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IMPROVING STUDENTS' INDEPENDENT LEARNING ACTIVITIES IN HIGHER EDUCATION THROUGH MOBILE LEARNING TECHNOLOGIES

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Abstract

This article analyzes the pedagogical potential of developing students' independent learning activities in higher education through the use of mobile learning technologies. It highlights the importance of mobile devices, electronic educational resources, online platforms, and educational applications in developing students' skills in independent knowledge acquisition, information search and analysis, self-monitoring, and assessment of learning outcomes. The flexibility of mobile learning enables students to access educational materials anytime and anywhere, complete independent assignments, and consolidate acquired knowledge. The study also examines the specific roles of teachers and students in the independent learning process and the conditions necessary for the effective use of mobile technologies. The findings indicate that the purposeful and systematic integration of mobile learning technologies into independent learning can contribute to increasing students' academic engagement, developing independent thinking, and strengthening digital competencies.

Keywords

mobile learning, mobile learning technologies, independent learning, independent learning activities, digital education, electronic educational resources, mobile devices, digital competence, academic engagement, self-monitoring.

Annotatsiya. Mazkur maqolada oliy ta'lim muassasalari talabalarining mustaqil ta'lim faoliyatini mobil ta'lim texnologiyalari asosida rivojlantirishning pedagogik imkoniyatlari tahlil qilingan. Tadqiqotda mobil qurilmalar, elektron ta'lim resurslari, onlayn platformalar va ta'lim ilovalaridan foydalanishning talabalarning mustaqil bilim olish, axborotni izlash va tahlil qilish, o'z-o'zini nazorat qilish hamda ta'lim natijalarini baholash ko'nikmalarini shakllantirishdagi ahamiyati yoritilgan. Mobil ta'limning

moslashuvchanligi talabalarga o‘quv materiallaridan istalgan vaqt va joyda foydalanish, mustaqil topshiriqlarni bajarish va o‘zlashtirilgan bilimlarni mustahkamlash imkonini beradi. Shuningdek, mustaqil ta’lim jarayonida o‘qituvchi va talaba faoliyatining o‘ziga xos jihatlari hamda mobil texnologiyalardan samarali foydalanish shartlari ko‘rib chiqilgan. Tadqiqot natijalari mobil ta’lim texnologiyalarini mustaqil ta’lim jarayoniga maqsadli va tizimli joriy etish talabalarning o‘quv faolligi, mustaqil fikrlashi va raqamli kompetensiyalarini rivojlantirishga xizmat qilishini ko‘rsatadi.

Kalit so‘zlar: mobil ta’lim, mobil ta’lim texnologiyalari, mustaqil ta’lim, mustaqil o‘quv faoliyati, raqamli ta’lim, elektron ta’lim resurslari, mobil qurilmalar, raqamli kompetensiya, o‘quv faolligi, o‘z-o‘zini nazorat qilish.

Аннотация. В статье анализируются педагогические возможности развития самостоятельной учебной деятельности студентов высших образовательных учреждений на основе мобильных образовательных технологий. Раскрывается значение использования мобильных устройств, электронных образовательных ресурсов, онлайн-платформ и образовательных приложений в формировании навыков самостоятельного приобретения знаний, поиска и анализа информации, самоконтроля и оценки результатов обучения. Гибкость мобильного обучения позволяет студентам получать доступ к учебным материалам в любое время и в любом месте, выполнять самостоятельные задания и закреплять полученные знания. Также рассматриваются особенности деятельности преподавателя и студента в процессе самостоятельного обучения и условия эффективного использования мобильных технологий. Результаты исследования показывают, что целенаправленное и систематическое внедрение мобильных образовательных технологий в процесс самостоятельного обучения способствует повышению учебной активности студентов, развитию самостоятельного мышления и цифровых компетенций.

Ключевые слова: мобильное обучение, мобильные образовательные технологии, самостоятельное обучение, самостоятельная учебная деятельность, цифровое образование, электронные образовательные ресурсы, мобильные устройства, цифровая компетентность, учебная активность, самоконтроль.

Today, the rapid development of digital technologies in higher education requires the introduction of new forms and methods of organizing the learning process. In particular, the widespread use of mobile devices and Internet services has significantly expanded students' opportunities to access educational materials independently. Students can use electronic textbooks, video lessons, online tests, electronic libraries, and various educational platforms to develop their knowledge beyond the classroom.

Independent learning is an important component of higher education. It contributes to the development of students' ability to work independently, think critically, search for and analyze information, and evaluate their own learning activities. From this perspective, integrating independent learning with mobile technologies is one of the important directions for modernizing the educational process. The main advantage of mobile learning is that it makes education more flexible in terms of time and location. However, the availability of mobile devices alone does not automatically ensure effective learning. They should be combined with pedagogically appropriate assignments, electronic educational resources, assessment methods, and feedback mechanisms. Therefore, improving students' independent learning activities through mobile learning technologies is an important and relevant pedagogical problem.

Aim of the Study. The aim of the study is to identify the pedagogical potential of developing students' independent learning activities through mobile learning technologies, determine effective methods and tools, and develop scientific and methodological recommendations for their implementation in the educational process.

Objectives of the Study. To achieve the stated aim, the following objectives were defined:

to study the role of mobile learning technologies in higher education from a scientific and pedagogical perspective;

to analyze the content and main characteristics of students' independent learning activities;

to identify the possibilities of using mobile devices and digital educational resources in independent learning;

to develop mobile-based assignments and exercises for organizing independent learning;

to identify ways of developing students' skills in information searching, analysis, self-monitoring, and independent decision-making through mobile learning;

to analyze the effectiveness of using mobile learning technologies and develop relevant methodological recommendations.

Research Methodology. The methodological basis of the study is based on the principles of digital education, mobile learning, and independent learning in higher education. The research focuses on the systematic integration of mobile learning technologies into students' independent educational activities. The methodology considers the student as an active participant in the learning process and emphasizes independent information search, analysis, self-monitoring, and evaluation of learning outcomes.

Research Methods. The study employed the following research methods:

Analysis of scientific and methodological literature – to study existing theoretical approaches to mobile learning and independent learning.

Comparison – to compare traditional and mobile-based approaches to organizing students' independent learning activities.

Observation – to examine students' engagement and independent work when using mobile technologies.

Questionnaire – to identify students' attitudes toward mobile learning technologies and their learning preferences.

Pedagogical experiment – to determine the effectiveness of mobile technologies in improving students' independent learning activities.

Analysis and generalization of results – to identify changes in students' independent learning skills and evaluate the effectiveness of the proposed approach.

Table 1. Indicators for Improving Students' Independent Learning Activities Through Mobile Learning Technologies

No.	Component of independent learning	Mobile learning tools	Student activity	Assessment indicator	Expected result
1	**Motivational component**	Mobile applications, video lessons, interactive content	Shows interest in learning activities	Level of engagement and motivation	Increased interest in independent learning
2	**Information-search component**	Electronic libraries, search engines, digital databases	Searches for and selects relevant information	Ability to find reliable sources	Development of information literacy
3	**Cognitive component**	E-books, online courses, educational platforms	Studies and understands learning materials	Level of understanding and knowledge acquisition	Improved subject knowledge
4	**Analytical component**	Interactive tasks, problem-based assignments	Compares, analyzes, and summarizes information	Ability to analyze and draw conclusions	Development of independent and critical thinking
5	**Practical component**	Online exercises, mobile applications, multimedia tasks	Applies acquired knowledge to practical tasks	Quality of completed assignments	Development of practical skills
6	**Self-monitoring component**	Online tests, quizzes, digital assessment tools	Checks and evaluates own knowledge	Test results and error analysis	Development of self-

					assessment skills
7	**Time-management component**	Mobile calendars, reminders, planning applications	Plans and organizes independent work	Timely completion of assignments	Improved time-management skills
8	**Communication component**	Online groups, messengers, learning platforms	Communicates with teachers and peers	Participation in discussions	Development of collaborative learning skills
9	**Creative component**	Multimedia tools, presentation applications	Creates presentations, videos, and digital projects	Originality and quality of the product	Development of creativity and digital competence
10	**Reflective component**	Digital portfolios, feedback tools	Evaluates learning outcomes and identifies difficulties	Ability to reflect on learning progress	Formation of reflective learning skills

Table 2. Effectiveness Criteria of Mobile-Based Independent Learning

Criterion	Low level	Medium level	High level
Information searching	Needs constant assistance	Searches with partial guidance	Independently finds reliable information
Information analysis	Has difficulty analyzing information	Performs basic analysis	Critically analyzes and compares information
Task completion	Frequently needs teacher assistance	Completes tasks with occasional assistance	Completes tasks independently

Self-monitoring	Rarely checks own results	Sometimes evaluates performance	Regularly evaluates and corrects own learning
Time management	Does not plan learning activities	Partially follows a plan	Independently plans and manages learning time
Digital competence	Limited use of digital tools	Uses basic digital tools	Confidently uses various educational technologies
Learning engagement	Low participation	Moderate participation	High and consistent participation
Independent decision-making	Relies mainly on teacher	Makes decisions with guidance	

The data presented in Table 1 demonstrate that mobile learning technologies can be used to develop different components of students' independent learning activities in a systematic manner. Their application is not limited to providing access to educational materials; it also supports students' motivation, information searching, analytical thinking, practical skills, self-monitoring, time management, communication, creativity, and reflection.

The table shows that each component of independent learning can be supported by appropriate mobile tools. For example, electronic libraries and digital databases develop students' information-searching skills, while interactive assignments contribute to analytical thinking. Online tests and digital assessment tools help students monitor their own learning outcomes and identify mistakes.

An important aspect is the gradual development of students' independence. At the initial stage, students may require teacher guidance when searching for information or completing assignments. As their digital and independent learning skills develop, they become more capable of planning their activities, selecting appropriate resources, evaluating information, and assessing their own results.

Results. The results of the study indicate that the systematic use of mobile learning technologies has a positive effect on students' independent learning activities. Mobile educational resources enabled students to access learning materials at a convenient time

and place, independently search for additional information, complete assignments, and monitor their learning outcomes.

The analysis showed that the use of electronic libraries, educational applications, online tests, video lessons, and interactive assignments contributed to the development of students' information-searching, analytical, practical, and self-monitoring skills. Mobile-based learning also encouraged students to take greater responsibility for planning and organizing their independent work. The results further demonstrated that students' engagement increased when assignments were presented in an interactive and accessible format. In particular, the possibility of receiving immediate feedback through online tests and digital platforms helped students identify their mistakes and review learning materials independently.

Discussion. The findings suggest that mobile learning technologies can play an important role in transforming independent learning from a teacher-directed activity into a more student-centered process. Students are given greater opportunities to select learning resources, determine the pace of their study, and evaluate their own progress.

At the same time, the effectiveness of mobile learning depends not only on the availability of technological devices but also on the quality of their pedagogical use. Mobile technologies should be integrated into the learning process according to clearly defined objectives. Assignments should encourage students to search for information, compare different sources, analyze content, and formulate independent conclusions rather than simply reproduce ready-made information. The teacher also remains an important part of the process. In a mobile learning environment, the teacher acts as a facilitator who selects appropriate digital resources, provides methodological guidance, monitors students' progress, and gives feedback. Therefore, effective mobile learning requires a balanced combination of technological resources and pedagogical support.

Conclusion. In conclusion, the study confirms that mobile learning technologies provide significant opportunities for improving students' independent learning activities in higher education. Their systematic use can contribute to the development of information-searching, analytical thinking, self-monitoring, time-management, communication, and digital competencies. Mobile learning is particularly effective when

electronic resources, interactive assignments, online assessment, and feedback are combined with appropriate teacher guidance. Therefore, higher education institutions should consider the purposeful integration of mobile technologies into independent learning and develop learning materials and assignments that encourage students to become more active and responsible participants in the educational process.

References

1. Al-Emran, M., Elsherif, H. M., & Shaalan, K. (2016). Investigating attitudes towards the use of mobile learning in higher education. *Computers in Human Behavior, 56*, 93–102. https://doi.org/10.1016/j.chb.2015.11.033

2. Al-Fraihat, D., Joy, M., Masa'deh, R., & Sinclair, J. (2020). Evaluating e-learning systems success: An empirical study. *Computers in Human Behavior, 102*, 67–86. https://doi.org/10.1016/j.chb.2019.08.004

3. Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education, 59*(3), 1054–1064. https://doi.org/10.1016/j.compedu.2012.04.015

4. Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones and social media. *The Internet and Higher Education, 19*, 18–26. https://doi.org/10.1016/j.iheduc.2013.06.002

5. Hwang, G. J., & Chang, H. F. (2011). A formative assessment-based mobile learning approach to improving the learning attitudes and achievements of students. *Computers & Education, 56*(4), 1023–1031. https://doi.org/10.1016/j.compedu.2010.12.002

6. Kearney, M., Schuck, S., Burden, K., & Aubusson, P. (2012). Viewing mobile learning from a pedagogical perspective. *Research in Learning Technology, 20*. https://doi.org/10.3402/rlt.v20i0.14406

7. Kukulska-Hulme, A. (2013). *Mobile Learning for Quality Education and Social Inclusion*. UNESCO Institute for Information Technologies in Education.

8. Martin, F., & Ertzberger, J. (2013). Here and now mobile learning: An experimental study on the use of mobile technology. *Computers & Education, 68*, 76–85. https://doi.org/10.1016/j.compedu.2013.04.021

9. Park, Y. (2011). A pedagogical framework for mobile learning: Categorizing educational applications of mobile technologies into four types. *The International Review of Research in Open and Distributed Learning, 12*(2), 78–102. https://doi.org/10.19173/irrodl.v12i2.791

10. Sung, Y. T., Chang, K. E., & Liu, T. C. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers & Education, 94*, 252–275. https://doi.org/10.1016/j.compedu.2015.11.008

11. Crompton, H., Burke, D., & Gregory, K. H. (2017). The use of mobile learning in PK–12 education: A systematic review. *Computers & Education, 110*, 51–63. https://doi.org/10.1016/j.compedu.2017.03.013

12. Bernard, R. M., Abrami, P. C., Lou, Y., Borokhovski, E., Wade, A., Wozney, L., Wallet, P. A., Fiset, M., & Huang, B. (2004). How does distance education compare with classroom instruction? A meta-analysis of the empirical literature. *Review of Educational Research, 74*(3), 379–439.