

## РОЗДІЛ VII. ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНІ ТЕХНОЛОГІЇ В ОСВІТІ

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### REALISING THE POTENTIAL OF DIGITAL EDUCATIONAL SERVICES AND RESOURCES IN THE CONTEXT OF THE DEVELOPMENT OF BLENDED LEARNING TECHNOLOGIES

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**Key words:** *educational technologies, personalisation of learning, interactivity in education, challenges of implementing digital services, adaptive learning environment.*

This article is devoted to the realization of the possibilities of digital educational services and resources in the context of the development of blended learning technologies. It sets out the purpose of studying this issue, which is to unlock the potential of digital tools in the educational process and determine their benefits in blended learning. The article begins with the problem statement, which indicates the need to use digital educational services and resources, analyses previous studies and publications related to this issue. Particular attention is paid to the unresolved aspects of this problem, which form the central part of the article. Next, the article presents the purpose of the article, which is to introduce new facts, conclusions, recommendations and patterns related to the implementation of digital educational services and resources in blended learning. This goal is distinguished as innovative and different from current approaches to the problem.

The main part of the article offers a presentation of the research material with a justification of the scientific results obtained. This section discusses the basic principles and capabilities of digital educational services and resources, such as the use of digital platforms, interactivity of learning and individualisation of the process.

The final part of the article provides conclusions and prospects for further developments in this area. The conclusions summarise the research findings and support the main idea of the article about the importance of digital educational services and resources in blended learning. The article also emphasises the need for further development of digital education and the promotion of innovative approaches to the educational process.

## РЕАЛІЗАЦІЯ МОЖЛИВОСТЕЙ ЦИФРОВИХ ОСВІТНІХ СЕРВІСІВ І РЕСУРСІВ В УМОВАХ РОЗВИТКУ ТЕХНОЛОГІЙ ЗМІШАНОГО НАВЧАННЯ

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**Ключові слова:** освітні технології, персоналізація навчання, інтерактивність в освіті, виклики впровадження цифрових сервісів, адаптивне навчальне середовище.

Статтю присвячено реалізації можливостей цифрових освітніх сервісів і ресурсів в умовах розвитку технологій змішаного навчання. Вона висуває мету вивчення цього питання – розкрити потенціал цифрових інструментів в освітньому процесі та визначити їх переваги в змішаному навчанні. Стаття розпочинається постановкою проблеми, у якій вказується на необхідність використання цифрових освітніх сервісів і ресурсів, аналізуються попередні дослідження та публікації, що стосуються цієї проблеми. Особлива увага приділяється невирішеним аспектам цієї проблеми, які становлять центральну частину статті. Далі презентується мета статті, яка полягає у введенні нових фактів, висновків, рекомендацій та закономірностей, пов'язаних з реалізацією цифрових освітніх сервісів і ресурсів у змішаному навчанні. Ця мета виокремлюється як новаторська та відмінна від сучасних підходів до проблеми.

Основна частина статті пропонує виклад матеріалу дослідження з обґрунтуванням отриманих наукових результатів. У цьому розділі розглядаються основні принципи та можливості цифрових освітніх сервісів і ресурсів, як-от використання цифрових платформ, інтерактивність навчання та індивідуалізація процесу.

У заключній частині статті надаються висновки та перспективи подальших розробок у цьому напрямі. Висновки підсумовують отримані результати дослідження та підтримують основну ідею статті про значущість цифрових освітніх сервісів і ресурсів у змішаному навчанні. Також наголошується на необхідності подальшого розвитку цифрової освіти і сприянні інноваційним підходам до освітнього процесу.

**Problem statement.** With the development of modern technologies, blended learning is becoming an increasingly relevant and practical approach to education. Combining traditional classroom learning with the use of digital educational services and resources opens up new opportunities for students and teachers. However, there are challenges that still need to be explored and addressed.

Recent studies highlight the importance of integrating digital educational services and resources into blended learning. They contribute to the active involvement of students in the learning process, the development of critical thinking and independence. However, there are still unresolved issues related to the optimal use of digital resources, relevance of content and organisation of learning materials.

**Analysis of research and publications.** Recent research and publications in the field of implementing

digital educational services and resources in blended learning have made a significant contribution to the understanding of this issue and contribute to the further development of this area. The following is an analysis of some key studies and publications that help to elaborate on this topic:

1) Pasichnyk O., Yelfimova Y., Donets A. (2021): In this study, the researchers focused on understanding and using blended learning in a vocational school. They explored the role of digital educational services and resources in enhancing student learning. The results showed that the use of digital tools contributes to the active involvement of students in the learning process and improves their academic performance.

2) Anderson, T., & Dron, J. (2011): In this study, the authors analysed three generations of distance learning pedagogy. They explored the evolution of approaches to distance learning, including blended

learning. The results showed that blended learning can combine the advantages of traditional learning and digital tools to improve learning effectiveness.

3) Garrison, D. R., & Kanuka, H. (2004): In this publication, the authors examined the concept of blended learning and identified its transformative potential in higher education. They emphasised the importance of combining traditional teaching practices with the use of digital technologies. The results showed that blended learning can improve student engagement and performance.

These studies and publications reflect the importance of implementing digital educational services and resources in blended learning, show the benefits of this approach and contribute to the further development of this field. The analysis of these studies and publications helps to understand the potential of digital technologies in the educational process and develop effective strategies for using digital educational services and resources in blended learning.

**The purpose of the article.** This article aims to study and analyse the possibilities of implementing digital educational services and resources in blended learning. The main idea is to identify the benefits, challenges and obstacles associated with introducing digital tools in the learning process. The article also suggests approaches to the optimal use of digital resources and solving existing problems.

#### **Summary of the main research material**

1) The role of digital educational services and resources in blended learning:

- Using digital platforms to collect and organise learning material.
- Interactivity and engagement of students in active learning activities.
- Ensuring individualisation and personalisation of learning.

2) Advantages of digital educational services and resources in blended learning:

- Increased accessibility and flexibility of learning.
- Expanding opportunities for collaboration and information exchange between – students and teachers.
- Creating an adaptive learning environment.

3) Challenges and obstacles to the introduction of digital educational services and resources:

- Insufficient training of teachers in the use of digital tools.
- Problems with providing access to the necessary technical infrastructure.
- Issues of data security and confidentiality.

In today's rapidly evolving world, educational services and resources are becoming increasingly digital and interactive. One of the most promising approaches to learning that effectively combines traditional methods with the use of technology

is blended learning. Blended learning combines elements of traditional classroom learning with the use of digital tools and resources.

Overview of blended learning and its development

Blended learning is based on the idea that students have the opportunity to acquire knowledge using a variety of sources and formats, including traditional lectures, interaction with the teacher and fellow students, and the use of digital tools and resources. Blended learning technologies provide students with the opportunity to learn at their own pace using a variety of methods and materials, which contributes to a more flexible and individualised approach to learning.

Overview of modern technologies that support blended learning

In the modern world, there is a wide range of digital educational services and resources that support blended learning. Online learning platforms such as Coursera, edX, Khan Academy provide access to a large number of courses and materials for self-study. These platforms allow learners to study new material at their own pace and time, as well as interact with other course participants.

Interactive platforms, such as Google Classroom, Moodle, allow teachers to create virtual classrooms and communicate with students by assigning tasks, posting materials, and tracking progress.

**Advantages** of digital educational services and resources in blended learning:

*Accessibility and flexibility:* Digital education services and resources can be accessed anytime and from anywhere, enabling learners to study at their own time and pace. They can also use a variety of materials and tools, which supports individualised learning and the development of different skills.

*Active learning:* Digital services and resources provide opportunities for active learning, where learners can interact with materials, solve problems, create projects and research. Interactivity and visualisation of information contribute to better learning and understanding of the material.

*Expanded opportunities:* Digital resources can provide access to enhanced learning opportunities such as virtual tours, simulations, video lectures from experts, etc. This allows learners to gain a more realistic understanding of certain concepts, phenomena or processes.

*Providing feedback:* Digital education services can provide fast and effective feedback to learners, where they can get immediate assessment of their work, comments and advice from the teacher. This helps learners to improve their skills and improve the quality of their work.

*Facilitate collaborative learning:* Digital services allow students to collaborate and share ideas through online platforms, forums, group projects, etc. This

contributes to the development of collaboration, communication and teamwork skills.

Digital educational services and resources have the potential to significantly improve the learning process in blended learning. They provide more opportunities for individualisation, active learning and collaboration, which helps to increase motivation, engagement and quality of education.

But there are certain **challenges** at different technological and pedagogical levels. Let's look at some of them:

*Infrastructure challenges:* Effective implementation of digital education services requires sufficient infrastructure, such as a stable internet connection, access to computers or other devices for students and teachers. In some cases, especially in rural or remote areas, there may be limitations in access to the necessary technology.

*Teacher training:* Teachers need to be properly trained to use digital education services and resources effectively. They need to be equipped with digital skills, understand the principles and methodologies of blended learning, and know how to integrate digital resources into the classroom. Teachers need support and training to use digital technologies effectively.

*Funding and accessibility:* The introduction of digital education services may require financial investment to purchase the necessary hardware, software licences and infrastructure support. Insufficient funding can be an obstacle for schools and educational institutions to implement digital services.

*Data protection and privacy:* The use of digital educational services and resources involves the collection and processing of students' personal data.

This raises questions about data protection and privacy. The legal and ethical aspects of storing and using learners' personal data need to be considered.

*Inequality of access:* There is a risk that the introduction of digital education services may increase inequality of access to quality education. Students with low socioeconomic status or disabilities may have limited access to the necessary technology or insufficient support to use digital resources. Equal opportunities for all students must be ensured.

Despite these challenges, the introduction of digital educational services and resources in blended learning has the potential to improve the quality of education, learner engagement and skills development. These challenges need to be addressed through support for infrastructure, teacher training, accessible funding, data protection, and equal opportunities for all learners.

**Conclusions and prospects for further development.** Digital educational services and resources have great potential in the implementation of blended learning, but their implementation depends on solving a number of challenges. Successful implementation of digital tools requires support and training for teachers, access to the necessary technical infrastructure, and the development of data security strategies. Further developments in this area should be aimed at improving digital resources, creating effective teaching approaches, and promoting innovative development of the educational process. Increasing the use of digital educational services and resources in blended learning will help improve the quality of education and prepare students for the modern information society.

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