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USE OF MOBILE APPLICATIONS AND DIGITAL TOOLS IN EDUCATION

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Annotation: The article is devoted to analyzing the role of mobile applications and digital tools in the modern educational process. It examines the features of implementing mobile learning (m-learning), the use of interactive platforms, virtual laboratories, artificial intelligence technologies, as well as the possibilities of gamification in education. The impact of digital educational resources on students' motivation, the individualization of the learning process, and the quality of knowledge acquisition is emphasized. Special attention is paid to the advantages and challenges of using mobile technologies in schools and higher education institutions, including issues of digital literacy, technical equipment, and the risk of student overload. The article also highlights current trends in the development of digital pedagogy and the prospects for using mobile applications to improve learning efficiency in the context of the digital transformation of education.
Keywords: mobile applications, digital tools, e-learning, educational technologies,
Аннотация: Статья посвящена анализу роли мобильных приложений и цифровых инструментов в современном образовательном процессе. Рассматриваются особенности внедрения мобильного обучения (m-learning), использование интерактивных платформ, виртуальных лабораторий, технологий искусственного интеллекта, а также возможностей геймификации в обучении. Подчёркивается влияние цифровых образовательных ресурсов на мотивацию, индивидуализацию учебного процесса и качество усвоения знаний. Особое внимание уделяется преимуществам и проблемам применения мобильных технологий в школах и вузах, включая вопросы цифровой грамотности, технической оснащённости и рисков перегрузки учащихся. Представлены современные тенденции развития цифровой педагогики и перспективы использования мобильных приложений для повышения эффективности обучения в условиях цифровой трансформации образования.
Ключевые слова: мобильные приложения, цифровые инструменты, электронное обучение, образовательные технологии, цифровая педагогика, интерактивные платформы, мобильное образование.
Annotatsiya: Maqola zamonaviy ta'lim jarayonida mobil ilovalar va raqamli vositalarning o'rnini tahlil qilishga bag'ishlangan. Unda mobil o'qitish (m-learning)ni joriy etish xususiyatlari, interaktiv platformalardan foydalanish, virtual laboratoriyalar, sun'iy intellekt texnologiyalari, shuningdek, ta'limda gamifikatsiya imkoniyatlari ko'rib chiqiladi. Raqamli ta'lim resurslarining o'quvchilarning motivatsiyasiga, o'quv jarayonini individuallashtirishga hamda bilimlarni o'zlashtirish sifatiga ta'siri ta'kidlanadi. Maktab va oliy ta'lim muassasalarida mobil texnologiyalarni qo'llashning afzalliklari va muammolariga, jumladan, raqamli savodxonlik, texnik jihozlanganlik hamda o'quvchilarning ortiqcha yuklanishi xavfi kabi masalalarga alohida e'tibor qaratiladi. Raqamli pedagogikaning zamonaviy rivojlanish tendensiyalari va ta'limning raqamli transformatsiyasi sharoitida mobil ilovalardan foydalanishning samaradorligini oshirish istiqbollari yoritiladi.

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Kalit so‘zlar: mobil ilovalar, raqamli vositalar, elektron ta’lim, ta’lim texnologiyalari, raqamli pedagogika, interaktiv platformalar, mobil ta’lim.

INTRODUCTION

As far as we know, the rapid development of digital technologies that began in the late 20th and early 21st centuries has led to profound changes in the field of education. The emergence of smartphones, tablets, high-speed internet, and specialized learning platforms has made it possible to shift from traditional teaching methods to new, interactive, and personalized educational models.

These technological transformations have created the foundation for the development of mobile learning (m-learning), which involves the use of mobile applications and digital tools to build competencies, increase student motivation, and expand opportunities for independent study.

Today, digital tools are being integrated into the educational process everywhere — from schools to universities, from supplementary education to corporate training.

On one hand, there has been significant progress in the digitalization of the educational environment thanks to the implementation of electronic platforms, interactive simulators, and virtual laboratories. On the other hand, several problems remain: digital inequality, insufficient technical equipment in some institutions, and the need to improve teachers’ digital literacy.

digital pedagogy, interactive platforms, mobile learning.

USE OF MOBILE APPLICATIONS IN EDUCATION

Mobile applications have become one of the key elements of modern learning thanks to their accessibility, interactivity, and adaptability.

The most common areas of application:

1. Language learning

Apps such as Duolingo, Memrise, and Lingualeo use game mechanics, level systems, and audio and video content, which increase motivation and learning efficiency.

2. Science and STEM disciplines

Applications like Photomath, Khan Academy, and GeoGebra help students solve equations, analyze graphs, and study chemistry, physics, and biology using visual interactive models.

3. Organization of the learning process

Google Classroom, Microsoft Teams, and Moodle ensure communication between teachers and students, allow assignments to be submitted, track academic performance, take tests, and work with digital resources.

4. Virtual laboratories

PhET Interactive Simulations and Labster make it possible to conduct laboratory experiments in a digital environment, which is especially important when resources are limited or specialized classrooms are unavailable.

DIGITAL TOOLS AND INNOVATIONS IN LEARNING

Modern digital technologies create new opportunities for both teachers and students.

1. Interactive platforms

Educational platforms (Coursera, Udemy, EdX) allow learners to take courses from leading universities, watch lectures at a convenient time, and complete practical assignments.

2. Artificial intelligence and adaptive learning

AI-based systems analyze student progress, offer individualized learning trajectories, and automatically select tasks of optimal difficulty.

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3. Virtual (VR) and augmented reality (AR)

AR and VR technologies are used for:

— modeling anatomy;
— studying historical events;
— conducting virtual excursions;
— practicing hands-on skills.

4. Gamification

The use of game mechanics — rankings, levels, rewards — increases engagement and contributes to strong learning motivation.

RESULTS AND DISCUSSION

The use of mobile applications and digital tools in education leads to a number of positive outcomes:

Advantages:

— increased student motivation;
— individualized learning;
— instant feedback;
— access to learning materials 24/7;
— development of digital literacy;
— expanded opportunities for distance learning.

However, there are also challenges:

— dependence on the quality of internet connection and devices;
— risk of digital overload;
— insufficient ICT competence among some teachers;
— problems with discipline and concentration due to distracting factors.

Despite these issues, studies show that with proper organization, the digital environment significantly improves the effectiveness of learning and contributes to deeper understanding of the material.

CONCLUSION

Today, mobile applications and digital tools are an integral part of modern education. One of the key areas of development is the creation of personalized learning systems, the use of artificial intelligence, the implementation of VR/AR technologies, and the expansion of opportunities for distance learning.

Modern advancements in digital platforms and mobile applications open new horizons for improving the quality of education, making learning more flexible, accessible, and interactive. The use of digital technologies already makes it possible to build new pedagogical approaches adapted to the needs of 21st-century learners and contributes to the development of competencies required in the digital economy.

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