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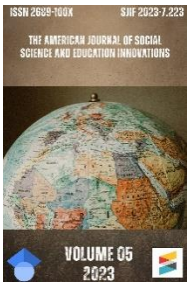

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Research Article

USE OF MULTIMEDIA EDUCATIONAL AND METHODOLOGICAL COMPLEX IN TRAINING FUTURE IT TEACHERS

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Muhabbat Ataxanovna Tayirova
Tashkent State University Of Economics Under The Tashkent Economics And Industry Technical School, Uzbekistan

ABSTRACT

The article is devoted to the development of multimedia technologies for the formation of cognitive independence of future computer science teachers. Recommendations for developing the structure and filling in the content are given in the stages of development. The study was carried out within the framework of the development of the methodology of teaching informatics aimed at improving the quality of training of informatics teachers. The obtained results can be used to develop multimedia technologies for use in teaching other subjects in the higher education system.

KEYWORDS

Multimedia, support, educational credit system, electronic textbook, informatics.

INTRODUCTION

For the successful implementation of the credit education system, computerization and "internalization" is an indispensable condition, which requires not only the modern technical equipment of educational institutions but also the appropriate development of multimedia support for the educational process.

The process of training future teachers at the university should be built taking into account the dual status of the student: now he is a student, and in the

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future, he will be a teacher. Both types of activity: teaching and learning are the most effective in teacher training aimed at developing creative thinking and active cognitive activity. We took these circumstances into account when developing multimedia support for the formation of cognitive independence of future informatics teachers.

When developing multimedia support for the formation of cognitive independence for future teachers, we identified and took into account its advantages:

- strengthening the positive intellectual and creative component of students' cognitive and professional activity;
- development of student's ability to independently use and assimilate increasingly complex knowledge in the professional field, explain complex phenomena, and self-educate; to stimulate students' knowledge activity and develop projective skills, their readiness and ability for continuous self-education;
- ensuring that each student perceives new material in an individual mode by implementing the three main principles of multimedia: presenting information using a combination of many environments perceived by a person; the presence of several stories in the product (including those built by the user on the basis of "free search" within the information offered in the product); artistic design with navigation tool interfaces;
- giving students the opportunity to actively participate in the formation of an individual educational program;
- Coordinating the management of knowledge and professional activities of students by teachers through the electronic form of placing various information and educational materials on the university server, their presence on the server is especially important for ensuring effective independent work of students outside of class.
- education of the future specialist's culture of professional behavior, development of students' methodological thinking, and ability to effectively and creatively use methods, tools, and forms of teaching science in practice;
- to ensure the educational process in various subjects at a high professional level in accordance with the State educational standard.

The higher education system, considering the state educational standard for the specialty "method of Informatics teaching", uses multimedia training as a multimedia aid for the formation of cognitive independence of future informatics teachers. we have developed methodological complexes.

A modern educational multimedia complex is a comprehensive didactic comprising various electronic educational materials, which provides training and management of the educational process of students according to individual and optimal educational programs using computer technologies and the Internet. is a system [2].

In the development of multimedia teaching-methodical complexes and implementing multimedia support to create favorable conditions for the formation of cognitive independence of future computer science teachers using multimedia, we used the main didactic principles of computer learning: 1) scientific character, 2) accessibility, 3) systematic and consistent, 4) computer visualization (appearance), 5) consciousness, 6) power, 7) individuality, 8) interactivity, 9) flexibility.

Multimedia accompaniment in the form of multimedia teaching-methodical complexes has created wide

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opportunities for professional learning under the guidance of a teacher and independently, so it can be used both in the classroom and in independent education. In the development of multimedia support, the main attention was paid to the independent work of students, their collective creativity, conducting mini-researches of various levels and increasing cognitive activity. The content of the structure is based on the goals and tasks of education, the specific features of the academic discipline, and intellectual activity by student teachers: many tasks designed for independent study of the educational material with the possibility of receiving advice from the teacher provided for.

It should be noted that multimedia teaching-methodical complexes combined the features of a simple textbook, a reference book, a laboratory workshop, and expert knowledge of learned information, and had a number of advantages over other software products. According to many authors, despite the great didactic possibilities in the process of using multimedia textbooks, their effective use in classes at higher educational institutions is still not enough. One of the reasons for this is that with this type of education, the status of the student and the teacher changes:

- the level of participation of the teacher in such activities and the nature of his work, the role of a consultant in complex issues of students: he should recommend additional sources of information; direct the learning process, manage the process of solving problems that appear before students, understanding the organization of this textbook, and teachers are often not ready for this;

- changes occur in the student's status - now he must "build" his own knowledge and not just perceive the presented content; when using a multimedia textbook that contains the information necessary for this course (often much larger than the one covered in the subject program), the student does not become dependent on the teacher for learning 'interrupts and may have more knowledge than the teacher on some issues.

The presence of these factors significantly complicates the process of using multimedia tools in education. Therefore, during the development of the special course developed by us and its introduction into the educational process, in our opinion, the main issues of interest to teachers who use multimedia tools to support the educational process were identified:

- selection of content to be supplemented with this special course and, accordingly, a multimedia textbook;

- multimedia textbook development process;

- methods of conducting various forms of lessons using multimedia textbooks;

Let's take a closer look at the process of developing and testing a multimedia teaching-methodological complex on the example of future teachers of computer science.

The development of the multimedia textbook was carried out by us in several stages.

In the first stage, we created an experimental sample of the program and a description of the scenario of working with the proposed multimedia teaching-methodical complexes. To fill the textbook with material, we used the recommendations for the creation and development of electronic textbooks, according to which "the usual components of the multimedia content of the electronic textbook: symbolic information (text, hypertext, formulas); static realistic and synthesized visual images

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(photographs, 2D photo panoramas, microphotographs, macro photography, schemes, diagrams, graphs, educational drawings, etc.); dynamic realistic and synthesized visual images (video experiences, video tours, 3D photo panorama with zoom/zoom, 2D animation, overlay and morphing of objects, animation created from 3D objects, virtual 3D models of objects, etc.); sound series (audio fragments)" [3].

Since choosing a technology for implementing a multimedia textbook is very complex and requires the most thorough and comprehensive analysis to choose an approach to its implementation, we took into account the following:

- students' requirements for the developed textbook;

- methodological requirements of teachers who teach using this textbook;

- ergonomic requirements for developing the design and structure of the training manual.

Based on the above, at this stage, we decided on the feasibility of developing one of the types of multimedia textbooks - a multimedia teaching-methodological complex.

At the first stage, the material was selected to support different forms of teaching using these educational materials, the textbook itself was created, and the logical connections between its components were determined. In parallel, active handouts for lectures, a set of control and test questions on each of the studied topics, goals and tasks at the beginning of each topic, as well as conclusions after studying it were developed. At the end of the first stage, the reliability, scientificity and relevance of the content of the multimedia educational-methodical complex we selected were checked.

In the second stage, the pedagogical and technological scenario of the work was developed, as well as a working sample of the multimedia textbook was created, which had to meet all the requirements of the content of the material and implement the script of the multimedia teaching-methodical complexes we selected - the content of the educational course and its procedural part distribution over time within different levels and targeted software structures.

Initially, such a method of creating educational material was chosen, which included basic information at level 1, additional information including explanations and supplements at level 2, and animation material at level 3. includes.

In the third stage, a pedagogical experiment was organized on the use of the multimedia textbook created during the teaching of the special course "Information technologies in professional activity".

The development of a multimedia teaching-methodical complex within the framework of the development of multimedia support for the formation of cognitive independence fully met the requirements of the modular technology we use in education. In our case, this textbook is a specific program saturated with specific information, which is divided into separate modules according to the thematic planning created within the specified special course. The main working screen of the created multimedia textbook is presented in picture 1.

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1-picture

Thus, in the development of this multimedia aid, a learning environment with a bright and visual presentation of information that is especially attractive to students is practically designed; integrating a large amount of data on one carrier is thought out; Thanks to the use of hyperlinks and the possibility of choosing an individual scheme for learning the material, navigation is simplified, students are provided with the development of their own individual learning trajectory, and a system of various levels of control and corrective measures is reflected. However, many years of experience in the study of scientific sources and the use of computer technologies in the teaching of various subjects allow us to conclude that it is reasonable to combine information technologies with traditional forms of education.

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