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Використання цифрових ресурсів у підготовці майбутніх фахівців із бібліотечної, інформаційної та архівної справи в закладах вищої технічної освіти

THE USE OF DIGITAL RESOURCES IN THE TRAINING OF FUTURE SPECIALISTS IN LIBRARY, INFORMATION, AND ARCHIVE STUDIES AT HIGHER TECHNICAL EDUCATION INSTITUTIONS

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Анотація. *У статті досліджується роль цифрових технологій у професійній підготовці майбутніх фахівців із бібліотечної, інформаційної та архівної справи у закладах вищої технічної освіти. Наголошується на необхідності інтеграції цифрових ресурсів в освітні програми з метою підвищення професійної компетентності, цифрової грамотності та адаптивності студентів до сучасного інформаційного середовища. У дослідженні акцентовано на трансформації традиційних методик викладання у відповідь на цифровізацію. Зроблено огляд існуючих досліджень на цю тему, процитовано праці науковців, які підкреслюють зростаючу важливість цифрових навичок у сучасній освіті. Аналіз визначає ключові чинники розвитку цифрової компетентності, серед яких глобалізація, стрімкий розвиток інформаційних технологій та попит на фахівців з аналітичними та творчими здібностями до розв'язання проблем. Стаття присвячена вивченню впливу цифрових інструментів на освітні практики. У ній обговорюються переваги віртуальних навчальних середовищ, освітніх онлайн-платформ (таких як Moodle, Google Classroom і Blackboard) та інструментів для створення цифрового контенту, які сприяють інтерактивному та орієнтованому на студента навчанню. Автор досліджує, як ці технології покращують результати навчання, мотивацію студентів та навички критичного мислення. У статті розглядаються проблеми впровадження цифрових інструментів в освіті, такі як необхідність технічної підтримки, різний рівень цифрової грамотності серед викладачів та студентів, а також опір змінам. Аргументується необхідність безперервного професійного розвитку освітян для забезпечення ефективної інтеграції цифрових технологій у підготовку майбутніх фахівців. Зроблено висновок, що цифрові технології є важливими для модернізації освіти та підготовки майбутніх фахівців до викликів цифрового суспільства. Це вимагає стратегічної розробки навчальних програм, інвестицій у цифрову інфраструктуру та просування цифрової компетентності як основного компонента професійної підготовки. Впроваджуючи інноваційні методики викладання та цифрові інструменти, заклади вищої технічної освіяти можуть краще озброїти студентів навичками, необхідними для успіху в сучасному інформаційному ландшафті.*

Ключові слова: *цифрова компетентність, бібліотечно-інформаційна справа, професійна підготовка, ІКТ в освіті, дистанційне навчання, майбутні фахівці, заклади вищої технічної освіти.*

Summary. *The article explores the role of digital technologies in the professional training of future specialists in library, information, and archival sciences within higher technical education institutions. It highlights the necessity of integrating digital resources into educational curricula to enhance*

students' professional competencies, digital literacy, and adaptability to contemporary information environments. The study underscores the transformation of traditional teaching methodologies in response to digitalization. It reviews existing research on the topic, citing works by scholars, who emphasize the growing importance of digital skills in modern education. The analysis identifies key drivers of digital competence development, including globalization, the rapid advancement of information technologies, and the demand for specialists with analytical and creative problem-solving abilities. The article is dedicated to examining the impact of digital tools on educational practices. It discusses the benefits of virtual learning environments, online educational platforms (such as Moodle, Google Classroom, and Blackboard), and digital content creation tools, which facilitate interactive and student-centered learning experiences. The authors highlight how these technologies enhance learning outcomes, student motivation, and critical thinking skills. The article addresses challenges in implementing digital tools in education, such as the need for technical support, varying levels of digital literacy among educators and students, and resistance to change. It argues for the necessity of continuous professional development for educators to ensure the effective integration of digital technologies in the training of future specialists. The article concludes that digital technologies are essential for modernizing education and preparing future professionals to meet the challenges of an evolving digital society. It calls for strategic curriculum development, investment in digital infrastructure, and promoting digital competence as a core component of professional training. By incorporating innovative teaching methodologies and digital tools, higher education institutions can better equip students with the skills necessary for success in the contemporary information landscape.
Key words: *digital competence, library and information study, professional training, ICT in education, distance learning, future specialists, higher technica*l education institutions.

Introduction. In the contemporary world, digital technologies have become indispensable across all fields, playing a crucial role in the effective operation of educational and research institutions. Their significance is particularly evident in the preparation of future professionals in library, information, and archival studies within higher technical education institutions where the management and processing of diverse documents demand both expertise and advanced technological solutions. Beyond merely ensuring compliance with professional standards, digital tools and services foster new approaches to professional development, emphasizing autonomy, critical thinking, and a commitment to continuous learning.

The modernization of education necessitates a thorough evaluation of the effectiveness of various teaching methodologies. Traditional approaches no longer align with the evolving demands of society, making the integration of digital technologies not just beneficial but essential. Virtual learning environments and simulations offer immersive, practice-oriented experiences that closely mirror real-world conditions, enhancing both knowledge acquisition and the development of practical competencies.

Analysis of recent publications. The use of digital resources in education has been extensively examined by scholars such as Gurin R. [4], Kademia M. [6], Kozyar M. [6], Dychkivska I. [5], Antonova O. [1], Bykov V. [2], Bilous O. [2], Bogachkov N. [3], Potiuk I. [8], Kuibida O. [7], Petrae M. [7], Fedulova L. [7], and Androshchuk H. [7]. Their research highlights the growing need for adaptation to a digital environment characterized by rapid technological advancement and constant change. This adaptation requires not only professional knowledge of digital technologies but also the ability to implement innovative teaching methods effectively. Furthermore, scholars emphasize the importance of continuous digital skill development as a fundamental aspect of professional growth.

Several key factors drive the advancement of digital competence. Globalization fosters interconnectedness and accelerates the integration of technological processes, while the rapid evolution of information technologies influences both professional and everyday life. The demand for specialists capable of unconventional thinking underscores the value of analytical skills, creativity,

and the ability to navigate complex information landscapes. Communication technologies and mass media also play a pivotal role at both global and national levels, facilitating new forms of collaboration, knowledge dissemination, and professional interaction. As a result, technological innovations and digital platforms are reshaping all spheres of activity, fostering new models of work, learning, and engagement [11]. The integration of digital technologies into vocational education offers significant opportunities for enhancing the learning process. Gurin's research examines methodological approaches to implementing innovative tools in teaching, analyzing their impact on the effectiveness of pedagogical practices. Particular attention is given to adapting educational methods to the demands of the modern digital environment and the needs of future professionals, who must develop information literacy to ensure their successful professional engagement. The author highlights the transformative potential of information technologies, which enhance the educational process by making it more interactive, individualized, and responsive to the diverse needs of students [4].

Notably, the incorporation of digital tools in education contributes to increased student motivation, improved learning outcomes, and the development of critical thinking skills. Equally important is the evolving role of the teacher, who is no longer merely a transmitter of knowledge but a facilitator guiding students in effectively utilizing digital resources to achieve their learning objectives.

Gurin provides a detailed examination of the stages involved in integrating new technologies into education, from teacher training to the implementation of specialized software, the development of e-learning courses, and the use of multimedia presentations and interactive platforms. His work also analyzes the experiences of educational institutions that have successfully adopted digital technologies, identifying key challenges such as the need for technical support, resistance to change, and varying levels of digital literacy among educators and students [4].

Traditional teaching methods alone are no longer sufficient to fully meet the modern educational standards set by the state. Addressing contemporary educational challenges requires the implementation of innovative approaches, among which information and communication technologies (ICT) play a central role. These technologies serve as powerful tools for fostering students' cognitive engagement and significantly enhancing the learning process.

A key aspect of modern education is the integration of digital educational resources which are stored and disseminated in digital formats. These resources provide broad access to knowledge, instructional materials, and learning tools that support both teachers and students in achieving educational goals. A significant milestone in the digitalization of education in Ukraine was the nationwide initiative to connect all educational institutions to the Internet as part of the national project *«Education»*. This initiative has greatly expanded access to online resources, thereby strengthening the digital infrastructure of the education system and improving the quality of learning environments [11].

The integration of the latest teaching methods, interactive platforms, and multimedia materials enhances the learning process, making it more engaging and effective.

Digital competence encompasses a set of knowledge, skills, personal attributes, and behavioral traits essential for the effective use of information and communication technologies (ICT) across various domains of life, both personal and professional. Importantly, digital competence extends beyond technical proficiency; it also includes cognitive, social, and emotional dimensions that shape how individuals interact with digital environments, process information, and solve complex problems [6].

As digital competence becomes a key factor in successful adaptation to the modern digital world, it must be understood as a dynamic and continuously evolving process. The rapid advancement of digital technologies necessitates ongoing learning and skill development to navigate emerging challenges and opportunities within the digital landscape effectively.

The purpose of the article is to examine the theoretical and practical aspects of integrating digital resources into the professional training of future specialists in library, information, and archival science. It also seeks to analyze their impact on developing professional competencies, enhancing digital literacy, and adapting students to the contemporary information environment.

Presentation of the main material. In the process of reforming the education of future library, information, and archival professionals, it is essential to consider international best practices, particularly the development of the *Digital Competence Framework for Citizens 2.0*, introduced by the European Union [11]. This framework serves as a key reference for educators, outlining the core areas of digital literacy that modern professionals, including those in the library, information, and archival fields, must master.

Future specialists in these disciplines require essential digital competencies across several domains including information and digital literacy, communication and collaboration, digital content creation, and cybersecurity. Proficiency in these areas is critical for effectively managing library and archival resources and navigating the complexities of the digital environment.

The *Digital Competence Framework 2.0* categorizes digital skills into different proficiency levels, ranging from basic user to expert. For future library, information, and archival professionals, attaining a high level of digital competence is particularly important. Their work requires the ability to efficiently search for, process, and preserve information, as well as to create and manage digital content–skills that form the foundation of their professional practice.

Digital technologies are transforming modern education, particularly in the training of future specialists in library, information, and archival science. The integration of smart didactics facilitates targeted instruction that aligns with labor market demands and the expectations of social partners regarding professional competencies. Higher education institutions that emphasize digital resources enhance the learning process by equipping students with the necessary skills to navigate contemporary information systems [4].

The development of Ukraine's economy, driven by talent discovery and the adoption of innovative technologies, serves as a key reference point for educational reform. The implementation of digital tools in academic programs plays a crucial role in preparing specialists capable of working effectively in the innovation sector, including the application of blockchain technology and other advanced digital solutions.

A student-centered approach to smart didactics should not only support the acquisition of professional skills but also foster adaptability in an evolving digital landscape. By integrating cutting-edge technologies into library, information, and archival sciences, educational programs ensure that graduates can both master their professional responsibilities and respond dynamically to technological advancements, thereby maintaining their competitiveness in the job market.

One of the most effective digital tools in education today is the use of online platforms. These platforms provide a flexible and interactive learning environment making education more accessible to students worldwide. They also enable educators to update materials in real-time and tailor the learning process to individual student needs. Moreover, online platforms facilitate immediate feedback, self-assessment through quizzes and tests, and active participation in discussions, fostering a more engaging and adaptive educational experience.

One of the most widely used tools for online learning is course creation and management platforms such as Moodle, Blackboard, Canvas, and others. These platforms enable educators to design courses, integrate various digital resources, assess student progress, and facilitate interaction between students and instructors. Their flexibility allows for both traditional and distance learning formats, which has been particularly valuable in the context of the global pandemic and quarantine restrictions.

For future professionals in library, information, and archival science, online learning platforms such as Moodle, Google Classroom, Blackboard, Edmodo, and Canvas provide essential tools for course development and management.

Moodle, one of the most commonly used platforms, supports comprehensive course creation and administration through a range of features, including quizzes, discussion forums, and resource sharing. For students, it serves as a vital tool not only for acquiring theoretical knowledge but also for developing practical skills in managing electronic library catalogs, digital archives, and integrated learning resources. Similarly, Google Classroom offers a user-friendly environment for organizing coursework, assigning tasks, grading, and collaborative document editing. This platform is particularly beneficial for students specializing in library, information, and archival science, as it helps them develop competencies in managing electronic information databases, working on collaborative projects, and enhancing their digital literacy.

Blackboard and Canvas offer even greater flexibility in developing interactive learning materials, administering assessments, and fostering collaboration among participants in the educational process. These platforms provide seamless integration with a wide range of digital resources and technologies, enabling students to develop competencies in using advanced information systems – an essential foundation for their future professional activities.

Edmodo, a platform designed for communication and task management, is also widely used in the training of future library, information, and archival specialists. It facilitates interaction between students and instructors while providing opportunities to work with electronic databases and digital resources.

Overall, these online platforms create an effective learning environment for the education of specialists in library, information, and archival science. They support not only the acquisition of theoretical knowledge but also the development of practical skills in managing digital resources and information systems. In the context of rapid technological advancements and digital transformation, such tools are essential for designing modern educational programs that align with the evolving demands of the information and library sector.

A critical aspect of preparing future library, information, and archival professionals is equipping them with the skills to create digital content. This includes developing e-books, scholarly articles, multimedia presentations, videos, and other resources integral to professional practice. To achieve this, students engage with various content creation and editing tools, such as word processing software (e.g., Microsoft Word, Google Docs), graphic design applications (e.g., Adobe Photoshop, GIMP), and multimedia production software (e.g., Adobe Premiere, Camtasia). These technologies enhance their ability to produce, manage, and disseminate digital materials, ensuring their adaptability in a rapidly evolving information landscape.

One of the essential tools for content creation is word processing software, such as Microsoft Word, Google Docs, and LibreOffice Writer. These programs offer a range of features for writing, editing, and formatting textual materials, making them indispensable for the preparation of scientific articles, textbooks, coursework, theses, and other academic documents. Additionally, their collaborative functionality facilitates teamwork, which is particularly valuable in the fields of library, information, and archival science, where joint research and documentation projects are common.

For the creation and editing of graphic content, widely used tools include Adobe Photoshop, Canva, and GIMP. These graphic editors enable users to design images, infographics, banners, and other visual materials that enhance educational resources, presentations, publications, and promotional materials. Mastering these tools helps future professionals develop skills in information visualization, allowing them to produce engaging and informative content for various academic and professional applications.

The production of video content, an increasingly important aspect of digital education, relies on software such as Adobe Premiere Pro, Final Cut Pro, Camtasia, and iMovie. These programs allow

users to create instructional videos, record webinars, and edit multimedia materials for online courses and other educational initiatives. Their compatibility with various video and audio formats makes them valuable tools for producing high-quality educational content, particularly in the training of future library and archival science specialists.

In today's digital landscape, audio content creation tools such as Audacity and Adobe Audition play a crucial role in recording and editing audio materials. These programs are particularly valuable for producing podcasts, audiobooks, and other multimedia resources, helping students develop essential skills in digital content creation.

Equally important are web development tools such as WordPress, Wix, and Squarespace, which enable students to design websites and blogs where they can publish research papers, articles, and studies, as well as manage electronic catalogs and archives. These platforms support the development of adaptive and accessible web resources, which is especially relevant for the creation of digital libraries and archival repositories.

Training future professionals in library, information, and archival science in digital content creation and editing not only fosters creativity but also equips them with essential competencies for their future careers. This aspect of professional preparation is increasingly significant, as modern libraries, archives, and information institutions rely extensively on digital content for the organization and dissemination of information.

A key challenge in higher education is adapting curricula to global and national priorities in the strategic development of higher education, particularly in the training of library, information, and archival specialists. In the face of rapid technological advancements and shifting labor market demands, educational programs must be agile in responding to emerging requirements, ensuring that students acquire both theoretical knowledge and practical skills relevant to their professional fields. Achieving this necessitates a systematic approach to curriculum revision, incorporating innovative teaching methodologies, cutting-edge digital technologies, and interdisciplinary perspectives.

To effectively integrate digital technologies into the educational process, several key factors must be considered.

First, curricula must be updated to incorporate modern digital tools and platforms that align with current labor market demands. Students should develop practical skills in working with databases, digital libraries, electronic archives, as well as tools for automating library processes and preserving documents. Additionally, training in the use of various interfaces for searching, storing, and processing information is crucial for their professional development.

Second, it is essential to integrate digital resources into the learning environment through online platforms. For future professionals in library, information, and archival sciences, learning to navigate and utilize digital platforms is critical. These platforms enable effective organization of information, the creation of electronic catalogs, and the management of digital collections, among other tasks.

Third, distance learning resources and online courses should be incorporated into the curriculum. This approach not only increases accessibility for students from diverse regions but also provides flexibility in choosing individual learning pathways. Online courses offered through platforms such as Coursera, edX, LinkedIn Learning, and Prometheus can supplement traditional instruction, allowing students to deepen their knowledge in areas such as information technology, digitalization, and the preservation of cultural heritage.

Fourth, it is essential to integrate hands-on learning through practical tasks and projects that incorporate digital tools. Students could engage in activities such as creating virtual archives, developing digital libraries, or digitizing documents. This approach allows students to apply theoretical knowledge in real-world scenarios, reinforcing learning through practical experience.

Such an adaptation of curricula necessitates the incorporation of cutting-edge technologies into the educational process. The use of distance learning tools, online courses, virtual simulations, and digital labs enables students to gain practical skills without the need for physical presence. Additionally, it is important to offer flexible learning pathways that allow students to choose areas of study that align with their individual interests and professional goals.

In this context, it is vital to continually monitor and update curricula in line with current international and national trends. The integration of modern digital learning platforms, close collaboration with industry, and the involvement of professionals in delivering practical courses all contribute to more effective training for future library, information, and archival specialists. Adapting curricula should not only reflect contemporary needs but also serve as a strategic measure to prepare qualified professionals capable of thriving in today's rapidly evolving technological landscape.

Conclusions. Digital technologies play a crucial role in shaping the professional culture of future specialists in library, information, and archival science. They offer access to vast knowledge, foster the development of digital competencies, and create opportunities for ongoing self-improvement. To fully realize these benefits, it is essential to integrate innovative approaches into the educational process, adapt curricula accordingly, and invest in the professional development of educators. Only through these efforts can we ensure the high-quality training of specialists who are equipped to address the challenges of the modern world.

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