PEDAGOGICAL CONDITIONS FOR THE EFFECTIVE USE OF COMPUTER TECHNOLOGIES IN TEACHING COMPUTER SCIENCE IN COLLEGES

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Abstract

This article analyzes the possibilities of effectively using modern computer technologies in college computer science lessons and the pedagogical conditions for their application. Computer technologies are essential tools for enriching the educational process, increasing students' interest, and enhancing their learning effectiveness. These methodological recommendations demonstrate the advantages of using interactive and individualized approaches in teaching computer science through computer technologies. Additionally, the pedagogical and psychological foundations of this approach are discussed, along with the pedagogical skills and technological competencies required for educators. The study's findings aim to identify effective methods and tools that help develop college students' independent and creative thinking skills and prepare them to utilize modern technologies.

Keywords: Computer technologies, Computer science education, College education, Pedagogical conditions, Effective teaching, Interactive learning, Individualized approach, Educational effectiveness, Pedagogical skills, Technological competence

Introduction:

Today's educational system continuously evolves, increasingly incorporating modern technologies to meet the demands of contemporary learning. With the advancement of computer technologies, their integration into educational processes has become essential for enhancing the effectiveness of instruction. The effective use of computer technologies in teaching computer science in colleges not only increases students' interest in the subject but also fosters the development of independent thinking and practical skills. Moreover, the proper establishment of pedagogical conditions is a critical factor in achieving high outcomes in the teaching process. This study analyzes the pedagogical and methodological conditions for effectively using computer technologies in teaching computer science to college students.

Methodology:

This study examines the pedagogical conditions for the effective use of computer technologies in teaching computer science within college education. Both theoretical and practical research methods were employed: theoretically, the significance of computer technologies in the educational process and the scientific basis of interactive and individualized approaches were investigated. Practically, the study analyzed teachers' experiences in using computer technologies in colleges and evaluated programs aimed at enhancing student performance. Data were collected through surveys, interviews, and observations, and results were processed with statistical analysis to draw general conclusions. This methodology aims to assess the effectiveness of modern computer technologies in teaching computer science to college students and to develop pedagogical recommendations.

Pedagogical practice indicates that enhancing the quality of training for students in pedagogical colleges can only be achieved through the integration of innovative pedagogical technologies within the learning process. These technologies include computer (information and communication) technologies[1].

Basic training in informatics creates an integrated information space of knowledge, contributing to the development of the information component of students' scientific worldview. Analyzing various studies in the field of information-communication competence [2, 3, 4] demonstrates that knowledge and skills in understanding informatics as a science, searching, analyzing, and presenting information, and using computer tools and technologies to solve academic or professional tasks, are of primary significance.

Attempts to incorporate computer technologies in teaching various disciplines often encounter a lack of validated experience that guarantees the pedagogical effectiveness of learning models extensively supported by ICT. In the last decade, numerous efforts have been made to implement these models on a large scale; however, their "acceleration" in schools outside of specific projects remains limited.

One of the domains within computer technologies is interactive technology. The primary method of using interactive technology is through a dialogue that ensures user interaction with the software system. When using interactive technology, the student becomes a full participant in the learning process, with their experience serving as a primary source of educational knowledge. The teacher's role is not to provide ready knowledge but to encourage students toward independent exploration. In interactive education, the teacher's task is to create conditions that foster student initiative.

Intelligent systems for teaching and testing, along with simulators, enable real-time monitoring and support during interactive communication with students, allowing for the refinement of teaching and testing strategies and assessment of students' knowledge, skills, and competencies. Modern systems for navigating, processing, and cataloging information enhance the effective use of the extensive informational resources of the World Wide Web, various electronic libraries, databases, and knowledge systems [5].

Conclusion:

In conclusion, the effective integration of computer technologies in college-level computer science education offers significant advantages in enhancing the quality of the learning process. By fostering interactive and individualized learning experiences, these technologies support students' independent and critical thinking skills and prepare them for modern informational environments. The findings emphasize the importance of creating appropriate pedagogical conditions and equipping educators with essential skills and technological competencies to maximize the benefits of computer-assisted learning.

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