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# **USING MODERN TECHNOLOGIES TO INCREASE THE EFFECTIVENESS OF TEACHING COMPUTER SCIENCE BASED ON DISTANCE EDUCATION**

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**Abstract** - Currently, the development of distance learning technologies has an impact on the field of education, and it also creates an opportunity to achieve new quality indicators of the educational process, speed up the management process, and increase its efficiency. As a result of the use of distance learning technologies in the educational process, the principles, essence, concepts and ideas of education change. As a result, the quality indicators of the teaching process in educational institutions will change.

**Keywords** - distance education, educational methods, educational system, interactive technologies, computer science, virtual environment.

## **INTRODUCTION**

Distance learning technologies provide for the use of new methods and approaches to increase and strengthen the knowledge of students in the educational process. In this regard, issues aimed at preparing students for independent life, forming their talents, abilities, aspirations and interests in the developing conditions of the process of informatization of the society take an important place.

## **MAIN PART**

The quality of the use of distance learning technologies in the educational process is determined by such factors as components such as educational materials and the system and means of their delivery to students. An information educational environment that improves the quality and effectiveness of the distance education

process is considered to be of high quality if it corresponds to the goals and standards of the informational education system, i.e. it provides the following[1-2]:

- possibility to use electronic information resources;
- that the form and quality of information resources are at the required level;
- completeness, speed and reliability of the information received;
- ease of obtaining information.
- collector, storer and service provider of information resources
- the creation and functioning of the evaluation system of the educational quality

management process;

– integration of the information environment with other regional and foreign resources to ensure the process of distance education and improve the qualifications of teachers;

– special courses have been organized in order to adapt the information literacy of teachers and students to the modern level of development of distance learning technologies;

– availability of electronic information resources designed for users of different levels and in different forms;

– provision of local networks and modern software tools that organize and transfer the information environment.

An important factor in the quality of the use of distance learning technologies in the educational system is the structure of the use of information resources, which includes the following [3]:

– availability and quality of local network access, operation and access to Internet resources;

– quality and availability of informational and methodological filling of intranet and internet servers;

– provision and quality of software tools for informing the educational system management process;

- the existence of an organizational structure that allows access to and work with electronic information resources;
- technical support.

This structure performs the following main tasks:

- to prepare students for independent life and ensure their possibility of social adaptation in the conditions of informatization of the society, where the type and volume of information is rapidly changing;

- teaching students and teachers to adapt to the information system, to effectively use modern information technologies in the educational process and daily work, and to form their information culture;

- formation of a capable, talented and aspiring well-rounded person in the electronic information environment;

- creating conditions for students and professors to continuously work on themselves;

- creating conditions for students to work independently, to increase their creative and ambitious abilities;

- formation of well-systematized interdisciplinary knowledge and skills in students in order to learn the innovations, changes and events occurring in science and technology, education and other fields;

- formation of communicative ability of students and professors;

- to ensure the maximum automation of the management of the educational process, the use of methods of evaluation, [4,5]

In distance education, the student and the teacher are in constant communication with the help of specially created educational courses, control forms, electronic communication and other technologies of the Internet, while being separated from each other. Distance education based on the use of Internet technology provides access to the global electronic information-educational network, performs an important series of new functions with the principle of integration and interaction.

In the process of distance education, the student learns independent teaching and methodical materials in the interactive mode, passes control, performs control work under the direct guidance of the teacher and communicates with other students of the “virtual learning group” in the group.

The analysis of multimedia implementation in higher education institutions. In the process of working in the educational environment, the student has the opportunity to realize a number of goals. That is, the program should help him to solve the problem that he or the teacher has set, to achieve the goal. The characteristic aspects of programs belonging to this class:

a) the possibility to show educational material and other resources according to the student questionnaire;

b) lack of monitoring of the student's activity by the system.[6,7]

The learning environment offers one of the following services for the learner:

1. Information - information service;

2. Problem solving (here the concept of the problem is considered as a comprehensive concept);

3. Building a content and functional model of static and dynamic objects (this includes a wide class of instrumental systems, from calculators, text and graphic editors to programming languages, electronic model builders, mechanical and other systems, and expert system instrumental tools).

Training programs (both automatic training systems, regular training systems, and electronic training manuals) serve to implement the following pedagogical goals:

1. Presentation of educational material: text, graphics, audio and video materials arranged in a certain form are presented to the student. Programs of this type are called visual, computerized lectures and electronic text manuals;

2. Testing and diagnosis: the student's behavior is examined to determine it. Under the concept of the student's behavior, it is necessary to understand the depth of his current knowledge, the level of formation of qualifications and skills;

3. Performing exercises: knowledge, skills and abilities are formed during the student's performance of a task (this task is problem solving, laboratory work, etc.). In this process, the student is examined in a limited time and the level of achievement of the set goal is determined;

4. Teaching: the student develops knowledge and skills in a specific subject area under the control of the curriculum, in which case the program undertakes the presentation of the educational material, monitoring the level of its mastery and learn to diagnose errors. Programs related to this class:

a) existence of educational goals;

b) implementation of some methods of teaching that determine the appearance of communication with the student and achieve the goal;

c) is characterized by complex solutions to training, control and diagnostic issues.

Multimedia electronic manuals provide individual training for different categories of users.

A four-level learner model is used:

- local, the last task completed by the learner embodies the information;

- current, embodying the current lesson result analysis;

- embodying the results of global, course-specific training and the sequence of traversing network nodes;

- examination, embodying the results of a priori examination.

In addition, there are a number of tools for creating multimedia electronic manuals, which have a wide range of possibilities. They have their own scripting languages, can program separate views of the system under construction, work with an arbitrary number of graphic, audio, video formats, build platform-specific training systems and use them independently of software tools. However, such building tools are very expensive and limited in their availability for a wide range of users. Such software tools include Toolbook, Author Ware, Director, Media Objects, learning Space.

In addition, there are complex software complexes that have the ability to manage the educational process, as well as to develop training manuals and test materials for the distance education system. Examples of such systems are "e-learning server 3000" (Hyper Method company), SDO "Promote".[8,9]

## **CONCLUSION**

It is known from experience that if the system of organization and management of education is not sufficiently provided with new information-management models, then in the process of education, the use of new distance technologies means and methods will lead to the real process of teaching. The positive effect is not so noticeable. Of course, the effective solution of this problem depends on some objective and subjective factors, and then these factors themselves are necessary for the management of the education system. It must be filled with timely information. In the "National Program of Personnel Training" of the Republic of Uzbekistan, a number of important tasks are set before the higher education system.

In particular, individualization of independent learning, development and mastering of distance education system technology, its tools, new pedagogical and information technologies, acceleration of student training using the modular system of preparation are among such urgent tasks [3]. In the process of teaching on the basis of distance learning tools, computer-based full teaching of computer science, editing of lecture texts, improvement of the method of presentation of lecture texts based on the analysis of the control results submitted by students, remote teaching of information technologies for students will have opportunities to see, hear and think about animation elements during the lesson based on the tools.

Distance learning technologies allow the simultaneous use of several methods of information presentation: text, graphics, animation, video and sound [10-11].

Distance learning tools are of particular importance in the educational process with the following most important aspects:

- Organization of differential and individual education process;
- Evaluation of the educational process, feedback;



- self-control and correction;
- demonstrate the studied subjects and show their dynamic process;
- use of computer and information technologies such as animation, graphics, multiplication, sound in science subjects;
- to provide students with important skills for mastering science, etc.

The most important feature of distance learning technology is the ability to influence the user in the operation of the interactive information environment [12-14].

It is impossible to overestimate the importance of multimedia technologies in education. Multimedia technologies help simplify abstract content, allow you to differ from individual people, and allow you to coordinate diverse views from different points of view. Of course, multimedia technologies improve teaching and learning process, but this technology has a number of drawbacks that make it difficult to implement it into the higher school program.

The system of multimedia technologies implementation in the learning process developed by the authors reflects their deep potential, helps to level the difficulties associated with their implementation and ensures the smooth development of this system in accordance with the needs of the digital economy.

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