USE OF MOBILE EDUCATIONAL TECHNOLOGIES IN TEACHING THE SUBJECT OF INFORMATION AND INFORMATION TECHNOLOGIES

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Annotatsiya

This article discusses the theoretical foundations and practical significance of using mobile educational technologies in the process of teaching the subject "Informatics and Information Technologies". The possibilities of developing students' interest in independent learning and digital competencies using mobile applications, online platforms and digital learning resources are analyzed. The advantages of mobile education, mechanisms for integrating it into the educational process, methodological approaches of teachers and recommendations for increasing efficiency are also given. The results of the study show that mobile educational technologies can enhance interactivity in computer science lessons, individualize the learning process and increase the level of students' knowledge acquisition.

Kalit so'zlar: mobile education, digital technologies, computer science education, mobile applications, information technologies, electronic resources, interactive learning, digital competence, learning process, distance learning.

In modern educational processes, information and communication technologies, in particular mobile educational technologies, are playing an important role in individualizing and increasing the efficiency of educational activities. The use of mobile devices as didactic models in the process of teaching the subject "Informatics and Information Technologies" not only helps to present the educational content in a visual and interactive form, but also helps to form a personal learning trajectory adapted to the individual capabilities of the student.

A pedagogical model is understood as a model that reflects the important aspects of the educational process or pedagogical phenomenon. In other words, a pedagogical model is an ideal system or conceptual description that expresses the content, structure and characteristics of the educational process on a theoretical basis [7]. In modern pedagogical science, the concept of "pedagogical model" is widely used and can manifest itself in various forms. As researchers have noted, a pedagogical model expresses certain features and structural structure of the original object through a logical model and allows it to be described in a cultural and practical form [9]. Thus, a pedagogical model recreates the educational process in a simplified, ideal form, and serves to effectively design and explain the didactic process.

There are also types of pedagogical models, which can be of a content, structural or functional nature [2]. For example, a content model of the educational process represents the content of

education and its composition, a structural model shows the structure of a pedagogical system or process, and a functional model shows the tasks performed by the process and the principles of its operation. In any case, a pedagogical model, reflecting in theory the important aspects of the educational process in reality, helps to understand and manage it more deeply [11].

Pedagogical modeling is the process of creating a model of a pedagogical system or process and using it for scientific research or practical purposes. This process is carried out in several stages. First, the problem and goals are determined, that is, which pedagogical phenomenon should be studied through the model and what result should be achieved. At the next stage, the concept of the model is developed: during this period, the properties of the research object, its components and the relationships between them are analyzed, and the ideal model structure is planned [9]. When creating a model, methods of abstraction, idealization and simplification are used, that is, secondary details of the real process are excluded and attention is paid to the main factors [4]. As a result, a theoretical model of the pedagogical process is created - an intellectual image.

After creating the model, it undergoes a stage of verification and improvement. At this stage, the created model is applied in practice or tested using computer simulation. As a result of the test, the extent to which the model corresponds to the real process and its effectiveness is assessed. If necessary, the model is corrected and improved. Thus, in the process of pedagogical modeling, a simplified copy of the observed phenomenon is created to study it and new knowledge about the phenomenon is generated through it [6]. Such thinking operations as analysis, synthesis, comparison, generalization are an integral part of the modeling process [11]. Importantly, pedagogical modeling fills the gap between theoretical research and practice, as it allows theoretical ideas to be transformed into a practical model.

In order for pedagogical modeling to be effective, certain didactic and organizational conditions must be provided. A number of pedagogical conditions for the optimal use of pedagogical modeling are presented in scientific sources. In particular, N.A. Kozyrev and O.A. In Kozyrev's research, the following conditions are emphasized when implementing the modeling method [10]:

Innovative environment and motivation: An environment that supports the creative activity of teachers and encourages the creation of new pedagogical tools. In this case, innovative activity should be encouraged by the management.

The need for achievement: The formation of an internal need for students and teachers to achieve high results. This serves to set high goals in the modeling process.

Harmony of values and goals: The upbringing of humanistic values, personal development and the idea of achieving effective results in the educational process. In order for the modeling process to be meaningful in content, it must correspond to the goals and objectives set by society and the education system.

An integrated approach to competencies: The use of modeling to form students' competencies holistically (whole). That is, the model must be developed in such a way that it covers the student's knowledge, skills and qualifications.

Resources and support: The readiness of the education system and the state to create and test new pedagogical models, the availability of the necessary material and technical base and methodological support.

Only when the above conditions are met, the implementation of pedagogical modeling will be successful and will give the expected results. Otherwise, the model may remain on paper or be ineffective in practice. Also, the methodological preparation of teachers for modeling, their ability to understand and use the created model are important factors [12]. Thus, the process of successful application of modeling depends not only on the model itself, but also on the pedagogical conditions surrounding it. The role and importance of pedagogical modeling in the educational process is great, and it has a number of advantages. First of all, modeling increases the activity and interest of students. Seeing and using a model of real reality or a process arouses strong interest in students, makes the topic more realistic and understandable. For example, if situational models or role-playing games are used in the lesson, this encourages students to actively participate, "livens up" the lesson, and helps to break away from monotony [13]. In the process of working with the model, students develop independent decision-making and problem-solving skills, while the teacher participates in the role of an advisor and guide. As a result, the educational process becomes interactive and student-centered.

Secondly, modeling develops theoretical thinking. Scientific studies have shown that the use of the modeling method significantly increases students' abstract and theoretical thinking skills [3]. In the process of creating and using a model, students learn to think analytically and logically, to identify important relationships and patterns. This not only deepens knowledge in the subject, but also enriches the general intellectual potential.

Another important advantage is the ability to test pedagogical processes or methods using modeling before their practical implementation. The model serves as a kind of "miniature" of the real process. Therefore, a new idea or method can be tested on the basis of the model before it is directly implemented. This is very convenient from a research point of view: it becomes possible to confirm or refute hypotheses and theories put forward on the basis of the model [4]. For example, before introducing a certain interactive learning technology, its model is first

created, theoretically evaluated and improved. Also, with the help of modeling, it becomes possible to compare different options and choose the most optimal solutio.

The possibilities of modeling are not limited to the teaching process. It is also widely used as a method in pedagogical research and is an important tool in creating new pedagogical technologies. Using modeling, researchers can study various aspects of the educational process and test innovative approaches. For example, when using digital technologies, their pedagogical model is first created: this model is used to analyze in advance the integration of these technologies into education. Also, as a result of pedagogical modeling, new educational materials, lesson plans, or even a project of an entire educational system can be created and implemented in practice. As Kozyrev and Kozyreva noted, through modeling, it is possible to create new pedagogical tools designed to solve a number of tasks facing modern pedagogical practice [2]. In conclusion, pedagogical modeling is a powerful scientific and methodological tool that allows for in-depth analysis, effective design and control of the educational process. A properly organized modeling process not only revitalizes students' learning activities, but also creates a basis for teachers to improve teaching methods and test new innovative technologies. The advantages of modeling - developing independent and theoretical thinking in students, making education more viable, testing scientific hypotheses, and creating new pedagogical solutions - further strengthen its place in today's education system. Therefore, theoretical knowledge and practical skills in pedagogical modeling are important methodological competencies for every modern teacher.

Foydalanilgan adabiyotlar

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