COMPUTER SIMULATION MODELS AND THEIR PLACE IN THE EDUCATIONAL SYSTEM

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Abstract. This article provides feedback on decrees, decisions on further improvement of the educational system in the field of Information Technology of our country, computerized imitation models and methods of their effective use in the development of media competencies in students, and analysis of research conducted by our scientists .

Keywords: Information technology, computerized imitation models, media competence , electronic resources, e-learning.

President Sh. M. Mirziyoyev's decision on June 10, 2020, "On measures to further improve the education system in the field of information technologies, develop scientific research, and integrate them with the IT industry," and the January 28, 2022, Decree No. PF-60 "On the development strategy of the new Uzbekistan for 2022-2026" laid the foundation for the formation of a national information system in our republic. Today's level of science, technology, and technological development has necessitated the wide introduction of modern pedagogical and information technologies in the educational system of higher education institutions. This includes rapidly incorporating materials related to important innovations in the fields of science and technology into educational programs and textbooks. This approach has created ample opportunities for students to acquire fundamental concepts easily, conveniently, and firmly.

The Decree of the President of the Republic of Uzbekistan dated October 8, 2019, "On approval of the concept of the development of the higher education system of the Republic of Uzbekistan until 2030" No. PF-5847, aims to increase the general level of use of digital technologies for students. This involves making permanent changes to the main educational programs in the higher education system, systematically organizing the process of developing and using multimedia products in education, improving computer science teaching methods in general secondary schools, implementing the "One Million Programmer" project in higher education institutions broadly, organizing distance education programs based on modern information and communication technologies, and putting into practice the "EMINBAR" platform, which allows for online monitoring and mastering of lectures and practical trainings, as well as uploading them to electronic information custodians, using "Cloud technologies" in educational processes.

Focusing students on forming media competence, organizing the educational process based on computer simulation models, and promoting the independent acquisition of knowledge and skills for practical application in higher education institutions highlight the need to choose teaching methods and technologies that help students not only acquire ready-made knowledge but also independently gain knowledge using various simulation models. This requires them to have the skills to form a personal point of view, justify it, and use the acquired knowledge to gain new knowledge.

In determining the scientific-theoretical direction of the research work, we studied and analyzed from a scientific point of view the works of foreign scientists such as A. Amakd o on

modern information technologies and their classification; VMBryab r in, AREsayan, GAKrasnova, Ye.I. Mashbis, A. Miklyayev, VMMonakhov, AAPolyakov, GISvetazarova, LITurchak, A. Faysman, VEFigurnov on educational literature about the introduction of information and communication technologies in improving students' media competence; NV Makarova, Ye. I. Kultyshev, AG Stepanov, VL Shirokov, VP Dyakonov, Steven S. Skyena, Miguel A. Revillalar, Yu. S. Izbachkov, VN Petrov, GV Kalabukhova, VM Titov, VS Mikshina, GA Yeremeeva, NB Nazina's lecture texts, practical tasks, educational literature created for laboratory practice, and the works of our republic's scientists RXDjurayev, J.G'Yoldoshev, UNNishonaliyev, Kh.Ibragimov, N.Saidakhmedov, O'.Q.Tolipov, N.Shodiyev on improving the educational process and applying pedagogical technologies to this process. We also examined the continuous education system of scientists such as AAAbduqadirov, M.Aripov, Sh.S.Akhraro, BABegalov, A.Sh.Daliyev, M.Lutfillayev, ARMarakhimov, SIRakhmonkulova, NITaylakov, TXXolmatov, U.Yu.Yuldashev, VQQObulov, SSGulomo v, RHHamdamov, and their research, articles, manuals, and textbooks on the introduction of communication technologies.

NV Makarova, Ye. "Informatics - Practicum on computer technologies" study guide provides a comprehensive description of Microsoft's Windows 2020, Word 2020, Excel 2020, Access 2020, Power Point 2020 software products, as well as the basics of working on the Internet. These tools and technologies are given in detail.

The textbook "New Information Technologies" prepared under the editorship of VP Dyakonov covers the basics of informatics, basic and additional devices of pocket computers, audio and video devices and their integration, classifications of cable and wireless networks used in practice.

Yu. S. Izbachkov and VN Petrov's "Information Systems" manual, intended for "Informatics and Computing" specialists of higher education institutions, describes database design and creation, modern programming technologies - COM, ActiveX, and Internet technologies.

GV Kalabukhova and VM Titov's "Computer practice from informatics - The manual "Office Technologies" describes in detail the skills of using a computer to solve practical problems. Each chapter of the manual consists of a set of sufficient theoretical information and practical tasks.

Students should have a system of knowledge, skills, and abilities that allow the effective use of computer technologies and computer simulation models in the formation of media competence.

In the formation of media competence in students, computer simulation models can be used both as an object of study and as a tool for the development of learning content, education, and training. In this process, the use of computer simulation models has two directions.

"In the first instance, knowledge, skills, and qualifications are enhanced through the use of computer simulation models. These models provide opportunities to understand different events and concepts, and assist in forming media competence qualifications based on graphics, images, sounds, and imitative actions.

In the second instance, computer simulation models significantly increase the efficiency of the educational process.

Gorbachev NN, in his scientific research work titled 'Modeli i metody upravleniya elektronnymi obrazovatelnymi informatsionnymi resursami dlya distantsionnogo obucheniya

invalidov,' discussed the development of software elements for an automated information system in distance education, emphasizing communicative tasks. The main types of ICT tools fulfill several functions in the educational process, including standard technologies, existing data formats, and auxiliary technologies.

Considering these points, the remote teaching of presentations and lectures using computer technologies facilitates the development of media competencies and allows for the repetition of lessons for students who need additional mastery.

Computer simulation modeling technology enhances the quality of the educational process. It enables the expansion of educational material provided to students and the incorporation of modern scientific achievements. Until recently, film and television were considered major breakthroughs in technical teaching tools. However, computer-based modeling is now gaining importance in education. In terms of application, computer-based modeling and simulation modeling perform similar functions, demonstrating the internal and external properties of objects (in this case, the educational process) through simulation.

The modeling style, including the creation of virtual presences and virtual laboratories, is increasingly being used. A model (from Latin modulus, meaning 'measurement' or 'norm') is an image or example of an object or system. For instance, a globe is a model of the Earth, and a planetarium screen is a model of the sky and stars.

Models can vary in their approximation and representation. For example, the accuracy of tools used in transferring experience affects the accuracy of the results received. From this perspective, modeling involves studying complex objects (physical events and processes) using various models. This approach aids in understanding various processes, events, and modeling reality for educational purposes. Our understanding of the world is based on incomplete and uncertain data. However, this does not prevent us from exploring complex subjects like the secrets of the atomic nucleus or societal development laws. Models are created based on the events and processes being studied, reflecting their characteristics as fully as possible.

Models are categorized into abstract and physical groups. Abstract models include mathematical and logical models. Physical models are scaled representations of objects, such as models of airplanes, ships, cars, trains, and hydroelectric power plants.

Mathematical models represent the structure and interconnections of living organisms and are based on mathematical and logical laws. They are compiled based on empirical information and are then tested through experimentation.

In computer modeling methodology, at least three directions can be identified:

1. The geometric direction involves organizing experiences with coordinates in a plane. Computers are used to learn about the properties of geometric objects and to test mathematical hypotheses.

2. The second direction involves modeling various actions. Computer models can solve a range of mobile issues, deepening our understanding of processes and expanding our imagination about the possibilities of computer modeling.

3. The third direction is graphics modeling on the computer screen, widely used in professional computer systems. The use of computer modeling technology plays a crucial role in understanding and learning about real-world processes.

These considerations highlight the importance of using computer simulation models to improve students' media competence. A three-step methodology is appropriate for creating these models.

"Studies show that using computer simulation models in the educational process helps develop students' media competence. Educational institutions are increasingly utilizing these models to enhance the learning process and provide access to electronic educational resources. This approach not only aids in teaching methods but also offers opportunities for developing new knowledge and media competence skills.

This practice of using information and communication technologies (ICT) is crucial in the process of educational reforms, both in our country and globally. The informatization of education involves several key processes in each educational institution:

1. Informatization of the teaching and learning process.
2. Managing the information flow within the educational institution.
3. Informing the activities and environment of the educational institution.

Modern information technologies play a significant role in the educational system, enabling students to acquire professional knowledge. They facilitate deep understanding through the modeling of events and processes in science, and allow for various types of study activities. This leads to the expansion of students' independent activities, individualization and differentiation of the learning process, and the development of media literacy as a member of the information society.

Universities are improving the content and essence of education through information technologies. These technologies support independent learning and offer a variety of didactic activities, enhancing the student's abilities, aesthetic taste, information culture, and skills in independent knowledge acquisition.

Modern information technologies in Higher Education Institutions (HEIs) enhance student thinking, decision-making abilities, communicative skills, aesthetic education, professional qualifications, and information culture development. They accelerate all stages of the educational process, increasing the quality and efficiency of student learning. This includes intensifying learning activities, deepening interdisciplinary communication, and enhancing the overall educational experience.

The effective implementation of information technologies achieves several didactic goals, such as individualization and differentiation of the learning process, control of study activities through feedback, self-regulation, and organization of independent preparation. These technologies also facilitate the visualization of study information, simulation modeling of events and processes, laboratory training using computer simulation models, creation and utilization of information databases, and the development of strategies for material appropriation. Through these methods, students develop critical thinking, decision-making skills, and a culture of media literacy."

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