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MOBILE EDUCATIONAL PLATFORMS AS A TOOL FOR DEVELOPING STUDENTS' INDEPENDENT LEARNING ACTIVITY

The modernization of higher education is inextricably linked with the processes of digitalization and the integration of innovative learning technologies. Mobile educational platforms, accessible through smartphones and tablets, are becoming a powerful tool for transforming the educational process, shifting the focus from traditional classroom teaching to independent cognitive activity. This article explores the didactic potential of mobile platforms for developing students' academic autonomy, self-organization skills, and ability to manage their own educational trajectory. The analysis covers the key characteristics of mobile learning, such as accessibility, flexibility, personalization, and interactivity, which directly contribute to the formation of self-regulated learning skills. The psychological and pedagogical aspects of the influence of mobile technologies on motivation and cognitive activity are considered. Potential risks and limitations of the digital educational environment are also identified, including the problem of digital inequality, information overload, and the need for developing digital literacy. The conclusions emphasize the strategic importance of integrating mobile technologies into the higher education system to prepare competitive specialists capable of continuous self-education in a rapidly changing world.

An important condition for the effective use of mobile educational platforms is pedagogical support and methodological guidance. In particular, the role of the teacher changes: they act not only as a source of knowledge but also as a mentor in the digital learning environment. Such interaction promotes the development of students' responsibility, self-control, and self-education skills. However, there are certain challenges – technical limitations, insufficient digital literacy among teachers, and the need to protect users' personal data. Despite these difficulties, mobile educational platforms are an important tool for developing students' independent learning activities, as they combine accessibility, interactivity, and personalization of the educational process. Their effective implementation requires adequate digital infrastructure, teacher training, and methodological support.

Key words: mobile learning, educational platforms, independent learning activity, self-education, digitalization of education, cognitive activity.

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МОБІЛЬНІ ОСВІТНІ ПЛАТФОРМИ ЯК ІНСТРУМЕНТ РОЗВИТКУ САМОСТІЙНОЇ НАВЧАЛЬНОЇ ДІЯЛЬНОСТІ СТУДЕНТІВ

Модернізація вищої освіти нерозривно пов'язана з процесами цифровізації та впровадження інноваційних технологій навчання. Мобільні освітні платформи, доступні через смартфони та планшети, стають потужним інструментом трансформації навчального процесу, переносячи акцент із традиційного аудиторного навчання на самостійну пізнавальну діяльність. У статті досліджується дидактичний потенціал мобільних платформ для розвитку академічної автономності студентів, навичок самоорганізації та вміння керувати власною освітньою траєкторією. Проаналізовано ключові характеристики мобільного навчання, такі як доступність, гнучкість, персоналізація та інтерактивність, які безпосередньо сприяють формуванню навичок саморегульованого навчання. Розглянуто психолого-педагогічні аспекти впливу мобільних технологій на мотивацію та пізнавальну активність. Визначено потенційні ризики та обмеження цифрового освітнього середовища, серед яких – проблема цифрової нерівності, інформаційне перевантаження та необхідність розвитку цифрової грамотності. У висновках підкреслено стратегічне значення інтеграції мобільних технологій в систему вищої освіти для підготовки конкурентоспроможних фахівців, здатних до безперервного саморозвитку в умовах швидкозмінливого світу.

Важливими умовами ефективного використання мобільних освітніх платформ є педагогічна підтримка та методичне забезпечення. Зокрема, роль викладача змінюється: він виступає не лише джерелом знань, а й наставником у цифровому навчальному середовищі. Така взаємодія сприяє розвитку у студентів відповідальності, самоконтролю та навичок самоосвіти. Проте існують певні виклики: технічні обмеження, недостатній рівень цифрової грамотності викладачів, а також потреба у захисті персональних даних користувачів. Незважаючи на складність, мобільні освітні платформи є важливим інструментом розвитку самостійної навчальної діяльності студентів, адже вони поєднують доступність, інтерактивність і персоналізацію освітнього процесу. Їх ефективне впровадження потребує належної цифрової інфраструктури, підготовки викладачів і методичної підтримки.

Ключові слова: мобільне навчання, освітні платформи, самостійна навчальна діяльність, самоосвіта, цифровізація освіти, пізнавальна активність.

Problem Statement

The contemporary paradigm of higher education is undergoing a fundamental transformation driven by globalization, technological progress, and the transition to an information society. The key task of a modern university is not only to transfer a set of knowledge but also to form a competent, mobile specialist capable of continuous self-education and rapid adaptation to changing conditions. In this context, the development of students' independent learning activity (SLA) becomes a priority, as it is the foundation for lifelong learning.

The rapid spread of mobile devices and wireless technologies has created unique opportunities for the educational sector. Mobile learning (m-learning), defined as learning across multiple contexts through social and content interactions using personal electronic devices [1], is becoming an integral part of the educational process. Mobile educational platforms, as specialized software environments, aggregate educational content, communication tools, and progress tracking systems, making them a powerful didactic tool.

The relevance of this study is determined by the contradiction between the high didactic potential of mobile platforms and the insufficiently developed methodological foundations for their use specifically for the development of SLA. While numerous studies have focused on the technical aspects of m-learning, the psychological, pedagogical, and didactic dimensions of its impact on student autonomy require a more systematic analysis. The purpose of this article is to theoretically substantiate and analyze the role of mobile educational platforms as a tool for developing the skills of independent learning activity among students of higher education institutions.

The proliferation of mobile technologies has created what can be termed as «ubiquitous learning environments» – educational spaces that extend beyond physical classrooms and scheduled sessions. This constant availability of learning resources fundamentally changes the nature of knowledge acquisition, making it more personalized and student-driven. However, this technological advancement also raises important questions about how to effectively harness these tools to foster genuine learning autonomy rather than simply providing convenient access to information.

Another crucial aspect worth examining is the generational dimension of mobile learning. Today's students belong to the generation of «digital natives» who have grown up in an environment saturated with digital technologies. This creates both opportunities and challenges – while students are technically proficient with mobile devices, they often lack the metacognitive skills necessary for effective self-regulated learning. The integration of mobile platforms must therefore address not only technological adaptation but also the development of critical thinking and learning management skills. Furthermore, the current global context of education, characterized by the mass transition to mixed and distance learning formats, has particularly highlighted the importance of mobile technologies. The COVID-19 pandemic served as a powerful catalyst for digital transformation in education, demonstrating both the advantages and limitations of various digital learning tools. This experience has underscored the need to develop robust methodological frameworks for using mobile platforms that can maintain educational quality regardless of external circumstances. It is also important to consider the socio-cultural aspects of implementing mobile learning. Different educational systems and cultural environments may require adapted approaches to integrating mobile technologies. The effectiveness of mobile platforms may vary depending on institutional policies, available infrastructure, and the digital literacy levels of both students and teachers. Understanding these contextual factors is essential for developing successful implementation strategies.

The research also addresses the need to balance technological innovation with pedagogical effectiveness. While mobile platforms offer numerous advanced features, their educational value ultimately depends on how well they support learning objectives and promote meaningful engagement. This requires careful design of learning activities that leverage the unique capabilities of mobile devices while maintaining alignment with curriculum goals and educational standards.

Analysis of Recent Studies and Publications

The scholarly investigation into mobile learning (m-learning) demonstrates a clear evolution in focus: from foundational definitions to advanced pedagogical applications. Early research laid the groundwork by characterizing m-learning as the delivery of educational content through portable devices, highly differentiated from traditional e-learning by its emphasis on context-awareness and mobility. J. Traxler, for instance, highlighted the situational and personalized nature of mobile learning [2], while Kukulska-Hulme et al. [3] comprehensively detailed its growth across Europe. The defining criterion established by Sharples et al. remains crucial: m-learning is learning across multiple contexts facilitated by personal electronic devices.

Subsequent studies confirmed the didactic value of mobile platforms in higher education. Systematic reviews [4] demonstrated a positive correlation between m-learning integration and improved student outcomes and engagement, especially when activities are strategically designed. Similarly, Oyelere et al. provided empirical evidence through the development and evaluation of mobile applications, confirming their efficacy in fostering learning mastery. A significant theoretical development is the concept of «ubiquitous learning environments» [5]. This framework suggests that the permanent accessibility enabled by mobile devices fundamentally shifts the pedagogical landscape, promoting continuous, personalized knowledge acquisition. Despite the confirmed technical potential, a persistent gap in the literature concerns the methodological integration of mobile tools specifically for developing Self-Regulated Learning (SRL) skills. While mobile platforms structurally support the phases of SRL – forethought, performance, and self-reflection – there is an insufficient body of work detailing how to leverage these tools to develop genuine student autonomy and metacognitive skills. This body of research underscores the necessity of moving beyond technical description to establish robust pedagogical frameworks that actively consider the psychological and didactic dimensions of mobile technology's impact on student self-management [6].

In summary, current literature acknowledges the technological readiness and general effectiveness of m-learning, setting the stage for this study to specifically investigate the under-explored relationship between mobile educational platforms and the systematic development of students' independent learning activity.

Purpose of the Research

The overarching purpose of this article is to theoretically substantiate the strategic value of mobile educational platforms and to analytically define their role in systematically developing the independent learning activity (SLA) and self-regulation skills among students in higher education institutions. This research seeks to delineate the core concepts of m-learning and SLA, establishing a clear theoretical framework for their interconnectedness within the context of digital transformation. Furthermore, a central objective is to examine the psychological and pedagogical mechanisms by which mobile platforms support the cyclical phases of self-regulated learning, focusing on how integrated features can enhance student autonomy in accordance with established theories [6]. The study also endeavors to evaluate the impact of platform-embedded motivational tools on satisfying students' basic needs for competence and relatedness, while concurrently identifying the critical risks and challenges associated with m-learning integration, thereby proposing evidence-based methodological solutions for their effective mitigation. Ultimately, this work aims to formulate clear, practical recommendations for educators and administrators regarding the optimal design and implementation of mobile-supported learning activities that genuinely promote lifelong learning competencies.

Presentation of the Main Research Material

The effectiveness of independent learning activity is directly dependent on the level of development of self-regulation skills. According to the theory of self-regulated learning SRL [6], this process involves active, cyclical self-management of one's cognitive, metacognitive, and motivational

resources to achieve learning goals. Mobile platforms structurally support all phases of this cycle: forethought, performance, and self-reflection.

During the forethought phase, students can use planners and calendars integrated into platforms to set learning goals and plan their activities. The flexibility of m-learning allows them to independently determine the time, place, and pace of studying the material, which fosters responsibility for the learning process. For instance, a student can review a video lecture on the way to university or complete an interactive task during a break, effectively using fragmented time. The performance phase is supported by interactive content (quizzes, simulations, drag-and-drop tasks) that provides immediate feedback. This allows students to monitor their level of understanding in real-time and adjust their actions without waiting for the teacher's assessment. Notification systems and reminders help maintain focus and prevent procrastination. The self-reflection phase is facilitated by built-in analytics tools. Digital gradebooks, progress graphs, and competency maps provide students with clear, visual data on their achievements and gaps. This transforms assessment from a formal event into a tool for self-analysis and planning of further steps for improvement. The success of independent learning activity is largely determined by the level of internal motivation. Mobile learning environments have significant potential to enhance motivational components based on the principles of gamification, personalization, and social constructivism. From the perspective of the self-determination theory [7], motivation flourishes when three basic psychological needs are satisfied: autonomy, competence, and relatedness. Mobile platforms directly address needs such as autonomy, competence, relatedness.

Autonomy. Students are given a choice – which topic to study first, which additional materials to use (video, text, podcast), in what sequence to complete tasks. This sense of control increases engagement and personal responsibility for the results.

Competence. The tiered structure of content («unlocking» new levels after mastering previous ones), systems of badges, points, and progress visualizations create a clear sense of growth and mastery. Immediate feedback reinforces the belief in one's own abilities.

Relatedness. Integrated forums, chats, and tools for collaborative work on projects (e.g., shared documents or whiteboards) create an educational community. Feeling part of a group, the ability to discuss, ask for help, and share successes satisfies the need for social connection, making independent learning less isolated.

Despite the significant potential, the integration of mobile platforms into educational process for developing SLA is associated with a number of challenges and risks that require pedagogical control and mitigation.

Digital divide and inequality. Not all students have access to modern mobile devices and stable high-speed internet. As J. Traxler warns [2], mobile learning might «accentuate the digital divide», particularly affecting disadvantaged groups. Socio-economic inequality can translate into educational inequality, where some students are deprived of the opportunity to fully engage in the digital educational environment.

Information overload and distraction. The constant flow of notifications from messengers, social networks, and other apps creates a high cognitive load and scatters attention. The «clip» thinking, formed in the digital environment, can hinder the development of skills for deep, concentrated work with complex text material.

Low level of digital and self-regulation literacy. Effective work with a mobile platform requires a set of skills: filtering information, critically evaluating sources, managing digital identity, and, most importantly, self-discipline [5]. Without these skills, a student may get lost in the abundance of content or use the device for non-educational purposes during study sessions.

Conclusions

Mobile learning presents «significant potential for transforming education» [4]. Thus, mobile platforms act as an external scaffold that structures the independent activity of students, gradually

forming their internal capacity for self-regulation and self-management. Examples of the influence on the development of students' independence are as follows: mobile platforms develop self-organization and time management skills; students gain the ability to plan their own educational trajectory; there is an increased motivation for lifelong learning due to 24/7 accessibility; digital literacy and the ability to work with various content formats (videos, interactive materials, tests) are enhanced. The future development should follow the path described by Kukulska-Hulme et al. [3], combining «the best features of campus and digital education» in blended learning models. Gamification elements, such as leaderboards, achievement badges, and «missions», trigger positive emotions and a desire to achieve more, turning the learning process into an intellectually stimulating challenge. As demonstrated in the S. Oyelere's study [8], «well-designed mobile applications significantly enhance student engagement and learning outcomes» through interactive features. Furthermore, the multimedia nature of content (videos, interactive images, audio lectures) caters to different cognitive styles, making learning more engaging and accessible for students with different perceptual preferences. At the same time, the implementation of mobile learning should be systematic, accompanied by measures to develop digital culture, provide technical support, and carefully plan the pedagogical design of courses.

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