatization of the information space. Having a whole arsenal of means more expressive than text, she operates not with words, but with audiovisual images. Computer multimedia culture forms

readiness, predisposition to perceive, cognize the world through the figurative and visual representation of information based on new information technologies, readiness for activities in the emerging information society.

Accordingly, if earlier in the educational activity the main thing was the verbal dialogue between the student and the teacher, now the audiovisual dialogue comes to the fore when working on a computer. Such visual-sensory activity becomes an integral part of human learning and self-development.

In the conditions of active development and penetration of multimedia technologies into education, the fundamental didactic principles of education (the principle of visualization of education, accessibility of education) due to multimedia technologies have become possible to implement at a qualitatively new level. Moreover, new information technologies in education should be considered not as a direct replacement for the existing pedagogical foundations, but as qualitatively new opportunities to increase their effectiveness.

Thanks to multimedia technology, the principle of visualization in learning has become possible to implement through the method of multimedia content visualization, i.e. through interactive multimedia visualization of educational information.

This way of visualizing information can be considered as a new visual method of teaching. It is based on the fact that the main source of knowledge, the means of cognition are multimedia visual images of the objects being studied, presented to the student through the screen in an interactive-intelligent mode. Assimilation of educational content occurs through their emotional and sensory perception, combined with interactive actions on them.

It follows that in teaching it is possible to use a fundamentally new type of educational visualization - multimedia visualization. We called it "interactively staged intellectual visualization for emotional and sensory cognition." It visually presents the material in the form of computer visualization (this is a didactically new form of visual representation of knowledge). Its main didactic unit is a multimedia audiovisual image.

Thus, multimedia visualization is a system of multimedia images of objects and phenomena under study, modeled for educational purposes and presented by means of a screen. The system has a hypermedia architecture that allows you to build a flexible individual trajectory of its study. The images that make it up, like any models, clearly reflect, first of all, those qualities of the student that are important for revealing his essence in accordance with the objectives of education; at the same time, in an interactive and intellectual mode, in a staged form for screen display (emotionally spectacular, dynamic, divided in time according to the scenario method of presenting material and controlling attention), in an integrated format (synthesis of graphics, sound, video, animation, text).

Our study is aimed at developing a methodological system for teaching future teachers the use of information technology, primarily multimedia. In general, under the indicated conditions of informatization of society, the most important direction in the modernization of education is the preparation of the future teacher for life and professional activity in the information society, a competent teacher with a high level of information culture, able to effectively apply new information, multimedia technologies in the learning process.

In Uzbek educational practice, when teaching multimedia technologies at a university to students of various areas of training (pedagogical and non-pedagogical areas), the following aspects are usually studied in the course "Multimedia": general issues of hardware and software of multimedia technologies; technologies for creating multimedia products; applied tasks for the development of specific software tools and the development of multimedia products based on them; features of the use of individual multimedia products distributed on CD-ROM or on the Internet, etc.

Let us highlight the features of the organization of teaching students of pedagogical areas of training in the development of

educational multimedia. After all, it is obvious that future teachers will have to work in the age of multimedia culture. It is important for them to know the possibilities, the didactic potential of multimedia, to be able to implement it, it is important to master the technologies for creating effective multimedia teaching aids and multimedia visualization technologies. For a modern teacher, mastering these technologies becomes a prerequisite for the effectiveness of his professional activity.

However, a number of authors (N.O. Vetlugina, I.V. Balandina, V.A. Kastornova, S.V. Lozovenko, E.V. Malkina, etc.), studying the phenomenon of educational multimedia, note its insufficient development from the standpoint of pedagogy , psychology and methods of teaching the development of educational multimedia.

Our study of the current system of training future teachers for the development of multimedia forms of knowledge transfer (primarily means of interactive multimedia visualization of educational information) also showed that technocracy still dominates here. First of all, software and hardware aspects of multimedia are considered; methods of working with computer software are considered as an end in itself. Rarely are multimedia products created with predetermined properties to implement a certain teaching methodology and solve didactic problems. More often, when developing them, the emphasis is not on training, not on helping the student, but on the technology of software implementation [1].

Also, to develop fundamentally new educational multimedia tools, it is often recommended to use the old methodology. As a result, the created multimedia manuals simply duplicate the content of printed manuals in electronic form, do not realize the potential of multimedia as a qualitatively new means of education, the potential of new information technologies.

More often in the learning process, no attention is paid to how the content of a multimedia product should first be designed, modeled, staged with a focus on the screen language. A systematic approach to the design of multimedia (from the point of view of pedagogy, methodology, psychology, ergonomics, design), creative staging of its form with a focus on the language of the screen in order to obtain a didactically effective new learning tool is not disclosed [5].

Therefore, on the part of the students being trained - future teachers, the formation of multimedia content occurs, as a rule, spontaneously and intuitively. Students do not comprehend a holistic picture of the process of developing multimedia visualization tools, which guarantees the receipt of really useful, professionally significant tools, they do not receive the fundamental foundations of the area under consideration.

The situation is aggravated by the lack of systematic, evidence-based methods of teaching how to convert information from book-text forms to screen multimedia.

This forms fragmentary, clip-like thinking among students and leads to the preparation of superficial users of the benefits of automation, who do not bother to creatively search for appropriate forms of presenting educational material, intellectual reflections on planning activities in order to obtain truly didactically effective products.

As a result, more often future teachers, having the skills to work with software, cannot productively organize their activities to create didactically valuable visual teaching aids that effectively transmit educational content using the multimedia visualization method, which implements the principle of visibility at a qualitatively new level.

Hence the aforementioned problem of improving the preparation of future teachers for designing, developing modern educational multimedia tools (first of all, means of interactive multimedia visualization of educational information that effectively implement the principle of visibility in learning) arose.

Therefore, the task that we are carrying out is the development of the content and technology for teaching future teachers of vocational training to design effective teaching multimedia tools, multimedia support for classes, interactively visualizing educational

content; overcoming the established technocratic approach in this field of study.

At Andijan State University at the faculty of " Informatics and Information Technology (Professional Education)" since the 2009 academic year, to fulfill the tasks of teaching students the use of information technology in education, the courses "Multimedia" were introduced,

"Pedagogical software", "Information technologies in education",

"Computer graphics".

Since 2012, special courses have been introduced to improve the training of students - future teachers (training area "Professional training") in the field of using educational multimedia in professional activities.

"Multimedia teaching aids", "Video processing technologies". They consider the phenomenon of multimedia, creation technologies and methodological aspects of the application of multimedia technologies in various fields of education.

So, within the framework of the program of the special course "Multimedia Teaching Tools" developed by us, students master multimedia technologies in the process of studying the following issues (training topics):

1) multimedia as a phenomenon in culture, in education; the possibilities of multimedia as a hypertext and hypermedia system, as a form of collective consciousness and information retrieval environment, as a means of electronic interactive communication (on the example of the Internet); didactic potential of multimedia, implementation of the principle of visibility in teaching;
2) essence, strategy of a systematic approach to the design of educational multimedia;
3) principles, methods of structuring information for multimedia; techniques for converting book text into a concise structured text, followed by the creation of a multidimensional hypertext basis for multimedia; principles of converting book text into the language of images, into the culture of the multimedia screen;
4) general questions of computer design; determination of a single style, color and graphic solution of the product (development of the concept of a graphical interface of a multimedia product);

Offering creative tasks to students and organizing their implementation of creative projects for the development of educational multimedia products:

5) collection of information, its structuring for alignment in a hypertext structure;
6) 6) development of a multimedia pedagogical scenario (basics of pedagogical multimedia design) based on a systematic approach;
7) searching the Internet or taking photographs, scanning photographs, illustrations and other types of graphics and obtaining graphic resources; importing them from different formats into the required format;
8) subsequent targeted processing of graphics for a multimedia product;
9) principles, technology for creating a system of hypermedia links of individual components of the product into a single whole;
10) filling frames with concise structured text;
11) inclusion of video fragments, sound accompaniment;
12) testing the work of the developed product [4, 5].

Note that the technologies for processing digital graphics, video, sound, technologies for working with various multimedia editor programs are considered primarily in other academic disciplines listed above (“Multimedia”,

"Computer graphics", "Pedagogical software", "Information technologies in

education"). At the same time, with a small number of training hours, we believe that when studying these technologies, first of all, one should consider graphics and animation processing technologies as one of the main tools for creating multimedia, the minimum necessary means of visual non-verbal information transmission in multimedia.

The specified special course "Multimedia teaching aids", dedicated to pedagogical design and development of multimedia teaching aids that interactively visualize educational content, effectively implement the principle of visibility, and also dedicated to the use of information technology in education, is intended for students of various forms of education (full-time, part-time and through the developed electronic version of the course - remote).

Based on the results of the final classes with the defense of creative projects (learning multimedia tools developed by students), it can be concluded that the vast majority of students (79–83% of students in different groups) acquire knowledge and skills to create practical, effective multimedia tools for learning, rated at 5 points.

The course was tested by the authors of the article in a number of universities in the city of Bryansk. Since electronic support for classes has been created for this course (a set of presentations with a visual demonstration of theoretical material and other files with a demonstration of the technology for performing practical tasks), in the future it is planned to use this course in the system of correspondence and distance learning.

Bibliography

1. Balandina I.V. Methodical system for preparing future teachers of informatics for the use of computer visualization technologies // Molodoy ucheny. - 2011. - No. 7. - V.2. - S. 75-77.
2. Vetlugina N.O., Akimova O.B. Possibilities of using multimedia in the educational process // Polythematic journal of scientific publications "Discussion". - 2014. - No. 9 (50). – http://journal-discussion.ru/publication.php?id=1195.
3. Kastornova V.A., Kastornov A.F. Information and telecommunication technologies in the education system // Erokhov readings: abstracts of scientific and practical reports. conference "New frontiers of the noosphere". - Cherepovets, 2004. - S. 137-139.
4. Salankova S.E. Computer technologies in the process of activating the student's creative potential // Collection of materials of the I Intern. scientific and practical. conference "Training and upbringing: methods and practice of the 2012 academic year" / ed. ed. S.S. Chernov. - Novosibirsk: Publishing house of NGTU, 2012. - P.120-124.
5. Sidorova L.V. Educational multimedia and improvement of modern pedagogical tools // Materials of the international. scientific and practical. conference "Formation of professional competencies of students in organizations of general and vocational education" May 18–20, 2016 - Bryansk: RIO BSU, 2016. - P. 100-105.
6. Shlykova O.V. Culture of multimedia: textbook. allowance for students / MGUKI. - M.: FAIR-PRESS, 2004. - 415 p.