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KNOWLEDGE MANAGEMENT AS A BASIS FOR THE FORMATION OF THE CONTENT OF COMPETENCE TRAINING OF DIGITAL ECONOMY ENTITIES IN THE CONTEXT OF DIGITALIZATION OF EDUCATIONAL INSTITUTIONS

УПРАВЛІННЯ ЗНАННЯМИ ЯК ОСНОВА ФОРМУВАННЯ ЗМІСТУ НАВЧАННЯ КОМПЕТЕНЦІЙ СУБ'ЄКТІВ ЦИФРОВОЇ ЕКОНОМІКИ В УМОВАХ ЦИФРОВІЗАЦІЇ ЗАКЛАДІВ ОСВІТИ

The digitalization of higher education in Ukraine is both a challenge and a key driver of transformation amid global technological shifts. Universities must adapt to digital realities and foster students' competencies for success in the digital economy. Educational programs require constant updates aligned with market needs and knowledge system trends. This article substantiates knowledge management as a strategic tool for shaping digital competence training. It examines the integration of research, innovations, and analytics into the learning process and proposes a model connecting knowledge management systems with e-learning platforms to align education with real market demands. The findings support strategies for digital program transformation, enhanced internal communication, and creation of a structured knowledge base for high-quality training of digital economy professionals.

Keywords: *digitalization, digital competencies, digital university, knowledge management system, e-learning system.*

Стаття присвячена дослідженню процесу управління знань як основа формування змісту навчання компетенцій суб'єктів цифрової економіки в умовах цифровізації закладів освіти. Так, цифровізація освіти виступає ключовим викликом і водночас ресурсом трансформації системи вищої освіти України в умовах стрімких змін глобального технологічного середовища. Від університетів сьогодні вимагається не лише адаптація до нових цифрових реалій, а й здатність формувати у студентів такі компетентності, які дозволяють успішно функціонувати в умовах цифрової економіки, що швидко змінюється. Зміст освітніх програм потребує постійного оновлення відповідно до потреб ринку, технологічних трендів і логіки розвитку знаннєвих систем. У цьому контексті одним із найбільш перспективних підходів виступає управління знаннями, яке забезпечує безперервну трансформацію практичного досвіду, аналітичної інформації та новітніх розробок у структурований, динамічний освітній контент. Метою цієї статті є обґрунтування управління знаннями як стратегічного підходу до формування змісту навчання цифрових компетентностей суб'єктів цифрової економіки в умовах цифровізації закладів вищої освіти. У статті розглядається система управління знаннями як інструмент інтеграції інноваційного досвіду, результатів наукових досліджень, освітньої аналітики та методичних розробок у навчальний процес. Здійснено аналіз взаємозв'язку між практичними завданнями цифрової економіки та навчальними цілями освітніх програм, запропоновано модель взаємодії між системами управління знаннями і системами електронного навчання як інноваційних платформ цифрового університету, що дозволяє забезпечити узгодженість між реальними викликами ринку і змістом вищої освіти. Показано, що використання систем управління знаннями забезпечує відповідність освітнього контенту реальним викликам ринку праці, сприяє посиленню внутрішньої комунікації у закладі освіти, розбудові інформаційної інфраструктури та підвищенню якості підготовки конкурентоспроможних фахівців. Отримані результати можуть стати основою для вдосконалення стратегій цифрової трансформації освітніх програм, створення системної бази знань та формування сталої цифрової культури в закладах вищої освіти.

Ключові слова: *діджиталізація, цифрові компетентності, цифровий університет, система управління знаннями, система електронного навчання.*

Problem statement. In the context of the digital transformation of society, the problem of matching the content of training with the requirements of the modern digital economy is becoming particularly relevant. Today, education can no longer be limited to the transmission of classical knowledge and the formation of standard professional skills. Digitalization is radically changing both the content of specialists' activities and the technologies they work with. The speed and scale of these changes are so significant that traditional approaches to the development of educational programs cease to meet the current needs of the labor market, and as a result, the educational process does not provide sufficient training for digital economy entities to work effectively in conditions of constant dynamics and uncertainty.

Classical methods of designing training content usually focus on established educational standards, and typical models of competencies, and do not take into account the rapid changes in knowledge and innovations that occur almost daily today. At the same time, information technology and digital services are increasingly performing routine professional functions, and the role of a person is shifting towards creative and strategic tasks [1;2]. For educational institutions, this raises the issue of a deep transformation of the content of training, which should focus on the formation of competencies that ensure not only mastery of digital tools but also the ability to generate new knowledge and effectively apply it in professional activities.

In this context, it is necessary to use innovative approaches to forming the content of education, among which a special place is occupied by knowledge management. The knowledge management approach allows for the integration of the real practical experience of business entities in the digital economy with the theoretical and methodological developments of universities, creating an educational environment in which knowledge is constantly updated and developed according to the new challenges of digitalization. That is why the study of the possibilities and mechanisms of applying knowledge management as a strategic approach to the formation of the content of competence training of digital economy entities in the context of the digitalization of higher education institutions is an extremely important and timely task of modern science and educational practice.

Analysis of recent research and publications. The issue of digital transformation in management and educational processes is at the forefront of contemporary academic discourse, encompassing an interdisciplinary field of research in economics, management, pedagogy, information technologies, and social communications. In the national academic discourse, digitalization is increasingly viewed not merely as a technical update but as a comprehensive innovation process that reshapes the functioning paradigm of higher education institutions, corporate governance, and public institutions.

Significant contributions to the theoretical and methodological foundations of this field have been made by P. V. Huk and O. V. Sklyarenko [1], who examined the economic feasibility of enterprise modernization through the implementation of automated systems. Their ideas have laid the groundwork for further research focused on managing digital transformations. In this context, the work of A. Krap and co-authors [2] is also important, analyzing the impact of digital technologies on contemporary corporate management methods, allowing these findings to be extrapolated to the educational domain, where institutional governance is undergoing substantial change.

The experience of implementing digital services to foster innovation in the business environment is thoroughly explored in the study by Ya. O. Kolodinska, O. V. Sklyarenko, and O. Yu. Nikolaevskyi [3], who consider digital tools as drivers of entrepreneurial thinking and innovation. Within the pedagogical discourse, the work of S. M. Yahodzinskyi, O. V. Sklyarenko, O. Yu. Nikolaevskyi, and A. V. Nevzorov [4] is noteworthy, addressing digital interactive technologies as a key component of the transformation of modern educational processes.

The role of interactive technologies in developing higher education students' competencies is analyzed in the research by O. O. Khomenko, M. V. Paustovska, and I. A. Onyshchuk [5], which contributes to a better understanding of the pedagogical effects of digitalization. The monograph by S. M. Yahodzinskyi [6] examines global information networks in a sociocultural context, highlighting new models of interaction and knowledge exchange within the digital environment.

A. Kozhyna [8] investigates the socio-economic aspects of digital development and inclusivity, emphasizing the reduction of inequality through digital approaches to economic growth. The collaborative research by S. I. Kubiv, N. S. Bobro, H. S. Lopushnyak, Y. I. Lenher, and A. Kozhyna [9] focuses on the innovation potential of European countries, including legal and analytical aspects of digitalization.

Particular attention should also be given to the study by H. N. Lopuschnyak, O. Chala, and O. Poplavska [10], which explores the socio-economic determinants of Ukraine's sustainable development, taking into account digital ecosystems – an essential context for analyzing the digital transformation of educational institutions as integral components of these ecosystems.

In summary, the aforementioned works form an interdisciplinary foundation for justifying knowledge management as an innovative tool for strategically updating the content of education in the context of the digital economy and the transformation of the higher education system.

The aim of the article is to substantiate the possibilities and advantages of applying the knowledge management approach to form the content of competence

training of digital economy entities in the context of digitalization of higher education institutions. The paper also reveals the key aspects of integrating a knowledge management system (KMS) with e-learning systems (ELS) and innovative activities.

Presentation of the main material. The use of traditional information technologies and electronic libraries for the development of educational programs for the formation of competencies of digital economy entities in the context of the digitalization of educational institutions is insufficient [3, p.54]. To effectively organize the work on collecting, storing, and disseminating knowledge, it is advisable to apply the knowledge management (KM) approach. It should be noted that knowledge is often confused with information, but content, in particular educational content, contains only information about knowledge, and the task of the entity is to reconstruct knowledge from information and use it in its activities.

The main purpose of using KM in educational institutions is to create and implement innovations. Accordingly, the development and updating of the content of educational programs can be considered as an innovative activity of the university. The innovative activity of an educational institution is fundamentally different from purely scientific research in that it results in a new product or service that meets the criteria of novelty, market demand, and economic feasibility [5, p.1231]. The KM approach allows educational institutions to create and market innovations such as curricula, analytical research, consulting services, etc. The sphere of education, like other sectors of the economy, is in dire need of innovative solutions.

The digital economy poses challenges to the education system that goes beyond the traditional concept of lifelong learning. Information technology is increasingly replacing humans in routine professional functions, which is constantly changing the content and means of professional activity. For example, such functions of a teacher as controlling learning outcomes, monitoring progress, and providing educational materials have been successfully automated in e-learning systems. However, despite the growing intellectual capabilities of IT, it is not able to create new knowledge on its own.

Due to the automation and digitalization of educational institutions, human resources are freed from routine and algorithmic tasks, refocusing on creative activities that involve the creation of new knowledge. It is the creative tasks in the structure of professional activity that will constantly grow. During such work, each specialist is faced with the need to obtain previously unknown knowledge that has not yet been integrated into traditional educational programs [8, p.30]. This can be knowledge of very narrow, situational application, expert knowledge, hidden (tacit) knowledge, or knowledge that is obvious in one area and completely new in another.

The diversity of digital technologies and areas of their application in the context of digitalization leads to the creation of a significant amount of new knowledge and competencies that cannot be fully covered by traditional approaches to curriculum development. Modern educational services and digital platforms also do not provide full access to all sources of relevant knowledge.

The knowledge management approach applied to the formation of the content of educational programs and educational materials helps to ensure relevance and compliance with modern requirements for training competencies of the digital economy. From the beginning of its development, knowledge management has been closely linked to learning processes. That is why teaching methods are an integral part of the knowledge management toolkit, which is actively used in the practice of modern educational institutions for the dissemination and exchange of knowledge [9, p. 260].

The tasks, tools, and methods of knowledge management in the context of the digitalization of educational institutions are presented in Table 1.

Knowledge management tools and methods operate exclusively with knowledge information, so information technology infrastructure is an extremely important component of the knowledge management system. In educational institutions, information technologies for knowledge management can be used separately or in various combinations, creating an integrated information system [10, p. 8]. The knowledge management approach involves the comprehensive use of technologies, methods,

Table 1

Tasks, tools, and methods of knowledge management in the context of the digitalization of educational institutions

Knowledge management tasks	Knowledge management tools	Methods of knowledge management
Knowledge discovery	Knowledge catalogs, information retrieval systems, meta-description systems, query languages	Work of expert communities
Knowledge extraction	Communication tools (forums, chats, e-mail), surveys, questionnaires, Wiki-platforms	Lessons learned method, After Action Review
Preservation of knowledge	Knowledge bases, data warehouses, file system	Knowledge ontologies, meta-description
Dissemination of knowledge	Communication tools, forums, Wiki-platforms	Storytelling, training
Application of knowledge	Tools for individual and collective work	Brainstorming method

Source: prepared by the author based on [1–3; 8–10]

and information sources, which is represented in the form of a knowledge management system (KMS).

The information environment of a higher education institution provides the necessary services, including e-learning systems and access to electronic libraries that support the university's educational and research activities. Knowledge management methods allow for not only the effective use of the knowledge accumulated by the global educational community and its dissemination in the form of educational materials but also stimulate the creation of new innovative products by engaging employees at all levels in innovative and project activities.

Important elements of the knowledge management system in the digital educational environment are tools for the joint accumulation, application, and creation of new knowledge. These tools are an important component of the information work and educational process of the institution.

The educational process in higher education institutions is directly implemented through Learning Management Systems (LMS). LMS and knowledge management systems are of great importance for universities as they provide support for educational, innovative, and project activities, which is especially important in the context of the digitalization of the educational environment. The integration of these two systems allows for achieving new synergistic effects (Figure 1).

The knowledge management approach ensures effective interaction between practical activities and the content of educational programs in order to form knowledge and competencies for the digital economy (Figure 2). The application of the knowledge management approach contributes to the transformation of key components of the educational process, namely:

– practical tasks of innovative activity are transformed into digital competencies;

– the content of professional activity is transformed into the ontology of the subject area;

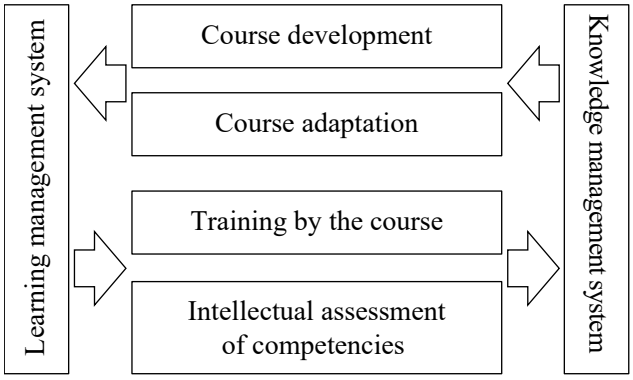

Figure 1. Integration of the knowledge management system and e-learning system at the university

Source: prepared by the author based on [2; 6]

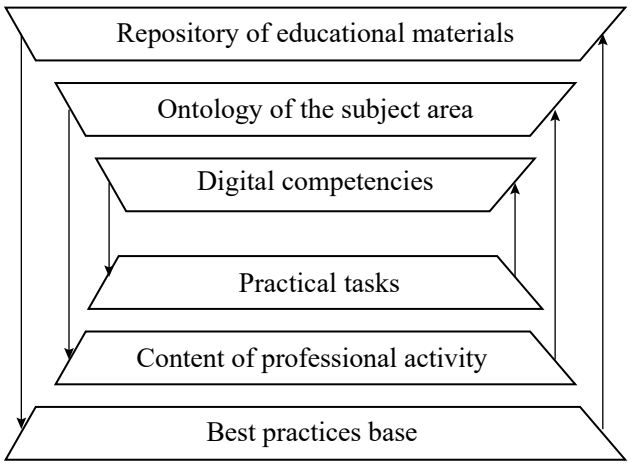

Figure 2. Interaction of educational activity of the university and innovative activity of the business entity through the knowledge management system

Source: prepared by the author based on [7; 8]

– best practices, examples, and cases are integrated into the content of the educational program.

Thus, a kind of knowledge spiral is formed, in which at one stage practical activity influences the educational process, and at the next stage, the results of the educational process already contribute to the further development of the practice of creating innovations by business entities of the digital economy.

A key factor in the success of the knowledge management approach and the implementation of relevant projects is the organizational culture, which includes the readiness of university staff and digital economy entities to jointly create, share, and use knowledge [3;5]. The issue of creating a favorable organizational culture is especially relevant in those organizations whose main activity is innovative work. Knowledge is the most valuable resource for creating innovative products and services. Attempts to isolate their knowledge and separate themselves from industry-wide information flows lead to a loss of competitive advantages and increase risks for enterprises and organizations.

Higher education institutions in many countries are actively shaping their knowledge management policy that supports the strategic goals of the university. Vivid examples of successful implementation of such a policy are universities in European countries, South Korea, and Japan [7, p. 57].

E-learning in the theory of knowledge management is considered as one of the key methods of knowledge dissemination in organizations. At the same time, the knowledge management system created in universities creates the necessary conditions for the development and implementation of innovative educational products. In the context of digitalization of education, an example of innovative activity is the development and implemen-

tation of e-courses. An e-course that contains the results of scientific and methodological activities of teachers and researchers is a completed innovative product of the university. Modern e-learning technologies and methods have long been a standard means of supporting the educational process in the world's leading universities.

Creating an effective knowledge management system at the university begins with the shaping of the institution's policy in this area and a clear understanding of how knowledge management contributes to the achievement of the strategic goals of the educational institution. The basis of such a system is a knowledge repository that supports the activities of university faculty and staff in developing, accumulating, storing, searching, and using educational content and its individual elements.

The knowledge repository includes the following main elements:

– A storehouse of knowledge that contains educational materials (lectures, presentations, videos, simulations, tasks, scenarios, etc.), each of which is accompanied by an appropriate metadata system.

– A knowledge base metadata system that ensures efficient search, cataloging, and use of knowledge.

It is the unified system of meta-description of professional activity that allows transforming practical tasks into digital competencies, turning the content of professional activity into the ontology of the subject area, and the best business cases and practices into the educational content of curricula.

The functions of the university's KMS are as follows:

– providing a single digital environment for teachers to work together to develop educational materials;

– accumulation of educational and methodological and scientific materials on educational programs, disciplines, individual topics, and competencies;

– supporting the process of continuous updating of educational materials;

– creating a base of links to open educational resources for each academic discipline, as well as materials of conferences, seminars, and other useful resources.

The key element that combines the university's educational process with the innovative activities of business entities of the digital economy is the dynamic educational content that is accumulated, stored, and updated in the university's knowledge management system. This eliminates time and space limitations in access to educational content, ensuring constant updating of knowledge and competencies that meet the modern requirements of the digital economy.

Conclusions. The knowledge management approach creates the necessary prerequisites for the realization of effective interaction between the practice of digital economy entities and the content of educational programs at universities. It allows for transforming practical innovative tasks into digital competencies, formalizing professional experience in the form of ontologies of subject areas, and actively using best practices and business cases in the content of the training. The implementation of a knowledge management system contributes to the formation of a single information environment that ensures the constant updating of educational content, the expansion of the creative potential of teachers and students, and creates a favorable basis for the innovative activities of educational institutions.

An important factor in the successful implementation of the knowledge management approach is the development of an appropriate organizational culture of universities, which implies openness to cooperation, willingness to share knowledge, and jointly creating new educational and innovative products. The creation of a knowledge repository that integrates educational and methodological materials, scientific developments, and open educational resources allows for timely access to relevant knowledge and competencies necessary for successful operations in the digital economy. Such an integrated platform is becoming an important means of overcoming the barriers between theory and practice, education and innovation.

Thus, a strategic approach to knowledge management is becoming a prerequisite for the formation of competitive competencies of digital economy entities, meeting the modern requirements of a dynamic educational environment. The model of integration of the KMS and the ELS proposed in the article, focused on ensuring the synergy of educational and innovative processes, allows not only increasing the efficiency of educational activities of universities but also supporting the development of the digital economy through the constant updating of the content of educational programs and the active involvement of students and teachers in the creation and use of innovations.

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