



CONTENTS, PROBLEMS AND DIDACTICAL BASIS OF TEACHING THE SUBJECT "ELECTRIC NETWORKS AND SYSTEMS" IN THE ELECTRONIC EDUCATIONAL ENVIRONMENT

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ABSTRACT: - The maximum effectiveness of the process of preparation for the e-learning environment can be achieved only through the coordinated development of psychological, technical, technological, information, legal, methodological and other components of the process. The introduction of modern information and communication technologies into the educational process has led to the creation of a new form of teaching - distance learning - in addition to traditional teaching methods.

KEYWORDS: Learning environment, educator, learner, educational programs, educational subjects, modern education, Internet, website, distance learning system.

INTRODUCTION

It is known that the process of transmitting electricity is due to the electromagnetic field of the wires, and this process has a wave-like nature, which leads to energy wastage, which causes them to heat up unnecessarily when current flows through wires and transformers. This waste is said to be overloaded due to the load currents. On average, waste is 14% of the transmitted

power, costing the state hundreds of millions of soms a year. In addition to these year-round costs, such systems require additional equipment, stationary equipment, reactive power compensation equipment, additional personnel, fuel, and so on at the same time. Therefore, it is important to find ways to reduce this waste and conduct regular research to develop measures. There are a lot

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of problems that need to be solved in order to transfer large amounts of energy without wastage. Sufficient specialists are needed for this.

THE MAIN RESULTS AND FINDINGS

It is very difficult to assess the importance of electricity today; it is impossible to imagine our lives and the lives of everyone - whether in production, business or life - without electricity. There are two main directions of the scientific and technological revolution of the twentieth century. It is the complete replacement of human physical energy with other forms of energy, mainly electricity, and the liberation of people from physical and mental labor by automating processes. Therefore, scientific and technological progress in all spheres of the complex economy of our country is determined by energy and automation. The development of energy is associated with a continuous increase in electricity generation. Why did people accept electricity as the main type of energy? Because it is easy to produce, distribute, and use in production.

Energy is the mainstay of the republic's economy. Uzbekistan has 37 large thermal power plants and HPPs with a total installed capacity of 11,043 MW; including IES - 9644 MW, HPP - 1399 MW Uzbekistan is fully self-sufficient in energy, and in part to Central Asian countries and South Kazakhstan.

Substantiation of the dissertation topic and its relevance. The total length of all voltage power lines in the Republic of Uzbekistan is 220,000 km, including 1,600 km of 500 kV, 4,600 km of 220 kV and 170,000 km of 0.4-10 kV distribution networks.

Aimed at improving the quality of teaching technical sciences in the world, the introduction of innovative and information technologies in the educational process,

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integration, use of mixed educational technology, the creation of modern methodological support aimed at developing students' intellectual potential, creativity and knowledge effective research is underway. Experts from the world's leading research centers and higher education institutions have developed recommendations for improving the teaching of chemistry on the basis of innovative and information technologies, the application of scientific developments in the educational process on the theoretical, methodological and methodological bases.

At the international level, special attention is paid to improving the efficiency of teaching technical sciences, the formation of the theoretical foundations of energy through information technology and innovative pedagogical technologies. At present, a number of practical steps have been taken to establish educational and scientific laboratories in our country and abroad. This research is carried out in modern laboratories, in special experimental fields. Matlab Simulink, Scada, AutoCAT software and a set of virtual laboratories have been developed to conduct experiments on electrical networks and systems.

Adopted by international organizations and developed countries in the world until 2030: the new concept of education recognizes that "Education is a key driver of development and an important activity that achieves the goals of sustainable development." Modern pedagogical and electrical networks and systems are used to provide quality education, a high level of development of skills and knowledge of students, the creation of electronic information and educational resources, the identification of promising areas for modeling the educational process.

Decree of the President of the Republic of Uzbekistan No. PF-4947 of February 7, 2017 "On the Strategy of further development of the Republic of Uzbekistan", April 20, 2017 "Measures for further development of the higher education system" Resolution No. PQ-2909 of 5 June 2018 "On additional measures to improve the quality of education in higher education institutions and ensure their active participation in the ongoing comprehensive reforms in the country" Resolution PQ-3775 "On measures", as well as this article to some extent serves in the implementation of the tasks set out in other regulations related to this activity.

The advent of Internet technology has changed things that have remained unchanged for centuries. This was evident in the exchange of regular correspondence by e-mail and in libraries by websites. Now, in the education system, the traditional forms of education have been replaced by elements of distance learning. The introduction of modern information and communication technologies into the educational process has led to the creation of a new form of teaching - distance learning - in addition to traditional teaching methods. In distance education, the student and the teacher are in constant communication with each other through spatially separated learning courses, forms of control, electronic communication and other technologies of the Internet. Distance learning based on the use of Internet technology provides access to the global information education network, performing a number of important new functions based on the principles of integration and interaction. Distance learning provides an opportunity for all those who want to learn to continuously improve their skills. In such a teaching process, the student learns independent teaching materials in an interactive mode, undergoes supervision, conducts supervision

under the direct supervision of the teacher, and interacts with other "vertical study group" students in the group. People who, for some reason, do not have the opportunity to study in full-time departments of educational institutions, for example, do not require health care, intend to change their profession or are older, intend to improve their skills. Distance learning is a convenient form of learning. Distance learning uses a variety of information and communication technologies, each of which depends on the purpose and nature of the problem. For example, while traditional print-based teaching aids (textbooks, manuals) are based on introducing students to new material, interactive audio and video conferences allow them to interact with each other over a period of time. It is designed to provide feedback and feedback, ie to send and receive messages. Pre-taped video lectures allow students to listen and watch lectures, while facsimile communication, messages, and the rapid exchange of assignments over the network allow students to learn through feedback. Based on the above, we provide descriptions and definitions of some of the terms that are currently being repeated in the educational process. Distance learning is a form of education based on information and telecommunication technologies, such as distance and full-time education, which includes the best traditional and innovative methods, teaching aids and forms.

The learning environment is pre-determined, not meaningful. Where the meeting of educators and learners begins, the educational environment begins, where the educational process is organized in separate institutes, educational programs, among the subjects of education as a source of joint activity. the environment is designed and built. Such an environment is interpreted as a space for the interaction of subjects (teachers

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and students) in the organization of education.

According to V.I. Slobodchikov, where there is an educational environment, there is its essence, connections and means. The environment has its limits and its composition. According to V.I. Slabodchikov, "What is the basis of the environment?", "What are its connections?", "What is the means of the environment and what distinguishes it?" must answer questions such as [1; 19-b].

"Informed learning environment (ATM) is a unit of pedagogical system and its support, a subsystem of financial, economic, logistical, regulatory and marketing management," it said.

In recent years, concepts such as "Informed learning space" and "Informed learning environment" have entered the pedagogical literature. These terms are interpreted and defined in different ways in computer science and pedagogy. Here are some of them:

In his research, OA Ilchenko describes "Informed educational environment - a systematic organization of information, technical and methodological support related to the human subject of the educational process" [2; 98-101 b].

According to OI Sokolova, "The information environment of higher education is one of the activities that provides educational, scientific communication, rapid access to information, storage, processing and transmission of information using a set of software, technical, organizational and methodological tools. industry" [3; 131-132 b].

J.N. Zayseva's ideas state that "Informed learning environment (ATM) is a real creative environment for learners, a pre-prepared

information environment to discover their talents" [4; pp. 29-31].

The maximum effectiveness of the process of preparation for the e-learning environment can be achieved only through the coordinated development of psychological, technical, technological, information, legal, methodological and other components of the process. It is information technology that can directly influence the development of modern education in many ways.

Resolution of the Uzbek Agency for Standardization, Metrology and Certification ("Uzstandard") dated November 10, 2017 No 05-896 Requirements for e-learning literature, e-learning resources used in the educational environment are described. According to him, the principles of modularity, completeness, visualization, networking, management, adaptability, computer support, aggregation, as well as didactic, technical, technological requirements are covered in the creation of e-learning literature. developed by higher education institutions [5; 88 b].

E-learning environment is synonymous with an informed learning environment, which can be described as a personal computer, telecommunications, methodological and organizational environment of the training process, based on modern information technologies to meet the needs of users for educational resources [6; 145 b].

Research has shown that e-learning environments include.

Personal computers, their main and peripherals.

1. People use computers to work on the Internet, in the educational process, in research, in business automation, in the

creation of multimedia applications, and so on.

A personal computer is a small computer designed for personal use, equipped with user-friendly software. A personal computer set consists of a system unit, a monitor, a keyboard, and a mouse. The system unit contains all the components necessary for the operation of the computer. All the equipment used to receive, store, process and send information on a computer is located in the system unit.

Personal computers have become an integral part of our lives. In particular, their use in education has yielded effective results. They have proven to be effective not only for corporate governance, but also in other areas such as medicine, architecture, communications, research, sports and education. Once used only in research laboratories and government offices, these machines are now widely used in all public schools around the world. The use of computers in the education system is changing the way we work effectively in any profession.

The organization of telecommunications is divided into four groups in terms of didactic structure. They are:

- Didactic features of telecommunications "computer-to-computer": transmission, reception, processing, editing, exchange, loading, sending, systematizing and printing any amount of textual and graphical information from computer to computer;
- didactic possibilities of e-mail: simultaneous transmission of information to a large number of clients, transfer of files stored on the server computer at the request of users, exchange of information with partners, automatic response to

whether the sent information reached the owner, group discussion of information access to any electronic database of interest to users, etc. ;

- Didactic opportunities of teleconferencing: transmission, exchange, preparation, printing, synchronous and asynchronous communication with the participants of the conference, sending and receiving conference materials at a convenient time, all types of messages at such time numbering, systematization, ease of use;
- didactic capabilities of the electronic board: placing messages from one electronic board to another without a specific address (to everyone), transmission, search for information of interest to the user and contact the owner, search for partners to work with, print out information of interest, etc. consists of.
 - o E.S.Polat also shows the role of didactic functions of telecommunications, information technology in solving pedagogical problems as follows [7; 91 b]:
- Organization of joint research work of researchers, teachers and students of different countries, universities, research centers;
- The organization of independent practical, program activities of partners, using various methods and forms of independent practical, creative activity;
- Assistance in conducting a wide range of operational consultations among the staff of scientific and methodological centers;
- prompt exchange of information on joint projects, ideas and plans, questions of participants, raising their outlook and cultural level;
- to teach communication skills between partners, the culture of discussion, the ability to express personal opinions

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concisely and clearly, to prove their point of view, to listen patiently and respect the opinions of partners;

- formation of specific scientific skills through modeling of scientific, creative laboratory work;
- to develop the skills of placement, storage and transmission of information from different sources, collaborative projects in different parts of the planet with the help of modern computer technology;
- learning a foreign language, taking into account the need to communicate in a foreign language;
- Facilitate the development of future professionals by providing them with cultural, ethnic and humanitarian information.

In an e-learning environment, telecommunications perform the following functions:

- Providing students with text, graphics and audio information;
- exchange of information between students and teachers in the field of science through e-mail, moodle, chat;
- Organize forums, conferences, teleconferences and various information exchanges with students of their peers and other higher education institutions.

Methodological support is an integrated information model of the pedagogical system, which is a didactic tool for training specialists, defines its components and demonstrates them in a certain form [8; 45-49 b].

Organizational environment The process of organizing lectures, workshops, seminars and independent study in accordance with the purpose of the topic specified in the curriculum. It is based on a technology map, lesson plans, and calendar plans.

In higher education, the subject "Electric Networks and Systems" is designed for undergraduate majors in engineering, which includes lectures, practical classes, laboratory classes and independent study hours, depending on the specialty. distributed according to.

The purpose of teaching the subject "Electrical Networks and Systems" in higher education is to acquaint students in depth and comprehensively with the use of modern technical means, operating systems and hardware, the principles and methods of automation of computational processes.

Objectives of the science To acquaint students with the functional capabilities of modern operating systems, text and spreadsheet information processing programs, to teach the theoretical foundations of the use of personal computers (PCs) in management processes and methods of their application in various industries and fields of national technology. teaching management systems and object-oriented programming languages, providing practical skills to work in the Internet system and local area networks.

Requirements for knowledge, skills and qualifications of students in the subject "Electrical Networks and Systems" are reflected in the state educational standards, science curriculum, working curricula.

The following tasks have been identified in the process of teaching the subject "Electrical Networks and Systems" in the field of higher education:

- Familiarity with and analysis of the process of teaching the subject "Electric Networks and Systems" in the field of engineering with DTS, training, working programs;

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- Analysis of the preparation and submission of financial statements of micro-firms and small businesses using power grids and systems [10; 36-37 b];

- To acquaint technical graduates with the workplace, to study the problems of using electrical networks and systems in the performance of official duties;

- Implementation of issues related to the teaching of the subject "Electric Networks and Systems" in the field of higher education techniques with the practice of production, etc.

The following problems were identified as a result of the above tasks:

Lack of methodological support for the teaching of this subject, which creates an e-learning environment, insufficient skills and abilities of teachers to use modern information technology in solving technical problems;

Insufficient knowledge of electrical engineering in the teacher of electrical networks and systems, and illiteracy in the teacher of technical networks and systems;

insufficient methodological support for future economists to teach the subject of electrical networks and systems, in particular, textbooks, teaching aids, literature, and the fact that the existing literature is not up to date.

V.A. Krasilnikova in the field of informatization of society, education of informatically cultured youth in the following description of the requirements for the teacher of computer science in the field of general cultural training, pedagogical activity:

E-learning environment discovers new aspects for teachers. This environment requires a higher education teacher to have a

high level of use of electrical networks and systems. Therefore, one of the prerequisites for a teacher of "Electric Networks and Systems" to constantly improve his skills, professional training is to work in the information-educational environment [12].

Organizational, socio-economic and socio-psychological capabilities are also required from a teacher working in an e-learning environment to achieve high pedagogical outcomes [13].

Conclusion

Therefore, the training and retraining of teaching staff is one of the important steps in the development of a new generation of training courses and the creation and development of an e-learning environment using modern electrical networks and systems in the educational process.

R.M Magomedov points out that the following requirements are set for a teacher of higher education "Electric Networks and Systems" [14; 41-42-b]:

- be able to organize distance learning courses, work with information and communication technologies and multimedia;
- have a positive attitude towards students during the training, have a certain psychological stability and be able to work with them;
- be effective during the training;
- develop a clear schedule of classes and all types of tasks in accordance with the curriculum, require prior knowledge and completion of the necessary components;
- readiness to actively exchange information with students using information and communication technologies;
- actively motivate students to complete homework;

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inform students about control tasks and their results;

- be willing to change the content of the subject frequently, to deliver new content to students, etc.

The purpose of teaching the subject "Electrical Networks and Systems" in higher education is to acquaint students in depth and comprehensively with the use of modern technical means, operating systems and hardware, the principles and methods of automation of computational processes.

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