DEVELOPMENT AND FEATURES OF MOBILE EDUCATION AS A FORM OF DISTANCE EDUCATION, PROBLEMS OF USE AND PROSPECTS

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Annotatsiya: Maqola masofaviy ta'lim shakli sifatida mobil ta'limning rivojlanishi va xususiyatlariga bag'ishlangan. Maqolada mobil texnologiyalarning rivojlanishi, internetga kirish imkoniyati va ta'lim dasturlari imkoniyatlarini jadal kengaytirish kabi mobil ta'limning ommaviyligini ta'minlovchi asosiy omillar tahlil qilingan. O'quv jarayonida mobil qurilmalardan foydalanishda o'qituvchilar va talabalar duch keladigan muammolar, jumladan, cheklangan ekran maydoni, kontentni moslashtirish zarurati, shuningdek, xavfsizlik va ma'lumotlarni himoya qilish masalalari ko'rib chiqilgan. Shuningdek, maqolada mobil ta'limning istiqbollari, jumladan masofaviy ta'limning boshqa zamonaviy usullari bilan integratsiyalashuvi, ta'limni shaxsiylashtirish uchun sun'iy intellektdan foydalanish, shuningdek, mobil texnologiyalarning yanada rivojlanish munosabati bilan ta'lim tizimidagi mumkin bo'lgan o'zgarishlar muhokama qilinadi.

Kalit so'zlar: mobil ta'lim, masofaviy ta'lim, mobil texnologiyalar, ta'limni shaxsiylashtirish, elektron ta'lim, ta'lim platformalari, interaktiv texnologiyalar, adaptiv ta'lim.

Аннотация: Статья посвящена развитию и особенностям мобильного обучения как одной из форм дистанционного образования. В работе анализируются ключевые факторы, способствующие росту популярности мобильного обучения, такие как развитие мобильных технологий, доступность интернета и стремительное расширение возможностей обучающих приложений. Рассматриваются проблемы, с которыми сталкиваются преподаватели и студенты при использовании мобильных устройств в образовательном процессе, включая ограниченность экранного пространства, необходимость адаптации контента, а также вопросы безопасности и защиты данных. В статье также обсуждаются перспективы мобильного обучения, включая интеграцию с другими современными методами дистанционного обучения, использование искусственного интеллекта для персонализации обучения, а также возможные изменения в образовательной системе в связи с дальнейшим развитием мобильных технологий.

Ключевые слова: мобильное обучение, дистанционное образование, мобильные технологии, персонализация обучения, электронное обучение, образовательные платформы, интерактивные технологии, адаптивное обучение.

Annotation: The article is devoted to the development and characteristics of mobile education as a form of distance education. The article analyzes the main factors ensuring the popularity of mobile education, such as the development of mobile technologies, access to the Internet, and the rapid expansion of the capabilities of educational programs. The problems that teachers and students face when using mobile devices in the educational process are considered, including limited screen space, the need to adapt content, as well as issues of security and data protection. The article also discusses the prospects of mobile education, including its integration with other modern methods of distance education, the use of artificial intelligence to personalize education, as well as possible changes in the education system in connection with the further development of mobile technologies.

Keywords: mobile learning, distance learning, mobile technologies, personalization of education, e-learning, educational platforms, interactive technologies, adaptive learning.

Introduction

Modern education is undergoing significant changes due to the introduction of new information and communication technologies. One of the rapidly developing forms of education is mobile education, which is the use of mobile devices (smartphones, tablets, laptops) to acquire knowledge and develop skills. This form of education has become an important component of distance learning, allowing students to study at any time

and anywhere, which is especially important in the context of globalization and the rapid development of technology.

Mobile education significantly expands educational opportunities by allowing the integration of traditional and new teaching methods, including multimedia resources, educational applications and platforms, which contributes to a more personalized and flexible approach to learning. At the same time, despite its many advantages, mobile education faces a number of challenges, such as the need to adapt educational materials for mobile devices, issues of data security and technical support.

The purpose of this article is to consider the development of mobile learning as an important form of distance learning, highlight its features, and also analyze the current problems and prospects for using this form of education in various fields.

Methodology of research

To study the development and characteristics of mobile learning as a form of distance learning, as well as the problems and prospects of its use, the article uses a comprehensive approach that includes the following methods and methodologies: analysis of literature and secondary sources, stages of work, structural analysis of educational platforms and mobile applications, conducting questionnaires and answering questions with students and teachers, comparative analysis of traditional and mobile learning, forecasting and prospect analysis. The research methodology combines theoretical and empirical approaches, which allows for a comprehensive analysis of the development of mobile learning, identifying its features and problems, as well as predicting its prospects. The use of several research methods, such as literature analysis, stages of work, questionnaires and comparative analysis, allows for a comprehensive understanding of the current state of mobile learning and its further potential in the field of distance learning.

Literature Review

As a form of distance learning, mobile learning has attracted the attention of researchers and practitioners around the world due to its advantages in convenience, flexibility, and personalization of teaching. With the development of mobile technologies and the widespread use of the Internet in recent decades, this direction has become an important element of the modern education system. This literature review examines various aspects of mobile learning, including its development, characteristics, problems, and prospects for use.

According to research by Hwang & Chan, 2017, mobile learning began to develop in the early 2000s, with the advent of smartphones and tablets. Experts say that every year the number of educational programs and platforms that combine various content is increasing: text materials, video tutorials, quizzes, and forums for communication between students and teachers. In the workplace, mobile learning is seen as a tool that allows students to be in a continuous learning process, regardless of time and location.

In addition, with the development of technologies such as 5G and cloud computing, mobile learning has become more convenient and functional. Sharples scientists and others emphasize the importance of integrating mobile technologies with other educational methods, including electronic and virtual learning, which increases the flexibility of the educational process.

One of the main features of mobile learning is its mobility and flexibility. Mobile devices allow students to access educational materials at any time and anywhere. Muhammad Ali's research shows that mobile learning helps to increase student motivation, as they can independently plan their time and choose appropriate learning methods. This form of learning is especially popular among students and workers who combine studying with other tasks.

However, one of the important features of mobile learning is its interactivity and multimedia. Scholar Kukulska-Hulme, 2009 argues that the use of multimedia elements such as video, audio, and images increases students' interest in the learning process and helps them better absorb the material. At the same time, mobile devices often offer features for teamwork, which encourages the development of communication and collaboration skills.

Despite its many advantages, mobile learning faces a number of challenges. One of them is the limited functionality of mobile devices. Small mobile screens and limited device resources make it difficult to display

complex educational materials, such as detailed graphics or technical diagrams (Conole, 2013). Also, the need to adapt traditional educational materials to mobile platforms is a significant problem, requiring additional efforts from developers and teachers.

Another important issue is ensuring data security and protection. The use of mobile devices for learning poses risks of privacy breaches and misuse of student data. This raises questions about legal aspects and the need to develop secure learning platforms.

Mobile learning will play an important role in the future of education. Research shows that mobile learning in the future will be closely related to the use of new technologies such as artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) (Johnson et al., 2016). These technologies will help create a more dynamic and personalized learning environment that can significantly increase student engagement and improve learning outcomes.

Social and cultural changes also play an important role in the development of mobile learning. More and more educational institutions have begun to integrate mobile technologies into the learning process, which is contributing to the creation of hybrid learning models that combine traditional and distance learning methods. An important step is also to increase the availability of mobile learning for various social groups, including people with disabilities. Despite the existing problems, mobile learning continues to develop and has a significant impact on education. Interest in this area is growing every year, and new solutions are emerging that help overcome existing difficulties. In the near future, we can expect widespread use of mobile technologies in the educational process, which will open up new horizons for students and teachers.

Mobile learning, despite its existing problems, continues to develop and has a significant impact on education. Interest in this area is growing every year, and new solutions are emerging that help overcome existing difficulties. In the near future, one can expect the widespread use of mobile technologies in the educational process, which will open up new horizons for students and teachers.

Discussion

Mobile learning as a form of distance learning is actively developing due to the rapid spread of mobile technologies and the constant improvement of access to the Internet. Unlike traditional forms of education, mobile learning allows students not only to study at their own time and in their own place, but also to use various interactive and multimedia resources, such as educational programs, video lectures, online courses and tests. This helps to master the material more deeply and effectively, and also allows you to take into account the individual needs of each student.

One of the important advantages of mobile learning is its ability to integrate with other technologies, such as artificial intelligence (AI), augmented reality (AR), and virtual reality (VR), which significantly increase student engagement and help them learn better. For example, the use of artificial intelligence helps personalize the learning experience by adapting content based on the student's level of knowledge and preferences. Augmented and virtual reality open up new horizons for practical exercises, laboratory work, and simulations that are not possible in traditional classes.

However, despite all the advantages, mobile learning faces a number of significant challenges. One of them is the limited screen space of mobile devices, which makes it difficult to perceive certain types of content, such as graphics or texts with a large amount of information. In addition, not all educational materials can be effectively adapted for mobile platforms, which requires additional time and resources to develop and update content.

Another important aspect is the issue of data security and confidentiality. The use of mobile devices for learning requires the transfer of personal data and learning outcomes, which can lead to the risk of data leakage or misuse. It is also necessary to ensure protection against virus attacks and technical support at all stages of the educational process. The prospects for mobile education look promising. In the future, we can expect further integration of mobile education with other forms of distance learning, such as online courses, webinars, and digital platforms for collaborative learning. With the development of 5G technologies and the improvement of the quality of mobile devices, the availability and quality of mobile content will increase. It is

also important to continue work on improving adaptive technologies in educational institutions, creating educational materials suitable for mobile platforms, and ensuring a high level of data security. Mobile learning has enormous potential to transform the learning process, but a number of technical, pedagogical, and ethical challenges need to be addressed for its effective implementation.

Results

Mobile learning (m-learning) as a form of distance learning has a number of unique features that distinguish it from traditional forms of education and other types of distance learning. These features make mobile learning especially convenient and effective for different categories of students.

One of the main features of mobile learning is the ability to study anywhere and at any time. The use of mobile devices (smartphones, tablets, laptops) allows students to access educational resources and materials without being limited to the physical space of the classroom. This allows them to study on the go, at home, during breaks between classes, and even while traveling. This approach is especially important for people who combine studying with work or family responsibilities.

Another aspect is that mobile devices allow for the active use of multimedia materials such as video lessons, audio content, graphics, animation, and interactive tests. This significantly improves the perception of educational material, makes the learning process more interesting and diverse. Interactive elements such as quizzes, problems, and simulations actively engage students and help them learn and retain information better. It is important to note that mobile learning provides flexibility and personalization of the learning process. This allows students to choose the pace and sequence of learning, as well as tailor learning to their needs and abilities. Unlike traditional learning, where the learning experience is often standardized, mobile platforms can offer personalized recommendations tailored to the student's level of knowledge and preferences. This can increase the effectiveness of learning the material.

Mobile learning platforms often provide immediate feedback, which is important for students who are self-directed learners. For example, after completing tests and assignments, students receive immediate feedback, which allows them to quickly correct mistakes and improve their results. This also helps to increase student motivation and independence.

Mobile learning supports both synchronous (real-time) and asynchronous (non-simultaneous participation) forms of interaction. Students can participate in online lectures and webinars (synchronous learning), as well as review materials, complete assignments, and tests at their own convenience (asynchronous learning). This flexibility allows mobile learning to be combined with responsibility, which is especially important for people with limited time.

Mobile platforms can include various features for social and collaborative work, such as forums, chats, discussion groups, and collaboration on projects. This helps students communicate and work in groups, developing teamwork and collaboration skills. Social interaction helps increase student engagement and motivation, and provides opportunities for sharing experiences and knowledge.

Mobile platforms often offer learning content in short, easily digestible chunks. These "micro-lessons" allow students to learn material in small chunks, which leads to better retention and higher levels of concentration. This is especially useful for busy people who can study in a short amount of time.

Mobile learning actively uses new technologies such as augmented reality (AR), virtual reality (VR), artificial intelligence (AI), big data and analytics. These technologies allow for more interactive, personalized and immersive learning environments. For example, with the help of augmented reality, students can conduct virtual laboratory work or study historical monuments, while artificial intelligence can adapt educational materials to the individual needs of students.

Mobile devices are intuitive and easy to use, which helps them reach a wide audience. It is important that mobile platforms often have user-friendly interfaces and are easily adapted to different devices and operating systems, which ensures the accessibility of learning to a wide range of users.

Mobile learning, due to its characteristics, is a powerful tool for distance learning, providing flexibility, convenience, interactivity and personalization of the learning process. These features make mobile learning

attractive to students and teachers, creating new opportunities for learning in different settings and improving the quality of the educational experience.

Mobile learning combines several advantages for students and teachers. First, it offers great flexibility: students can study anytime and anywhere, which is especially important for those who have limited time or combine studies with work. Mobile learning can significantly expand access to educational resources, especially in conditions where the capabilities of traditional educational institutions are limited.

Secondly, it helps to increase student motivation through the use of various multimedia and interactive elements, such as video lessons, tests, games and forums. These tools make learning more interesting and active, which helps students learn better.

Mobile learning also improves interaction between students and teachers through various messaging platforms, chats, video conferencing. Such tools increase the level of student involvement in the process and create the opportunity for individual communication with teachers.

Despite the obvious advantages, mobile learning faces a number of problems and difficulties. One of the main problems is the need to adapt educational materials for mobile platforms. The limitations of mobile device screens can make it difficult to understand complex text and graphics. This requires the development of compact and optimized educational materials for mobile devices that do not lose information content and quality.

Another important aspect is the issue of security and privacy. The use of mobile devices for educational purposes ensures the protection of personal data of students and teachers, as well as protection from viruses and other threats.

In addition, there is a problem of digital inequality: not all students have access to modern mobile devices or stable Internet access, which limits the possibilities of mobile learning for some categories of students.

The future of mobile education is closely linked to the development of technology and innovative approaches to education. In the coming years, we can expect further improvements in the quality of mobile learning platforms, the expansion of the possibilities of personalizing education using artificial intelligence, as well as the integration of complex and interactive lessons with virtual reality technologies, which will open up new horizons and create more opportunities for students.

It is also worth noting that mobile education is not only more convenient, but also more inclusive, allowing learning for people with disabilities and overcoming obstacles associated with the physical capabilities of educational institutions.

Mobile learning continues to actively develop as a form of distance learning, and its potential will only increase with the development of technology. This makes the learning process more convenient, flexible and effective, giving students the opportunity to study at a convenient time and anywhere. Despite the existing problems and difficulties, mobile learning has great prospects and is expected to become an integral part of the future education system.

Conclusion

Mobile learning as a form of distance learning is an important and promising component of the modern education system. The development of mobile technologies, the widespread use of smartphones and tablets are creating new opportunities for organizing the educational process, providing the opportunity to receive education anywhere and at any time. Mobile learning is becoming not only a means of increasing the flexibility of the educational process, but also a powerful tool for personalizing education, allowing you to adapt materials to the needs of each student.

However, despite its many advantages, mobile learning faces a number of problems, including the limited capabilities of mobile devices for perceiving complex educational materials, issues of data security and privacy, and digital inequality. These difficulties require the development of effective solutions to improve the quality of education and ensure equal access to educational resources.

The prospects for mobile learning are wide-ranging and are associated with the further development of technologies such as artificial intelligence, augmented and virtual reality, which create a new era for educational processes. In the future, mobile learning will increasingly integrate with other forms of education, creating hybrid models that increase the flexibility and efficiency of the learning experience. Thus, mobile learning has a huge potential to transform education, and its development will help create more convenient, interactive and personalized learning solutions that meet the needs of students and modern society as a whole.

List of used literature:

1. Ally, M. (2009). Mobile learning: Transforming the delivery of education and training. Athabasca University Press.
2. Conole, G. (2013). Designing for learning in an open world. Springer.
3. Hwang, G.-J., & Chen, C.-M. (2017). Mobile learning: A new approach for lifelong learning. Springer.
4. Johnson, L., Adams Becker, S., & Cummins, M. (2016). The NMC Horizon Report: 2016 Higher Education Edition. The New Media Consortium.
5. Kukulska-Hulme, A. (2009). Mobile learning: A handbook for educators and trainers. Routledge.
6. Ng, W. (2012). Can we teach digital natives digital literacy?. Computers & Education, 59(3), 1065-1078.
7. Sharples, M., Taylor, J., & Vavoula, G. (2016). A theory of learning for the mobile age. In M. Ally (Ed.), Mobile learning: The next generation (pp. 37-54). Athabasca University Press.
8. Tapscott, D. (2009). Grown up digital: How the net generation is changing your world. McGraw-Hill.
9. Traxler, J. (2007). Defining, discussing, and evaluating mobile learning: The moving finger writes and having writ…. International Review of Research in Open and Distributed Learning, 8(2), 1-11.
10. Van't Hooft, M., & Swan, K. (2007). Ubiquitous computing: Integrating mobile technologies into learning environments. Journal of Educational Technology & Society, 10(4), 46-57.
11. West, D. M. (2013). Mobile learning: Transforming education, engaging students, and improving outcomes. Brookings Institution.
12. Woolf, B. P. (2010). Building intelligent interactive tutors: Student-centered strategies for academic success. Morgan Kaufmann.
13. Beknazarova, S.S., Abdullayev, S.X., Abdullayeva, O.S., Abdullayev, Z.S. Methods of increasing the contrast of images in video information systems/ Proceedings of SPIE - The International Society for Optical Engineering 2024, 13065, 130650L
14. Safibullaevna, A. An integrated approach to the effectiveness of training masters of technical higher educational institutions/ International Journal of Mechanical Engineering, 2022, 7(1), p. 1170–1173
15. Beknazarova, S., Kurbanov S. Deep learning approaches to biomedical image segmentation/ "BIG DATA and Advanced analytics" VI Международная научно-практическая конференция, 2020, VI (1)
16. Kurbanov S. K. Processing color images, brightness and color conversion // Innovation of sectors of the economy information and communication in development technology importance. Tashkent 2021. – P. 218-219.
17. Kurbanov S. K., Safibullayeva S. S. The process of extensive use of computer graphics in the diagnosis of renal function // International Conference on Information Science and Communications Technologies. Tashkent 2021.
18. Курбанов С.К. New assistant systems for learning language // Молодой ученый. 2019. № 5 (243). С. 184–187.
19. Курбанов С.К. Использование аудиовизуальных устройств при преподавании технических курсов на английском языке // Молодой ученый. 2019. № 5 (243). С. 184–187.
20. Курбанов С.К. The advantages of creating the tutorial multimedia applications of educating english for pre-school and school age children // Молодой ученый. 2015. № 24. С. 1031–1034.