EXPERIENCE OF USING INTERACTIVE PLATFORMS IN TEACHING PROGRAMMING IN DISTANCE AND BLENDED LEARNING ENVIRONMENTS

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Abstract: This article provides a systematic analysis of the experience of using interactive educational platforms in teaching programming disciplines under distance and blended learning conditions. The rapid development of modern information and communication technologies and the digitalization of the educational process have led to the widespread implementation of distance and blended learning formats in higher education. This trend particularly requires the application of new pedagogical approaches, innovative methods, and interactive educational tools in teaching practice-oriented disciplines such as programming.

The study examines the role of interactive educational platforms in distance and blended learning, their didactic capabilities in organizing the learning process, and their effectiveness in developing students' knowledge, skills, and competencies. In particular, the research analyzes the possibilities of delivering theoretical content in a visual and interactive form, performing practical programming tasks remotely, providing real-time feedback, and enhancing student engagement and self-directed learning through these platforms.

In addition, the article identifies technical, methodological, and organizational challenges that arise when using interactive platforms in distance and blended learning environments and proposes practical recommendations for addressing these issues. The research findings contribute to the effective organization of programming education in higher education institutions under modern educational conditions and to the improvement of educational quality and the training of competitive specialists.

Keywords: distance learning, blended learning, programming education, interactive platforms, digital education, virtual learning environment, practical training

Introduction

In recent years, the rapid development of information and communication technologies has led to fundamental changes in the education system. In particular, the implementation of distance and blended learning formats has required new pedagogical approaches to organizing the teaching and learning process in higher education institutions. This transformation is especially significant in the teaching of programming disciplines, as these subjects require the development of strong practical skills in addition to theoretical knowledge.

Traditional classroom-based instructional models cannot fully ensure effectiveness under distance and blended learning conditions. Therefore, the need to use interactive educational platforms in the learning process has become increasingly evident. These platforms enable the delivery of instructional materials remotely, the completion of practical programming tasks, the assessment of students' knowledge, and the provision of timely feedback.

The main objective of this article is to examine the experience of using interactive educational platforms in teaching programming under distance and blended learning conditions, analyze their effectiveness, and develop practical recommendations. The results of the study contribute to the formation of a modern digital learning environment.

Theoretical and Pedagogical Foundations of Distance and Blended Learning

Distance and blended learning formats are recognized as innovative approaches in the modern education system, with the primary aim of ensuring flexibility, openness, and effectiveness of the educational process. Distance learning is mainly organized through information and communication technologies without direct physical interaction between instructors and students, whereas blended learning combines traditional face-to-face classroom instruction with elements of distance education.

From a pedagogical perspective, distance and blended learning are based on the principles of constructivism, the competency-based approach, and student-centered learning concepts. These approaches focus on shaping students not as passive recipients of information, but as active participants in the learning process. In teaching programming disciplines, these approaches are particularly important, as they contribute to the development of algorithmic thinking, problem analysis skills, and the ability to independently design solutions.

In the context of distance and blended learning, interactive educational platforms play a significant role as pedagogical tools. They enable the structured and visual presentation of learning materials, the individualization of the learning process, and the monitoring of students' learning activities. At the same time, continuous communication and feedback between instructors and students through interactive platforms enhance the overall quality of education.

Theoretical analyses indicate that for distance and blended learning models to achieve high effectiveness in teaching programming disciplines, they must be methodologically well-designed and closely aligned with curricula and course syllabi. This approach represents a key factor in ensuring the effective use of interactive educational platforms.

Practical Aspects and Recommendations

To ensure the effective teaching of programming disciplines under distance and blended learning conditions, it is necessary to focus on several important practical aspects when using interactive educational platforms. First of all, enhancing instructors' digital competencies and preparing them to work with modern educational platforms is of critical

importance. In this regard, organizing professional development courses, seminar-trainings, and practical workshops is considered an effective approach.

In addition, the learning materials placed on interactive platforms should be systematically structured and aligned with the curriculum. Programming tasks should be designed based on real-life problems and practical projects, which contributes to preparing students for professional activities. Through the use of automated assessment systems, prompt feedback, and individualized recommendations, it is possible to monitor and further develop students' knowledge and skills.

Furthermore, to encourage students' engagement in self-directed learning, it is recommended to implement rating systems, gamification elements, and collaborative projects. These methods increase students' motivation and enhance the overall effectiveness of the educational process.

Conclusion

In conclusion, the use of interactive educational platforms in teaching programming disciplines under distance and blended learning conditions constitutes an essential component of the modern educational process. These platforms create opportunities not only for delivering theoretical knowledge but also for developing practical skills, increasing student engagement, and fostering self-directed learning.

The research results indicate that the effectiveness of teaching programming can be significantly improved through the proper and systematic integration of interactive platforms into the educational process. By developing instructors' digital competencies, strengthening technical infrastructure, and improving methodological approaches, it is possible to accelerate digital transformation in the higher education system. These approaches contribute to the training of competitive specialists equipped with modern knowledge and skills.

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