MODERN METHODOLOGY OF TEACHING THE SCIENCE OF ELECTRICAL TECHNICAL MATERIALS

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ABSTRACT

The article discusses teaching methods based on modern educational technologies when teaching electrical materials science, which analyzes teaching technology and organization of the educational process using mixed educational technologies.

Keywords: pedagogy, technology, education, innovation, blended education, online learning, independent education, full-time education, integration.

The development of artificial intelligence in the world and the globalization of the information space, openness and the strengthening of mass media in the age of digital technologies are expanding the possibilities of developing the innovative potential of learners in an integrated educational environment. In the process of modernization of education in our country, great attention is paid to the development of the professional competence of future specialists, the development of information-communicative and technical skills, to the modernization of the teaching processes of technical sciences, including electrical technical materials [1].

Especially in the development of technical and technological competence of future technical engineers, the effective organization of mixed education and strengthening of their practical training becomes important. A number of scientific studies are being conducted around the world aimed at improving the content of education, teaching electrical materials science in the professional field, and developing the competence of future engineers. Also, developing ways to use interactive software when teaching electrical materials in technical universities, improving the quality of education taking into account the possibilities of blended learning, and the educational process is based on the priority of the technocratic education paradigm. Ensuring intensity, designing educational materials based on the principles of concentricity is becoming increasingly important. This requires the development of an innovative methodological system for teaching electrical materials, developing the cognitive competence of future engineers through the effective use of digital technologies in the educational process [2,3].

Ta’lim jarayonida elektron ta’limni qo‘llash darajasiga qarab, onlayn ta’lim va aralash ta’lim ajratiladi.

Online education is a method of organizing the process of self-studying educational materials using an educational environment based on Internet technologies.

Blended education is a combination of online learning with face-to-face learning, integration of traditional forms with electronic technologies. Traditionally, blended learning combines traditional face-to-face learning with e-learning and involves replacing some traditional learning activities with an electronic environment [4].

It is a complex process that includes the active participation of all subjects of the mixed education system - teachers and students, which allows us to talk about its dual nature. Thus, mixed education is implemented in two ways:

• student's educational activity (independent and audience);

• organization of this activity by the teacher in electronic and traditional formats.

Thus, we can distinguish three main components of the blended learning model used in the modern educational environment:

• full-time education (face-to-face): is the traditional format of the teacher-student in the classroom;

• independent learning: includes students' independent work: searching for materials using a resource map, searching the network, etc.;

• online education (online collaborative learning): online work of students and teachers, for example, online conferences, Skype, etc.

Now the educational process cannot be imagined without information and computer technologies (ICT). Tools such as e-courses, e-libraries, and the latest teaching and knowledge transfer tools reinforce the traditional educational concept. The importance of e-learning in higher education is constantly increasing.

Higher education institutions are adopting e-learning because it:

• meets the living needs of modern students in the digital world;

• encourages pedagogical innovations;

•helps to develop knowledge exchange and cooperation within and between universities;

• expands the possibilities of distance education and simplifies the access to education for different categories of students.

The term "mixed education" as a pedagogical category has existed since the end of the last century. The concept itself is taken from the English language, literally translated from the English phrase "blended learning", and the word "learning" means teaching, that is, the student's knowledge and reflects an active position in the process of acquiring skills [5].

A special interest in mixed education arose in 2020 in connection with the adoption of measures to reduce the risk of the spread of the new coronavirus infection in educational organizations.

Blended education is a technology for organizing the educational process, which is based on the concept of combining traditional classroom system technologies and electronic learning technologies based on new didactic opportunities provided by ICT and other modern teaching aids.

The main focus of the new generation is on the transition from education, where the student is the object of the teacher's influence, to educational activities, where the subject is the student, and the teacher works as an organizer, employee and assistant. When blended learning is included in the educational process in higher education, it is understood that blended learning is a teaching method that combines various resources, in particular, face-to-face training sessions and elements of e-learning.

Blended learning is a formal curriculum in which students are taught at least partially in an electronic, online format, while having some elements of control over the time, course, and pace of learning; partial teaching is carried out inside, outside of students' homes. As a result of such learning, a variety of methods are used to provide an integrated learning experience.

An important part of blended learning is that it includes elements of student self-direction, such as time, place, method, and pace. Also, online assessment organized in blended learning reduces the teacher's workload and allows students to monitor their individual progress. Blended education is today the driver of innovative development of higher education around the world. Its mission is to provide individualized professional training for each student. In this regard, it is important to understand and evaluate the possibilities of pedagogical models of such training used in the implementation of programs of higher educational institutions.

In conclusion, it can be said that after analyzing the use of "Blended education" technology, its use ensures the active participation of pedagogues in the educational process, and the rational use of class time. The interactivity of education increases, working with a large number of real electronic resources has a positive effect on the educational process. Thus, blended learning in the continuing education system is effective for both learners and teachers who are now acquiring knowledge, allowing for reduced class hours for deeper study of problematic issues. This technology allows to create conditions for the student's active learning, optimize the time spent by the teacher and increase the efficiency of the learning process.

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