EFFICIENCY OF USING DIGITAL RESOURCES IN ENSURING THE QUALITY OF EDUCATION IN GENERAL SECONDARY EDUCATION INSTITUTIONS

ЕФЕКТИВНІСТЬ ВИКОРИСТАННЯ ЦИФРОВИХ РЕСУРСІВ У ЗАБЕЗПЕЧЕННІ ЯКОСТІ ОСВІТИ В ЗАКЛАДАХ ЗАГАЛЬНОЇ СЕРЕДНЬОЇ ОСВІТИ

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The article presents an analysis of the current state of use of digital resources in general secondary education institutions and examines their impact on the quality of the educational process. It is determined that the integration of digital technologies is becoming a key factor in the transformation of the educational environment, which contributes to improving the quality of education, flexibility of curricula and individualisation of the approach to teaching students. Different types of digital tools used in general secondary education institutions, including electronic textbooks, interactive platforms, learning management systems, multimedia resources and distance educational technologies, are investigated. It is noted that digital resources have a positive impact on the educational process, contributing to the improvement of academic achievement, student motivation and the development of critical thinking and independent learning skills. However, it has been found that there are some challenges in the use of digital technologies, such as insufficient technical training of teachers, different levels of access to technology for students, and the need to adapt curricula to new forms and methods of teaching. To achieve maximum results, it is important to ensure that teachers are properly trained and that all students have access to technology, which will allow them to fully realise the potential of digital resources in education.

The article offers a number of practical recommendations for optimising the use of digital resources in general secondary education institutions, in particular, improving the level of teachers' training in working with digital technologies, developing a strategy for reducing the digital divide between different social groups of students, and creating effective mechanisms for integrating digital tools into curricula. The focus is on how to ensure equal access to quality education for all students through the use of modern digital technologies.

Thus, the article aims to deepen the understanding of the role of digital resources in improving the quality of education and formulate recommendations for their effective use in general secondary education, which is relevant in the context of global changes in the educational sector.

Key words: quality of education, digital resources, general secondary education institution.

У статті представлено аналіз сучасного стану використання цифрових ресурсів у закладах загальної середньої освіти та досліджено їхній вплив на якість освітнього процесу. Визначено, що інтеграція цифрових технологій стає ключовим чинником трансформації освітнього середовища, що сприяє підвищенню якості освіти, гнучкості навчальних програм та індивідуалізації підходу до навчання учнів. Досліджено різні типи цифрових інструментів, які використовуються в закладах загальної середньої освіти, включаючи електронні підручники, інтерактивні платформи, системи управління навчанням, мультимедійні ресурси та дистанційні освітні технології. Зазначено, що цифрові ресурси позитивно впливають на освітній процес, сприяючи покращенню академічних досягнень, мотивації учнів та розвитку навичок критичного мислення й самостійного навчання. Однак виявлено, що існують певні виклики у використанні цифрових технологій, такі як недостатня технічна підготовка педагогів, різний рівень доступу учнів до технологій, а також необхідність адаптації навчальних програм до нових форм і методів викладання. Для досягнення максимальних результатів важливо забезпечити належну підготовку викладачів і доступ до технологій для всіх учнів, що дозволить повною мірою реалізувати потенціал цифрових ресурсів у навчанні.

У статті запропоновано низку практичних рекомендацій щодо оптимізації використання цифрових ресурсів у закладах загальної середньої освіти, зокрема, підвищення рівеня підготовки педагогів до роботи з цифровими технологіями, розроблення стратегії зменшення цифрового розриву між різними соціальними групами учнів, а також створення ефективних механізмів інтеграції цифрових інструментів у навчальні програми. Основну увагу приділено тому, як забезпечити рівний доступ до якісної освіти для всіх учнів шляхом використання сучасних цифрових технологій.

Таким чином, стаття спрямована на поглиблене розуміння ролі цифрових ресурсів у підвищенні якості освіти та формулювання рекомендацій щодо їх ефективного застосування в умовах загальної середньої освіти, що є актуальним у контексті глобальних змін в освітній сфері.

Ключові слова: якість освіти, цифрові ресурси, заклад загальної середньої освіти.

Problem Statement in General Terms. The modern system of general secondary education is at the stage of active digital transformation, which is a response to global trends in the development of the information society. Digital technologies are playing an increasingly important role in shaping new approaches to the organisation of the educational process, ensuring flexibility and accessibility of education. However, despite its many advantages, the introduction of digital resources in education is accompanied by a number of problems that require detailed analysis and scientific understanding.

One of the key problems is the uneven level of access to digital resources among students and educational institutions. This leads to inequalities in educational opportunities, which is especially relevant in the context of distance learning, which has become an integral part of the educational process in recent years. In addition, there is a problem of insufficient technical and methodological training of teaching staff

to work with digital tools, which limits the effectiveness of their use.

Another important problem is the lack of clear strategies and standards for integrating digital technologies into the educational process, which makes it difficult to assess their impact on the quality of education. Despite the significant potential of digital resources, their use is often fragmented, which does not allow for the full realisation of their potential to improve the quality of education.

Thus, the problem lies in the need to develop effective models and methods of using digital technologies in general secondary education institutions that would ensure the quality of the educational process and equal access to knowledge for all students, regardless of their social or economic opportunities.

Analysis of recent research and publications. Many scholars both in Ukraine and abroad have studied the problem of using digital technologies in the educational process and their impact on the quality of education. Their research covers various aspects of the integration of digital resources into learning, the effectiveness of technologies and the methodology of their implementation. For example, John Hattie examines the impact of various factors on the quality of education, including digital technologies, emphasising the importance of an evidence base for educational decision-making. Ken Robinson emphasises the importance of creativity in learning and the role of technology in developing individual talents. Gary S. Becker highlights the role of digital technologies in developing the skills needed to improve the quality of education. Eric Klinenberg focuses on the social implications of digital technologies, including their impact on education systems.

The following Ukrainian scholars are dedicated to the problems of introducing digital technologies in education and their impact on the quality of education in Ukraine: O. Spivakovskyi studies the issues of digitalisation of the educational process, development of electronic educational resources and their use to improve the quality of education in general and higher education institutions. O. Pometun's research focuses on the introduction of new technologies in the educational process, the development of critical thinking of students and the use of electronic resources to improve the quality of education. M. Piskariova analyses the introduction of ICT in general secondary education and its impact on pedagogical activities. L. Lytvyniuk studies the impact of digital technologies on pedagogical activity, develops recommendations for the introduction of innovative technologies in the educational process to improve the quality of education.

Identification of previously unresolved parts of the overall problem. Despite the numerous studies in this area, it is important to emphasise that there are certain aspects that require further elaboration. It is necessary to study in detail how digital resources can be integrated into the existing curricula of general secondary education institutions, as well as to develop recommendations for their adaptation in order to achieve high quality education.

The purpose of the article is to study the impact of digital technologies on improving the quality of the educational process and to identify ways of their effective implementation in educational institutions.

The objectives of the article are to analyse the current state of use of digital resources in general secondary education institutions, to characterise the concept of «quality of education», to study the impact of digital technologies on the quality of education, and to provide practical suggestions on optimising the use of digital resources in general secondary education institutions.

Presentation of the main material. The relevance of this issue is due to several key factors that emphasise its importance in the modern educational environment. First, the digitalisation of all spheres of life, including education, continues to grow rapidly. This necessitates the introduction of innovative technologies into the educational process to prepare students for the challenges of the modern world. Modern educational institutions must meet the requirements of the digital age by providing students with access to modern knowledge that ensures not only basic literacy but also develops 21st century competencies: critical thinking, creativity, communication skills and the ability to work with information.

Secondly, the efficiency of using digital resources is directly related to improving the quality of education. Digital resources can significantly expand access to learning materials, create individual learning paths, and adapt curricula to the needs of individual students, which is especially important in today's environment. Interactive platforms, video tutorials, e-textbooks, learning management systems and other tools provide an opportunity for more flexible learning, which helps to increase students' motivation and engagement in the educational process.

The third aspect of the topic's relevance is the role of digital technologies in ensuring equal access to quality education. In today's environment, the role of digital resources in ensuring the continuity of the educational process has become obvious. Digital tools have made it possible to provide learning even in the most difficult conditions, but this process has also revealed shortcomings and challenges, including inequality in access to technology and insufficient technical training for both teachers and students. This calls for more research into the effectiveness of their use to improve the educational process and reduce the digital divide.

In addition, research on the effectiveness of digital resources has an important impact on teacher training. Successful implementation of technologies depends on the level of teachers' training and awareness of

new educational technologies. This creates an additional challenge to adapt educational programmes for teacher training and develop professional development programmes that will allow for the most effective use of digital resources in the educational process.

Thus, this topic is not only about improving the quality of the educational process, but also about the formation of new learning models that can influence the development of the education system as a whole, making it more flexible, inclusive and responsive to the challenges of the modern information society.

The link between the quality of education and the use of digital resources is direct and important. Digital resources increase the accessibility, personalisation, interactivity and engagement of students in the educational process, which in turn improves the quality of education.

Approaches to understanding the quality of education in theoretical studies vary depending on the conceptual views of scholars.

V. Poliansky defines the quality of education through its ability to meet social needs in the formation and development of the individual in terms of his/her education, upbringing, reflection of social, mental, and physical qualities [1, p. 19].

According to B. Dyachenko, the «quality of education» as a result of the educational process is evidenced by the formation of national and universal values, democratic beliefs, respect for civil rights and freedoms, traditions and cultures of other nations, the ability to navigate the realities and prospects of socio-cultural dynamics, care for the preservation of their health, readiness for life in a constantly changing world [4, p. 90].

Within the constructivist theory, K. Beebe distinguishes two aspects of quality: internal, which refers to the quality of classroom learning for students to acquire thorough knowledge, and external, which covers the quality necessary for the country's economic development and social progress. In his works, D. Stevens, according to the humanistic concept, emphasises the transition from economic requirements to a focus on the individual's being in society [5].

Evaluating different approaches to the interpretation of the quality of education, Ukrainian scholar T. Lukina distinguishes two groups of researchers. The first group, which includes M. Potashnyk, S. Shyshov and V. Kalney, uses the so-called normalised approach, which considers the quality of education from the point of view of meeting needs and achieving established standards. The other group of researchers, including V. Kachalov and T. Lukina, adheres to the managerial approach, in which the quality of education is considered as an object of managerial influence with an emphasis on the quality of the educational system, the educational process and the quality of the graduate as a result of the educational system [3].

The Law of Ukraine «On Education» states that the quality of education is the compliance of learning outcomes with the requirements established by law, the relevant education standard and/or the contract for the provision of educational services [2].

In today's world, the quality of education has become one of the key aspects of society's development, and its improvement requires the introduction of innovative technologies, among which digital resources play a special role. This relationship between the quality of education and the use of digital resources is multifaceted and complex, as digital technologies affect various aspects of the educational process. Let us consider the main directions of this relationship.

1. Accessibility of learning materials

Digital resources provide wide access to learning materials, which improves the quality of education. Thanks to e-textbooks, online courses and databases, students can access knowledge anytime and from anywhere. This is especially important for students from remote areas or those who are unable to attend traditional classes. A wide range of materials allows students to study topics of interest and deepen their knowledge on their own.

2. Personalisation of learning

The use of digital resources allows us to adapt the educational process to the individual needs of students. With the help of online platforms that analyse students' performance and progress, teachers can identify weaknesses and offer additional materials to improve knowledge. Personalised learning promotes deeper learning and, as a result, improves the quality of education.

3. Interactivity and engagement

Digital resources, such as interactive quizzes, online games and multimedia learning materials, encourage learners to be active learners. Learners' engagement in the learning process is enhanced when they can interact with the material through interactive elements. This active participation leads to better understanding and retention of information, which directly affects the quality of learning.

4. Collaboration and communication

Digital resources also contribute to the development of communication skills and collaboration among learners. Using online platforms for group projects and discussions allows students to work in teams, share ideas, and support each other in their learning. This collaboration helps develop social skills that are important for success in future careers.

5. Monitoring and assessment of progress

Digital resources provide opportunities to monitor and assess student progress in real time. Teachers can quickly receive data on student performance, which allows them to quickly adjust the educational process. Timely feedback helps students to realise their achievements and challenges, which leads to improved performance.

6. Preparation for modern life

The modern labour market requires not only knowledge but also the ability to work with the latest technologies. The use of digital resources in the educational process prepares students for life in the digital world by teaching them to use technology to solve practical problems. This helps to increase the competitiveness of graduates in the labour market.

7. Challenges and limitations

Despite the many benefits, there are some challenges associated with the use of digital resources. For example, insufficient training of teachers in working with new technologies can lead to uneven implementation of digital resources in the educational process. Also, not all students have access to the necessary technologies, which can cause a digital divide and inequality in education.

Thus, the link between the quality of education and the use of digital resources is key and essential. The use of digital resources helps to improve accessibility, personalisation, interactivity and engagement of students in the educational process, which has a positive impact on the overall level of education. To achieve the best results, it is important to ensure that teachers are well-trained and that all students have access to modern technologies, which will allow them to fully realise the potential of digital resources in education.

It should be noted that digital resources play an important role in the modern educational process, changing traditional approaches to learning and teaching. They provide new opportunities for students and teachers, promote innovation in learning, and increase the overall effectiveness of the educational process. Digital resources:

– allow enriching learning material with a variety of formats: texts, graphics, video, animation and interactive elements. This makes the learning process more dynamic and interesting for students. Multimedia materials can help explain complex theoretical material in a better way, which contributes to its deeper learning;

– provide learners with access to learning materials at any time and from any place, which contributes to the flexibility of learning. This is especially important for distance learning, where learners can organise their own learning schedule. It also allows learning to be tailored to individual paces and learning styles;

– allow the educational process to be adapted to the individual needs of each student. With the help of platforms that use personalisation algorithms, learners can receive recommendations for learning materials based on their previous performance and interests. This increases student engagement and promotes better learning;

– interactive elements of digital resources, such as quizzes, interactive exercises and games, increase students' motivation to learn.

Gamification, which includes elements of competition and rewards, can make the learning process more engaging and interesting;

– provide new opportunities for communication between students and teachers. Using online platforms for discussions, comments and questions allows for an open dialogue and promotes a deeper understanding of the learning material. It also allows teachers to receive real-time feedback from students;

– promote the development of cooperation and teamwork skills among students. Through online projects, group assignments, and collaborative document editing platforms, students can work together, share ideas, and solve problems in groups. This helps to develop social skills and teamwork;

– provide the ability to monitor student progress and performance in real time. Teachers can use analytical tools to assess learning outcomes, identify weaknesses in students' knowledge and adjust their teaching methods. This allows for a more objective and effective assessment system;

– promote the development of students' independence in learning. Thanks to access to online courses, video lectures and other learning materials, students can study new topics on their own, review the material they have learned and develop their interests. This builds self-education skills that are important in a fast-paced world.

Thus, digital resources play an important role in the modern learning and teaching process. They not only enrich the learning content, but also make it more accessible, flexible and personalised. Digital technologies stimulate students' motivation, improve communication, facilitate collaboration and develop independent learning. In turn, this leads to an increase in the quality of education in general. However, to maximise the effectiveness of digital resources, it is important to ensure that teachers are properly trained, have access to technology, and support students in adapting to new forms of learning.

In recent years, Ukraine has seen an active introduction of digital technologies in general secondary education institutions. This is driven by the need to adapt to global educational trends and the need for educational institutions to switch to distance learning. As a result, many general secondary education institutions have started using electronic platforms, online courses and other digital resources to support the educational process.

Modern educational institutions have access to a variety of digital resources, including: electronic textbooks and learning materials that provide interactivity and multimedia; online learning platforms such as Google Classroom, Moodle and others that allow organizing courses and managing the educational process; video and audio materials with educational content used to explain complex topics.

However, there are regional differences in the availability of these resources. Some general secondary education institutions, especially in remote or rural areas, face problems of insufficient technical support.

Modern teachers face challenges in using digital resources in teaching. The necessary training of teachers is critical for the effective use of technology. In Ukraine, there has been a gradual introduction of professional development programs aimed at teaching teachers how to work with digital tools, but the level of training is still uneven.

Despite the fact that the use of digital resources in education has a number of advantages, such as increased student motivation, individualization of the educational process, and easier access to information and educational materials, there are also certain challenges:

– digital divide between general secondary education institutions and students with different access to technology;

– insufficient technical base in some educational institutions;

– uneven quality of educational materials, which leads to ambiguity in the perception of digital resources by students and teachers.

To improve the current state of use of digital resources in general secondary education institutions, we offer practical suggestions for their optimization.

1. Improving the digital literacy of teachers.

Since digital literacy encompasses the ability to use digital technologies, tools and resources for learning, and the modern educational process requires teachers to be proficient in new technologies, as the integration of digital resources into learning has become an integral part of modern education, improving the digital literacy of teachers is important for the effectiveness of the educational process, which will ensure better interactivity, student engagement and adaptation of learning materials.

Various forms of training can be used to improve teachers' digital literacy:

• refresher courses: programs that offer the study of modern digital technologies, platforms, and techniques that can be used in the educational process;

• webinars and online courses: flexible learning formats that allow teachers to master new technologies at a time convenient for them;

• workshops: practical classes where teachers can gain skills in working with specific digital tools and resources;

• exchange of experience: organization of meetings where teachers can share their best practices and experience in using digital resources.

The benefits of improving the digital literacy of teachers are the improvement of the quality of education, as teachers with high digital literacy can more effectively integrate technology into the educational process, which has a positive impact on student achievement; adaptation to change, as teachers who constantly improve their skills are more easily able to adapt to changes in the technological environment.

2. Creating inclusive learning materials.

In the modern world, education should be accessible to all. This is not only a requirement of the times, but also a legal norm in many countries. Inclusive learning materials are resources that take into account the diversity of students and their needs in the educational process. They should be accessible, understandable, and relevant to all learners, regardless of their abilities, learning styles, cultural backgrounds, or social context. Inclusive learning materials can be presented in different forms: electronic textbooks, and adapted for different formats (e.g., with the ability to change fonts, colors, or text size); video and audio materials (using subtitles, sign language, or audio recordings to support students with different needs); interactive exercises (engaging students through games, quizzes, multiple-choice tasks); visual materials (infographics, drawings, diagrams for better perception of information).

Creating inclusive learning materials is an important step in ensuring equal access to education for all students. It not only promotes better learning, but also ensures the development of social skills and supports diversity in the classroom. To achieve this goal, it is necessary to use a systematic approach, taking into account the needs of students and teachers, and to integrate the latest technologies into the educational process.

3. Develop a single platform for learning

Modern educational needs require the integration of various technologies and resources into a single system. A single learning platform is an integrated system that combines various resources, tools, and services to manage the educational process. It provides access to educational materials, interaction between teachers and students, and management of administrative functions in educational institutions. Such a platform helps to optimize the educational process and make it more efficient. The reasons for developing a unified platform are: reducing time for management tasks (automation of administrative processes such as journaling, lesson planning, and grade management); improving access to educational materials (students and teachers have centralized access to electronic textbooks, presentations, videos, and other resources); simplifying the communication process (the ability to provide feedback, exchange information, and work together among all participants in the educational process).

An effective unified learning platform may include the following components:

– a teacher's office for lesson planning, classroom journaling, grade management, and student performance analytics;

– a student account for access to learning materials, assignments, lesson schedules, and the ability to provide feedback to teachers;

– messaging tools, discussion forums, and chats that provide quick and convenient interaction;

– a resource library – electronic textbooks, supplementary materials, video lessons and other resources available for download or online reading;

– tools for creating and conducting tests, surveys, and collecting feedback.

The development of a unified learning platform is an important step towards optimizing the educational process in general secondary education institutions. It ensures the integration of various resources and tools, increases learning efficiency and facilitates management tasks. The successful implementation of such a platform can become the basis for modern and high-quality education.

4. Implementation of gamification in education.

Today's students have grown up in the age of technology and gaming, making gamification a powerful tool for capturing their attention. Gamification in education is becoming increasingly popular because game elements can make learning more engaging and interesting, which encourages students to actively participate. Gamification helps to keep students' attention during long lessons by making them active participants in the process and can reduce stress and fears associated with assessment through elements of competition and collaboration.

Gamification in learning can include a variety of elements, including rewarding learners for completing tasks or achieving goals, which encourages them to keep working; publishing learners' achievements, which creates healthy competition and encourages them to do better; and creating different levels of learning, which allows learners to move forward with new knowledge and skills.

To successfully implement gamification in education, there are several key aspects to consider:

– determining which game elements are best suited for a particular course or subject;

– involving students in the process of developing gamification elements, which can increase their motivation;

– use of platforms and applications that allow to realize the idea of gamification.

The introduction of gamification in education opens up new opportunities for engaging students, increasing their motivation and activity. The use of game elements in education can significantly improve the learning process, making it more interactive and interesting. However, it is important to take into account both the benefits and challenges associated with the introduction of gamification in order to achieve maximum efficiency in the educational process.

Conclusions. In modern conditions, general secondary education institutions face the need to integrate digital resources into the educational process to improve the quality of education. The analysis of the current state of use of digital resources has shown that their implementation not only expands access to educational materials, but also promotes student engagement, making learning more interactive and personalized.

The concept of "quality of education" takes on new dimensions in the context of digitalization. It is determined not only by the level of knowledge of students, but also by their ability to effectively use digital technologies to solve various problems. Digital technologies affect the quality of education by increasing students' motivation, providing access to relevant knowledge, and promoting the development of critical thinking and other key competencies.

Based on the study, practical suggestions were made to optimize the use of digital resources. In particular, the emphasis was placed on the need to improve the digital literacy of teachers, develop unified learning platforms, create inclusive learning materials, and introduce gamification into the educational process. This will not only improve the quality of education, but also create a more comfortable and effective educational environment.

Thus, the successful integration of digital resources into general secondary education institutions is an important step towards ensuring high quality education that meets modern requirements and the needs of society. To achieve this goal, it is necessary to take into account both technical and pedagogical aspects of the introduction of digital technologies in the educational process.

Prospects for further research. The study of the use of digital resources in general secondary education opens up numerous prospects for further research, including the analysis of successful practices of introducing digital technologies in education in other countries, which can help identify the best approaches and adapt them to the conditions of Ukrainian education; research on the ethical aspects of the use of digital resources, in particular, the problems of student data privacy and security in the online environment.

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