

USE OF MOBILE APPLICATIONS IN THE EDUCATIONAL PROCESS

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The article explores the role of mobile applications in modernizing the educational process. It analyzes key platforms and frameworks for mobile app development. The advantages of their use for providing access to educational materials, communication and educational process management are determined. The study identifies the development of adaptive platforms utilizing artificial intelligence technologies to create personalized learning environments as a promising direction for future research.

Keywords: mobile application, educational process, artificial intelligence, gamification.

The integration of mobile applications into the educational process is a key element in the implementation of a hybrid learning, offering anytime, anywhere access to learning resources and communication platforms. In addition, mobile applications present a promising direction for advancing educational practices, fostering the individualization and adaptation of learning to meet the needs of students and teachers.

It is worth noting that not all teaching staff have uninterrupted access to desktop or laptop computers during classes. This limitation restricts the use of these devices as the primary platform for delivering educational program components, necessitating additional strategies to adapt technical tools for educational purposes.

A potential solution to this issue may include the implementation of several technical measures, including the pre-installation of software on all university computers with the simultaneous establishment of a local area network. This approach would create a unified educational and information environment ensuring stable access to learning resources and enabling the use of applications at each workplace. However, it is important to consider that maintaining such a system requires a dedicated staff of employees responsible for the operation of this environment, which will lead to additional material costs.

A mobile application is the most practical solution for informatizing the educational process. The development of such software requires proficiency in programming languages and the use of appropriate frameworks, which include a set of specific libraries to structure code functionality. The primary operating systems for mobile applications are Android and iOS, while other options include Windows Phone, based on Microsoft technologies, and HarmonyOS, a product derived from Android technologies [1; 2].

In today's world, numerous platforms and frameworks are available for mobile application development. The most widely used and effective frameworks include:

1. Xamarin.Forms – Developed by Microsoft to work within the Visual Studio integrated development environment (IDE). Programming language: C#. Supported platforms: Android, iOS, UWP.

2. Flutter – Developed by Google, Flutter provides a comprehensive set of development tools. It is an open-source framework designed to create mobile applications for both Android and iOS. Programming language: Dart. Supported platforms: Android, iOS.

3. Android Studio – A dedicated IDE for developing Android applications, Android Studio features a Drag-and-Drop function for quickly designing graphical user interfaces. Programming languages: C/C++, Java. Supported platforms: Android [3, p.110].

Applications written in Dart, Java, Kotlin, and C# are among the most relevant solutions for developing mobile software backends. Here is a brief description of each programming language:

- Dart is a class-oriented programming language that offers a clear code structure. In terms of resource consumption, Dart has a number of performance advantages.
- Java is an object-oriented language known for its simplicity and effectiveness in developing software tools.
- Kotlin is a statically typed programming language built on the Java Virtual Machine (JVM). It is considered more productive than Java.
- C# runs in a specialized executable environment known as the Common Language Runtime (CLR). Like Java, C# is compiled into bytecode. A feature of C# is its capability for deep hardware programming, and it also boasts the fastest resource release system.
- JavaScript is a dynamic programming language based on Java and is often used in conjunction with HTML documents [4; 5].

For developing a graphical user interface (GUI), the most relevant layout languages are:

- XAML/XML allow for creating a graphical interface as a hierarchy of tags, where layers are built and populated from top to bottom.
- Drag-and-Drop Designer enables the intuitive creation of user interfaces by dragging and dropping the necessary elements into the layout. These elements have various properties that can be modified in both the backend and frontend.

One of the key aspects of effectively using mobile applications in the educational process is their integration with existing information and communication systems of educational institutions. An important task in this integration is ensuring the security of personal data for both students and teachers, because as technology advances and the volume of information processed by mobile applications increases, the challenge of maintaining data confidentiality becomes increasingly important.

Despite the availability of numerous mobile applications designed to support the educational process, such as Creatrix Campus, E2S, Clobas, Ellucian, and Guidebook, none fully meets the diverse requirements and features inherent in the educational systems across different countries and educational institutions. Each of these applications offers specific advantages but also has limitations. For instance, Creatrix Campus excels in automating educational processes and managing curricula but falls short in addressing all aspects of personalized learning. E2S focuses on enhancing communications between students and teachers, but its limited functionality lacks AI integration for adaptive learning. Clobas provides a university platform for managing academic and administrative processes, but lacks tools for gamification as well as automated financial and communications management. Ellucian focuses on enhancing the student experience and offers analytical tools to improve the educational process, yet its functionality is not fully integrated. Guidebook allows universities to build their own mobile applications but does not deeply integrate into learning processes or offer adaptive learning tools [6, p. 20].

Clearly, there is currently no universal solution that fully meets the diverse needs of all educational institutions. This creates a demand for the development of a comprehensive mobile application capable of addressing these needs. Such an application should integrate with existing learning management systems, support personalized learning, incorporate gamification, automate administrative processes, and provide analytical data to assist in strategic decision-making.

It is important to recognize that the development of a comprehensive mobile application for educational institutions must consider current trends in both education and technology. A key area of focus is the integration of artificial intelligence (AI) and the use of chatbots. These

technologies can significantly enhance interactions between students, teachers, and administrators by providing personalized support, automating routine tasks, and delivering instant responses to frequently asked questions.

Thus, the use of mobile applications in the modern educational process represents a strategic development vector that allows optimizing the learning process, enhances access to educational resources, and facilitates individualized learning paths. The integration of mobile technologies encourages the adoption of innovative pedagogical approaches, such as adaptive learning and gamification, which, in turn, boost student motivation and engagement. However, it is essential to ensure data security and compatibility of mobile applications with the existing infrastructure of educational institutions. A promising area for further research is the development of adaptive platforms that leverage artificial intelligence technologies to create personalized learning environments.

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ВИКОРИСТАННЯ ЗДОБУВАЧАМИ ВИЩОЇ ОСВІТИ ІНІ ПРИ ПІДГОТОВЦІ ДО АТЕСТАЦІЇ: ЕТИЧНІ ТА ТЕХНІЧНІ АСПЕКТИ

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Writing a master's thesis, which is a key stage of certification, confirms the acquisition of competencies for professional or scientific work. The relevance of using artificial intelligence (AI) as an auxiliary tool to improve work efficiency, particularly in data analysis and scientific research writing, is emphasized. At the same time, it is noted that the use of AI must comply with the principles of academic integrity, specifically to support the research process rather than automate the creative process. The importance of combining AI and independent work to ensure the high quality of the educational process and the development of essential skills in students is highlighted.

Keywords: Attestation, qualification work, master's work, artificial intelligence (AI), academic integrity, competences, independent work.