Effectiveness of web technology teaching computer science and information technologies

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Annotation: *The article deals with the creation and effective use of electronic information and educational resources based on Web technologies in improving the quality of the educational process in the organization and conduct of training sessions, the use of e-learning resources in the educational process. rni, importance and possibilities are given. As a result of the use of e-learning resources in the educational process, students are provided with additional information resources, as well as a brief summary of their use in the classroom and outside of class time.*

Key words: *learning process, e-learning resources, distance learning, multimedia presentation, web technologies.*

It is known that the full-time education system uses lectures, seminars, practical classes, laboratory classes, consultations, supervision, colloquiums, independent work and other types of training. The organization and conduct of classes is determined by the teacher, who is the main subject of the learning process. The didactic tools of education play a key role in the quality of teaching.

Distance learning also uses the basic types of training to organize the learning process. Lectures are the main method of teaching to acquire basic knowledge in a field or problem.

Lecture - one of the methods of verbal expression of knowledge, which involves the oral presentation of knowledge, the size of its volume, logical construction, figurative proof, classification, definition, systematization, generalization. methods are used.

The main task of the lecture is to provide a theoretical basis for teaching, to develop interest in learning activities, to form a focus on independent work of students on the subject. In full-time teaching, lectures are given by the teacher. In the distance learning process, the lectures are recorded on computer recorders and delivered to the audience through audio recording devices. Students can use the computer to listen to lectures over and over again.

In distance learning, the theoretical material of the lectures is organized using video and video lectures using the capabilities of the computer.

To organize video lectures, the teacher's lecture is recorded on external storage devices. This recorded report will be uploaded to a Web-based learning platform using a server computer. The main advantage of video lectures is that the listener can listen to the lecture at a convenient time, repeatedly referring to the most difficult places.

Interactive computer training programs are used to organize multimedia presentations. Multimedia presentations are based on text, sound, images, graphics, and visual aids.

Distance learning also includes a variety of hands-on activities to reinforce the theoretical knowledge gained from the disciplines. Practical training plays an important role in developing thinking, retelling, and professional skills. Practical exercises can be used in the form of exercises and

problem solving, seminars, laboratory classes.

Exercises and problem-solving exercises are organized in three stages:

In the first stage, students will be introduced to published manuals on problem-solving methods, materials available in the database of electronic information-educational resources based on Web technologies, video lectures, computer simulators. Sample exercises and problems are recommended that allow students to develop existing methods used in exercises and problem solving, to understand the relationship between theoretical knowledge and specific problems, and to solve them. It is also a good idea to use informal tests to check students' knowledge, not only in the form of determining the correct answers, but also in giving a full explanation of the question asked when the wrong answer is chosen. In this case, the tests are not only control, but also educational.

In the second stage, creative exercises and problems are suggested, in which the teacher takes the lead. Communication between teacher and student is carried out through online technology.

In the third stage, control exercises are organized, which allow you to test specific exercises and problem-solving skills. The effectiveness of the practical training will be determined by the results of the control work. Exercises and problem-solving errors are resolved in the process of communication between teacher and student.

Experience has shown that e-learning resources based on offline technology are used to coordinate full-time and distance learning.

The use of computers in the educational process is based on the organization of the educational process through information, virtualization, multimedia and network systems. Computer technology assists in the organization and management of the learning process, and in the development of recommendations for the creation of curricula, study programs, and teaching materials.

On the basis of proposals to improve the teaching of computer science and information technology in academic lyceums on the basis of Web technologies, modern lesson plans, didactic tools, monitoring and evaluation systems on the subject of "Computer Science and Information Technology" have been developed. In addition, a set of printed and multimedia e-learning materials and manuals for students and teachers of "Computer Science and Information Technology" was created to improve the content and teaching methods of the subject.

The research developed content and software for online and offline academic lyceum students to study independently and in-class on the subject of "Computer Science and Information Technology".
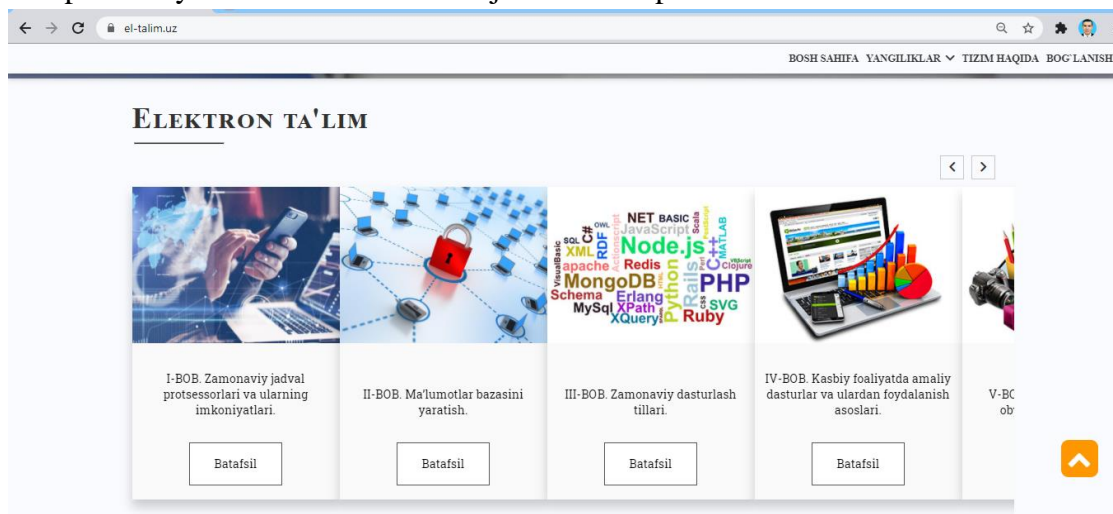
Figure 1. Software created on the basis of Web technologies on the subject "Informatics and Information Technology".

The e-learning resource is divided into 3 parts, namely e-learning, educational resources and legal documents, in addition to the section Latest News, Suggestions and Feedback .

The e-learning section covers topics in computer science and information technology in academic lyceums. The topics are divided into chapters, for example when the 1st topic of Chapter 1 is selected, the main content of the topic is displayed on the screen. Once students are familiar with the content of each topic, they can become familiar with the development of hands-on activities related to the topic. At the end of the training, a test-based knowledge control process was organized to determine the level of mastery.

In the section of educational resources there are "Electronic literature", "Explanatory dictionary", "Interesting information", "IT scientists", "Internet resources", in each section there is information about electronic information-educational resources. data are given.

The section of legal documents contains laws, decrees and decrees, state educational standards, curricula introduced by our government in the field of computer science and the teaching process.

In contrast to the real learning process, the advantage of Web-based learning is that the student learns to visualize, think, listen, record, and visualize every process, event, and phenomenon that is being explained. monitors impossible, unimaginable events and processes in a virtualized computer model. Each diagram, graph, table, and complex word is clearly displayed electronically. It saves time as students check their knowledge through virtual control. In addition, students who have not mastered the course or are unable to consolidate their knowledge have the opportunity to use virtual textbooks independently.

Learning through e-learning resources based on web technologies should be tailored to the level of computer literacy and intellectual capacity of the learners.

The following principles should be considered in order to improve teaching through e-learning resources:

- creation of additional electronic resources, data and libraries, development of special software for searching for information on the network;

- Improving the teaching methods of teachers, cooperation with experts in the field of Internet use, information technology and psychology;

- Regular replenishment of e-learning resources with the latest information on science and technology;

- the use of advanced pedagogical technologies and active methods in teaching through e-learning resources;

- Criteria for assessing knowledge in teaching methods through e-learning resources is an important issue. Since this methodology is mainly focused on independent learning, it requires the active and responsible participation of teachers in the organization of assessment. This is because the assessment process should take into account not only the test results, but also the students' activity and ability to work independently.

- The curriculum of the special subject should be adapted to the teaching methods through electronic information and educational resources.

E-learning materials for independent learning in e-learning resources created on the basis of web technologies work with the help of automated software. Automated teaching materials provide students with information on relevant topics and monitor knowledge. Depending on the results of the knowledge control, students will be offered different levels of assignments. With the help of automated teaching aids, students can increase and improve their knowledge without the help of a teacher.

The advantages of using e-learning resources based on web technologies in the educational process are:

• deeper and more complete mastery of educational materials;

• introduction of new forms of education;

• Opportunity to save time as a result of reduced learning time in the classroom;

• The acquired knowledge can be stored in the memory for a long time and can be put into practice.

• short time for students to develop certain skills;

• increase in the number of assignments in the classroom;

• the student becomes a subject of education as a result of the need for active computer control;

• Students will be able to model and demonstrate processes that are difficult to observe, observe, and so on.

Based on the content of the curriculum created in accordance with the requirements of the State Educational Standard (SES), the content of the subject "Informatics and Information Technology" is placed in electronic information and educational resources based on Web technologies, as well as for academic lyceums. The content of the recommended tasks on the subject of "Technology" is developed on the basis of the requirements of the STS and the curriculum.

The study concludes that one of the main requirements of today is the need to create and effectively use educational tools based on modern information and communication technologies in an era of expanding the information and educational environment for students in the learning process. we can get:

- Based on the analysis, the software environments used for the organization of educational processes based on e-learning resources are identified, the purpose of the work and the main issues to be addressed within it are formed.

- The technology of creating semantic models of e-learning resources was developed, and on the basis of it the laws of the relationship between the content of e-learning resources were identified.

- Relevant software for placing e-learning resources in a web-based learning system will be created.

- A special software user interface for the virtualization of the educational process, remote testing technology based on e-learning resources and a system for the use of its software in the educational process in certain disciplines.

In order to increase the effectiveness of subject learning in the education system, it is necessary to provide students with educational tools aimed at developing independent learning activities. It was argued that the use of e-learning resources, which are an integral part of modern teaching technologies, plays a leading role in the development of students' independent learning activities.

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