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DIGITALIZATION IN UNIVERSITY EDUCATION: DIDACTIC ASPECTS

Abstract. Intensively developing digital technologies are transforming the basic processes studied by the didactics of higher education: ways of the teacher-student interrelated activity; the student and the knowledge, skills, and competencies intended to be learnt and gained; the teacher and the methodology of educational material. The learning goals set by the information society shift the focus from mastering the system of knowledge and developing professional skills to developing competencies, the formation of students' readiness to design their own unique educational trajectories based on a competency-based approach. As higher education becomes more digitalized, there is a shift from coordinating teaching and learning activities to projecting, forming, and mastering individual educational plans. To meet the challenges of modern education, educators are expected to be able to comprehend changes impacting all of the components of didactic theory, including goals, content, forms, technologies, and learning tools. Digitalization processes lead to the dominance of infographic forms of presentation of educational material instead of narrative (text) forms associated with the development of voluminous texts. The variety of forms of organization of educational activities in the digital educational environment is increasing significantly, they are becoming a dynamic open system of educational modules. The educators are being faced with new theoretical tasks due to the active modernization of university educational practice, including the need to find ways to implement continuity between traditional and innovative methods of organizing the educational process while taking into account specific cognitive, motivational, and need-based characteristics of the digital generation. The transition from teaching as the educators' primary activity to the variety of pedagogical roles they play in the digital educational process actualizes teachers' mastery of the information technologies and the development of their personal professional teaching strategy.

Keywords: didactics of higher education; university teacher; digitalization; "digital natives"; "digital immigrants"; educator's digital competence.

1. INTRODUCTION

The informatization of higher education system is one of the basic trends of the economic and social development of the modern state. In particular, according to "Education. Strategy of Ukraine 2030" [1], universities should switch to digital learning models and develop digital transformation programs to ensure the competitiveness of educational, research, and economic activities at the national and international levels.

The problem statement. Positive changes associated with the introduction of information (digital) technologies into the higher education system include the capacity to create individualized educational trajectories; transparency of the operations of educational institutions; improvement of participant interaction in the educational process; etc. However, along with the advantages of introducing information (digital) technologies, one should also be aware of the difficulties that the higher education system faces. The rise in student mobility, the introduction of new providers, and changes in student preferences for educational content, forms, and technologies, among other factors, have all contributed to greater competition in the market for educational services. In-depth consideration is given to the issues associated with didactics in higher education as a system of knowledge about teaching, which deals with a theoretical description of the learning process and the conditions for its implementation; the formation of learning environments that are better organized than the existing ones; and the creation of new didactic systems and teaching technologies, particularly in terms of the use of information technology. This study is relevant due to the peculiarities of modern trends in higher education, which have resulted in changes to the content, organizational structures, and teaching strategies, as well as to the requirements for the qualifications of educators in this field.

Analysis of recent studies and publications. Initially, the university has been the successor to the ancient Academy, a corporation of teachers and students involved in rhetoric. The modern model is largely based on W. Humboldt's university model, which first appeared in the 19th century. According to W. Humboldt's postulate, universities should isolate themselves from the influence of the state, and their first and most important task is to study science in its fundamental form in order to obtain the greatest benefits for society. W. Humboldt believed that by creating a model based on the principles of educating an individual and forming a citizen of the world, students would be able to develop their own perspectives without having to rely on existing dogmas. Versions of the Humboldt model (K. Jaspers, B. Ridings, J. Ortega y Gasset) served throughout the entire 20th century, but by its end, they were no longer able to keep up with the requirements of the information society. The theoretical basis of higher education was the ideas of D. Dewey, L. Vygotsky, J. Bruner, and L. Wenger, et al. All these mechanisms and schemes work in the system of traditional education, within which the individual has the opportunity to interact with others in real space and time.

The megatrend of modernity is referred to the digitalization of all aspects of life, which changes the basis of human activity and the essential structure and effectiveness of systems, processes, and phenomena. This megatrend has determined the vectors of development of higher education. The "Digital agenda for Europe" [2] and the European economic development strategy "Europe 2020: a strategy for smart, sustainable and inclusive growth" [3] are two initiatives the European Union has actively begun to execute to help Europeans develop their digital competence. The Ukrainian educational system was no exception. The "Digital Agenda for Ukraine 2020" project, which aimed to identify the key priorities for the development of the information society in Ukraine on the basis of integration into the global digitalization processes, was presented by the Cabinet of Ministers of Ukraine [4]. The adoption of these documents is an incentive for research in the field of education. Education is seen as a means of accumulating social capital (J. F. Helliwell and R. D. Putnam [5]; F. Fukuyama [6]). According to Ed. Glaeser [7], a significant part of the educational process is reduced to the acquisition of social skills. Many researchers pay attention to the problem of social capital formation in the virtual environment of education. Thus, some of the works are devoted to establishing a connection between the availability of the Internet and the civic identity of individuals (M. Alessandrini [8]). In the works of B. Daniel [9], G. McCalla, and R. Schwier [10], the problem of trust is considered the basis for creating social capital in virtual educational communities. The development of social capital is facilitated by certain

pedagogical models for organizing student interaction in a virtual environment, described by D. Engelbart and H. Lehtman [11]; J. Fresen [12]; T. Koschmann, A. Zemel et al. [13]. This type of study is characterized by the construction and exchange of knowledge in group interaction using Information technologies as the main means of communication or a shared resource. Computer-supported collaborative learning (CSCL) is implemented in an interactive virtual classroom or virtual learning environment and can occur synchronously or asynchronously. A number of studies of K. Bereiter and M. Scardamalia [14] contain the key concepts of the CSCL model.

The research goal is to assess the impact of the digitalization of modern higher education on an educator's didactic activity.

The following research tasks are intended to achieve the aim:

- to assess the impact of digital technologies on students and teachers as basic educational process participants;
- to study the influence of the information society on the components of the educational process in higher education;
- to investigate the changes in the requirements for the qualifications of modern educators in relation to the organization of teaching in higher education.

2. RESEARCH METHODS

The following research methods are used to achieve the aim of the study: theoretical analysis (historical and comparative), synthesis, systematization, and comparison of the results of previous studies on the issues of digitalization of education, the development of digital competence, and the formation of digital skills for teaching. The systemic historical approach necessitated research on the development of didactic knowledge about the educational process in higher education, as well as research on the subsequent changes of its structural elements and their transition to a new quality under the influence of external and internal factors. A sociocultural study was carried out, which assumes the investigation of the peculiarities of the development of scientific and pedagogical knowledge within a broad sociocultural context.

3. THE RESULTS AND DISCUSSION

The educational process as a dynamic and integral pedagogical system is subject to constant transformation. Since the introduction of the first computers in the second part of the 20th century, the informatization of society has become a global trend in the transformation of the educational environment. Not all institutions of higher education consider digitalization to be a priority for the modernization of the educational process. At the same time, they cannot ignore technological progress, which promises certain benefits to all parties involved, since the introduction of digital technologies and tools is thought to expand the use of interactive teaching methods and have a positive impact on students' engagement in learning. For example, digital technologies based on artificial intelligence (chatbots) are very useful in organizing the educational process. Chatbots are used as virtual consultants to help customize the educational experience for each student. In the Summit Learning project, the chatbot serves as a tutor, engaging in conversation with each student in order to identify the areas in which they are falling behind. The chatbot then uses this information to design a customized learning program that focuses on the topics that cause the greatest difficulties. The chatbot monitors students' progress from the first to the last lesson [15, p. 29–46]. Along with digital technologies, universities that adhere to a conservative model of education also use interactive

Web 2.0 tools created on Internet resources (Fandom, Wikidot, etc.) involving various services (for example, Learning Apps).

In contrast to some digital technologies and tools, online education is associated with the active introduction of interrelated digital technologies that involve the transfer of the entire educational process to an online mode. Examples include the creation and implementation of online courses on specifically designed Internet portals; the use of online assessment; the switch to online communication between students, teachers, and administration responsible for organizing training (electronic timetables, electronic grade books, etc.).

Modern digital technologies make it possible to create a personal learning environment that integrates formal and informal self-regulated learning. Social media plays a central role in shaping the personal learning environment and often includes:

- Weblogs (authors can publish and receive feedback on the Internet in real-time);
- Websites (Wikis) (any member can edit any published page or create a new page using their web browser) (e.g., Wikipedia);
- social bookmarking (users can share links to sites (e.g., Reddit, StumbleUpon, Digg));
- social networking sites (users can create a personal profile, identify other users, and send and receive messages privately or publicly (e.g., YouTube, Facebook, LinkedIn));
- status update services (users can share short updates about people or events and can see updates tweeted by others (e.g., Twitter)) [16, p. 2].

Along with social media, various kinds of learning management systems are support oriented for a virtual educational environment. This may be the experience of using the Moodle platform (Modular Object-Oriented Dynamic Learning Environment) in order to create a common learning environment for all participants in the educational process at the university. The platform offers plenty of room for educators' creativity, including the possibility to design training courses, deliver educational content in a variety of forms, and use a wide range of interactive learning technologies. For students, the platform creates conditions for the formation of cognitive strategies for self-learning and self-education. In addition, the platform contributes to the development of network interaction between the educator and students through the following: discussion of course issues on the forum; online consultations; network seminars; and conferences. The chat activity in Moodle makes it possible to communicate in real-time within the framework of web consultations, analysis of cases, and discussion of complex issues during the study of the discipline.

The educational environment is changing due to the development and integration of digital tools and technologies into the educational process. In addition to students, educators, university administration, and state bodies that regulate university activity, new participants, whose actions modify traditional interaction, are added to the circle of subjects involved in education. These participants include developers of software tools; developers and owners of educational platforms; intermediaries that provide services for adapting both the tools and technologies to the educational process and teachers and students to new technologies; tutors, facilitators, mentors, and consultants.

The traditional system of lectures and practical classes, recognized in higher education institutions, is more focused on addressing students' immediate needs as consumers, and the teacher is the primary source of new knowledge. Obviously, digitalization requires a new didactical approach. Didactics studies the issues related to the goals of education, its content, organizational forms, methods, learning tools, and principles of education.

The didactics of higher education addresses a wide range of problems. In particular, it deals with:

- the problems of the delivery of educational content, taking into account students' age characteristics and patterns of learning and cognitive activity;
- didactic principles and patterns;
- issues of self-education as a means of increasing the effectiveness of educational activities;
- control of knowledge and skills and the level of students' readiness for professional activity.

In the didactics of higher education, "teacher-student" interaction is fundamental and central. It shows how the learning process is actually organized. The terms "digital natives" and "digital immigrants" were introduced by M. Prensky and are used to define the student and the educator in the 21st century [18]. According to M. Prensky, "digital natives" are proficient at multitasking, have an innate understanding of digital technologies, and perceive the digital world as a daily routine. They are used to sudden changes in the pace at which information is perceived, as well as the interactivity of gadgets, their own activity in social networks, and the fast development of the video game industry [17–18]. Their future is associated with the digital world. Therefore, for "digital natives", traditional education does not match the digital forms of interaction. The digital generation produces new educational styles. They prefer self-study, independent access to knowledge, and getting educational services at their own pace. For "digital natives", the teacher is most likely an instructor-facilitator who helps develop the skills they need.

M. Prensky compares "digital natives" to "digital immigrants", those who were not born into the digital world and, therefore, are not native speakers of a digital language but immigrants in a foreign country. Among educators and parents, there are supporters of the Digital Natives theory, stating that today's students have distinct capabilities and skills, uniquely personal and behavioural characteristics directly connected with high technological literacy (parallel processing, multitasking, working with graphics, random access technologies, etc.).

Opponents of the Digital Natives theory believe that such broad generalizations miss out on age-related changes as well as cognitive distinctions among individuals [19]. One may claim that some activities like content creation (blogging, posting photos or videos, etc.) are not typical for any student born after 1990 [20]. Therefore, just like other skills and competencies, the digital proficiencies attributed to today's children and adolescents require formation and development.

The student and training task relations largely determine the specifics of higher education and emphasize the significant role of the learning process and students' independent work. That is why they are the focus of the didactic studies.

Reflecting on the new generation, M. Prensky singles out multitasking as a specific feature of the "digital natives". So far, scientists do not know how to treat it. Some experts pay attention to the relationship between multitasking and cognitive functions of the individual, such as concentration, attention switching, and memory capacity [21]. Others believe that media multitasking impairs executive processes by increasing impulsivity and provoking cognitive control deficiencies [22]. S. Carter et al. [23] showed that the very fact of using a laptop during training can hinder the understanding of the material by both the device users and their neighbours. Thus, it becomes the responsibility of educators to decide when laptops and tablets can be used for activities like online collaboration or a search query.

The theoretical analysis of the phenomenon of the digital generation allows us to draw some conclusions and identify changes in the nature of the interaction between the participants in the educational process. The social environment determines the formation of the individual. Digitalization influences the younger generation's personality development and changes the older generation's awareness. The digital generation has some advantages

over the older generations, including greater mobility and more flexible thinking, a better capacity for multitasking and media multitasking, faster information processing, and instant switching from one task to another. However, "digital natives", who were born into the digital world and raised in a technologically advanced environment, lack the skills to independently produce educational content and need pedagogical support because the level of digital skills does not predetermine learning outcomes.

The teacher and educational material relations are didactic problems because they are associated with the selection of materials and planning of the learning process. The development of didactic knowledge about the selection and presentation of the learning material in higher education will involve the discussion of educational tasks, educational content, tools for organizing the educational process, and their specificity in the context of the information society:

- Educational tasks outline a variety of standards for learners taking into account their intellectual and natural capabilities. By their nature, the tasks of pedagogical activity are dynamic phenomena. They reflect, on the one hand, the interests and expectations of various social groups and, on the other hand, the needs and aspirations of an individual. The logic of their development is such that, arising as a reflection of actual trends in social development and bringing the content, forms, and methods of pedagogical activity in line with the needs of society, they form a detailed program of gradual movement towards the highest goal – the development of the individual in harmony with him/herself and society. In the context of the information society, the task is to harmonize the achievement of two objectives in a single educational process: firstly, the formation of knowledge, skills, and competencies that students will need in life; and secondly, the development of the student's ability to learn and to independently formulate educational tasks as well as set goals for their personal and professional development. There is a shift from the development of a knowledge system and professional skills to the learning tasks that focus on the development of competencies, the formation of student personality, their readiness for innovative activities, the education of tolerance, multiculturalism, etc.
- The educational content is put up as a scientifically grounded system of didactic, systematically designed learning material for various educational and qualification levels. This is a clearly defined range of knowledge, abilities, skills, and competencies that a person acquires through education. The content of education varies according to the level of scientific, socioeconomic, and cultural development of society, taking into account the needs for education of young people, as well as the country's prospects of social and economic development. The modern system of higher education is changing towards an open system of educational modules due to its variability and flexibility, which enables students to design their own unique educational trajectories based on a competency-based approach.
- Techniques and tools for organizing the educational process that ensure the maximum use of the didactic possibilities of digital technologies to achieve learning tasks. Today, personalization, modularization, pedagogically effective virtualization, network distribution, and coordination of the educational process all involve the use of digital technologies in teaching and learning. In the context of digitalization, various technologies and teaching methods are differentiated in terms of their didactic potential. The role of long-term, structurally homogeneous activities and "passive" forms of educational work, such as lectures, is noticeably reduced. On the contrary, the role of pedagogical technologies based on the students' self-engagement, interactive communication, teamwork, and group and individual reflection is increasing. Project-related activities, game-based learning tools, case-

solving, group discussions, etc. are some examples. With the help of all these technologies, students can develop, among other things, a set of social competencies necessary in a digital society. Digitalization leads to the dominance of infographic forms of presentation of material instead of narrative (text) forms associated with the learning of voluminous texts. The variety of techniques for the organization of educational activities in the digital educational environment is significantly increasing: groups of shifts, spatially distributed training teams, a quick transition from team to individual activities, and vice versa;

- The learning tools are components of the educational process. Digital courseware packages and their constituent (as well as independently used) educational simulators, virtual laboratories, and educational games are very promising and will define the direction of modernization in higher education.

Possible negative consequences of the changes call for further research in order to hinder their unfavourable effects in practice. For example, the use of information technologies, the possibilities of global networks, and distance learning should not reduce the value of the traditional forms of organizing the educational process in the form of lectures and seminars, students' work with classical texts, etc.

The digital generation has changed the educational process, actualizing the need to enhance teachers' professional development, which should also be analyzed and evaluated in terms of digital competence. Digital competence is significant for the teacher's career because it enables educators to work in the information environment and use new technologies in their professional activities. Considering this, it is worth turning to the experience of foreign countries, where the formation and development of teachers' digital competence is a strategic task of the education system.

In our opinion, the work of international experts on the requirements for digital competence and the development of conceptual approaches and frameworks is useful in this context. The framework of digital competence for educators, DigCompEdu [24], has become widely used. It outlines the main forms and methods of developing the digital competence of participants in the educational process, as well as the principles of creating a digital learning environment in an educational institution. It focuses on a conceptual reference model of digital competence, a new vocabulary, and optimized descriptors. DigCompEdu is aimed at teachers and lecturers at all levels of education.

This framework uses 22 components [24, p. 16] to define six major areas where a teacher's competence is demonstrated: 1) professional engagement (use of digital technologies for communication, professional development, and cooperation); 2) digital resources (search, creation, and distribution of digital resources); 3) teaching and learning (management and application of digital tools in teaching and learning); 4) assessment (improvement of assessment through the use of digital technologies and strategies); 5) empowering learners (using digital tools to increase students' opportunities); 6) facilitating learners' digital competence (providing opportunities for creative and responsible use of digital technologies for working with information, communication, content creation, well-being and problem solving) (Figure 1).

The core structure of DigCompEdu is defined by areas 2–5. These areas are associated with the essence of digital pedagogical competence, which enables the development of effective, inclusive, and innovative teaching and learning strategies [24, p. 16-17].

Area 5 identifies the potential of digital technologies to implement human-centered learning strategies. This area is transversal (cross-cutting) for areas 2, 3, and 4, which means that it contains guiding principles which apply to and complement the components of other areas [24, p. 17].



Figure 1. The European Commission's science and knowledge service. Digital Competence Framework for Educators (DigCompEdu). 2017. Source: <https://ec.europa.eu/jrc/en/digcompedu>

Traditional educational structures of additional education serve as the main resources for the formal improvement of the pedagogical qualifications of the teaching staff. They include institutes for advanced training, institutes for the development of regional education, scientific and methodological centers; advanced training courses, practical seminars, distance education. Educational structures that can be used both in the system of formal and informal education are innovative educational centers, video libraries of advanced pedagogical experience, incubators of new technologies, resource centers, multifunctional centers of applied (professional) qualifications, centers of independent certification of qualifications, educational clusters, research and educational consortia, mass open online courses (MOOC), network communities of professionals, etc.

One of the actively developing forms of advanced training is participation in professional communities. Professional online communities are aimed at exchanging methodological experience and discussing professional problems. Participants have the opportunity to turn to colleagues for advice and/or propose an issue for joint discussion and share methodological findings and educational materials. The main mechanism that ensures not only the successful functioning but also the development of communities is to maintain a balance of self-organization and moderation. Maintaining this balance suggests that the community is a self-organizing network in which the initial processes or impulses are generated purposefully with the help of specific tools, including feedback. Modern information technologies make it possible to gradually and purposefully collect students' works on a website (or blog), systematize them, and provide reviews or comments. As a result, the teacher leaves a significant digital imprint online and "visibly" presents the results of their professional activity.

The forms of work listed above provide the establishment of a generalized intellectual and creative environment for the development of professional competence of teaching staff, contribute to the development of a system of continuous interaction between the educational communities of various levels, acting as a means of organizing the advanced training of teaching staff, and allow teachers to create and effectively use the possibilities of the digital

educational environment and all its components in the educational process.

The digitalization of the educational process requires fundamental changes in the formats of preparing the younger generation for life and professional activity in the new conditions. This is the maximum flexibility of the content and forms of training, the development of cross-professional competencies, and the fast formation of targeted, narrow competencies that are in demand in the labour market today. The orientation to the competence of a higher education graduate actualizes the tasks of mobility of the higher education system and provides for the formation of a unified system of levels and qualifications. National priorities and meanings in higher education are challenged by common educational values and unified standards, as well as by the expansion of sociocultural and educational environments. In addition, the transition to a digital educational environment, which includes a system of online courses and other educational resources that are considered self-sufficient means, will lead to a significant decrease in the role of the teacher in the educational process balanced by a sharp increase in the value of self-learning through digital technologies. However, it is doubtful that accessible educational content and network technologies will be able to provide quality education and act as a sufficient means to maintain educational motivation among students with a low level of educational independence.

4. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

The study on the informatization of higher education has shown that the impact of digital technologies on higher education institutions is multifaceted. The modern higher education system is shifting toward an open system of educational modules due to flexibility, variability, and the ability of students to design their unique educational trajectories based on a competency-based approach. Digital technologies cause the transformation of the primary didactic relations between a teacher and a student, a student and training tasks, and a teacher and learning material, actualizing revision of the learning tasks, content, techniques, tools of the educational process, methods for assessing learning outcomes, and characteristics of interaction between educators and students. Active modernization of university educational practice implies the need for emphasizing the teacher's role as a designer, who constructs an effective learning environment, reconsiders the classical answers to the main didactic questions, and brings about a new vision corresponding to the ideas of nonlinearity, probability, and uncertainty. Didactic understanding of digitalization in higher education, the multivariance content of educating, and the flexible educational forms will be the basis for practical transformation in pedagogical activity aimed at effective interaction with the digital generation representatives. To minimize the digital gap between a student and a teacher, the latter requires professional skills to deal with the realities of the digital environment to effectively integrate them into educational practice based on continuity with traditional forms of organizing the educational process.

In conclusion, based on research results, our recommendations and prospects for future research can be the following:

1. The structure of a modern teacher's professional competence is supplemented by digital competence. The level of a teacher's professionalism directly depends on the level of digital competence possession. We believe that the reproductive and adaptive levels of mastering digital competence can be provided by the introduction of specialized courses for students of pedagogical training, which allow using digital technologies to solve educational problems, conduct digital communication with students and colleagues, etc. To achieve and maintain technological and creative

levels of digital competence, it is desirable to provide teachers with advanced training courses in the field of digitalization of higher education. At universities, to help teachers, it is necessary to form consultation centers on the organization of the educational process in digital conditions. It is essential to organize subscriptions to online platforms so that teachers can receive consultations and advice on their use.

2. The university digital environment provides material prerequisites for the implementation of education. However, the guiding, coordinating, and controlling roles of the teacher in the student-teacher activity are needed. The teacher is required to find a psychologically, pedagogically, and methodologically justified balance between the use of digital capabilities and lively dialogic communication in the educational process.
3. Further research, aimed at the regularities of the personal development of a representative of the "digital generation" in the system of continuous education, is becoming relevant. The results of further research are capable of becoming scientific-methodological support of the modern educational process, the basis of new disciplines ("Psychology of digital education", "Ethics of digital education", etc.).

REFERENCES (TRANSLATED AND TRANSLITERATED)

- [1] "Education. Strategy of Ukraine 2030". [Online]. Available: <https://www.slideshare.net/UIFuture/2030-148758034> (in Ukrainian).
- [2] "Digital agenda for Europe". [Online]. Available: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0245&from=en> (accessed 2020) (in English).
- [3] "Europe 2020: A strategy for smart, sustainable and inclusive growth". [Online]. Available: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC2020&from=en> (accessed 2020) (in English).
- [4] "Digital agenda of Ukraine". [Online]. Available: <https://ucci.org.ua/uploads/files/58e78ee3c3922.pdf> (accessed 2020) (in Ukrainian).
- [5] J. F. Helliwell and R. D. Putnam, "Education and Social Capital". [Online]. Available: <https://www.jstor.org/stable/20642328> (in English).
- [6] F. Fukuyama, "Social Capital and Civil Society", in *IMF Working Paper*, pp. 1–19. Accessed: April 2000. [Online]. Available: <https://ssrn.com/abstract=879582> (in English).
- [7] E. L. Glaeser, "The Formation of Social Capital". [Online]. Available: <http://www.oecd.org/dataoecd/5/17/1824983.pdf> (in English).
- [8] M. J. Alessandrini, "Getting Connected: Can Social Capital be Virtual". [Online]. Available: <https://www.webology.org/data-cms/articles/20200515034902pma33.pdf> (in English).
- [9] B. K. Daniel, "Building Social Capital in Virtual Learning Communities", 2002. [Online]. Available: https://www.researchgate.net/publication/2855721_Building_Social_Capital_in_Virtual_Learning_Communities (in English).
- [10] B. K. Daniel, R. A. Schwier, and G. I. McCalla, "Social Capital in Virtual Learning Communities and Distributed Communities of Practice". Accessed: October 2003. [Online]. Available: <https://www.learntechlib.org/p/43189/> (in English).
- [11] D. Engelbart and H. Lehtman, "Working together", in *BYTE*. Accessed: December 1988. [Online]. Available: <http://www.dougenelbart.org/about/bibliography.html> (in English).
- [12] J. Fresen, "Quality assurance practice in online (web-supported) learning in higher education: an exploratory study". [Online]. Available: <https://repository.up.ac.za/bitstream/handle/2263/29858/Complete.pdf?sequence=11> (in English).
- [13] T. Koschmann, A. Zemel, and M. Conlee-Stevens, et. al. "How do people learn? Members' Methods & Communication Mediation," in *Barriers and Biases in Computer-Mediated Knowledge Communication and How They May Be Overcome*. R. Bromme, F. W. Hesse, H. Spada, Eds., Springer, Boston, MA, 2005, pp. 265–294. https://doi.org/10.1007/0-387-24319-4_12 (in English).
- [14] K. Bereiter and M. Scardamalia, "Learning to Work Creatively with Knowledge". [Online]. Available: <http://ikit.org/fulltext/inresslearning.pdf> (in English).
- [15] "Chatbots in Education: Applications of Chatbot Technologies". [Online]. Available: <https://elearningindustry.com/chatbots-in-education-applications-chatbot-technologies> (in English).

- [16] R. Owusu Boateng and A. Amankwaa, “The Impact of Social Media on Student Academic Life in Higher Education”, *Global journal of human-social science: G Linguistics & Education*, vol. 16, no. 4, pp. 1–7, 2016. [Online]. Available: https://www.researchgate.net/publication/331000005_The_Impact_of_Social_Media_on_Student_Academic_Life_in_Higher_Education_The_Impact_of_Social_Media_on_Student_Academic_Life_in_Higher_Education (in English).
- [17] M. Prensky, “Digital Natives, Digital Immigrants”, *On the Horizon*, vol. 9, no. 5, 2001. [Online]. Available: <https://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf> (in English).
- [18] M. Prensky, “Is the human brain still the smartest thing on the planet? When enhanced by technology, it is”, *Our Brains Extended*, vol. 70, no. 6, 2013. [Online]. Available: <http://www.ascd.org/publications/educational-leadership/mar13/vol70/num06/Our-Brains-Extended.aspx> (in English).
- [19] “U.S. Smartphone Use in 2015”. Pew Research Center. [Online]. Available: <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015> (in English).
- [20] K. W. Lai and K. S. Hong, “Technology Use and Learning Characteristics of Students in Higher Education: Do Generational Differences Exist?”, *British Journal of Educational Technology*, vol. 46, no. 4, pp. 725–738, 2015. doi: <https://doi.org/10.1111/bjet.12161> (in English).
- [21] K. E. May and A. D. Elder, “Efficient, helpful, or distracting? A literature review of media multitasking in relation to academic performance”, *International journal of educational technology in higher education*, vol. 15, no. 1, pp. 2–17, 2018. doi: <https://doi.org/10.1186/s41239-018-0096-z> (in English).
- [22] M. M. Martin-Perpina, F. V. Poch, and S. M. Cerrato, “Media multitasking impact in homework, executive function and academic performance in Spanish adolescents”, *Psicothema*, vol. 31, no. 1, pp. 81–87, 2019. doi: <https://doi.org/10.7334/psicothema2018.178> (in English).
- [23] S. P. Carter, K. Greenberg, and M. S. Walker, “The Impact of Computer Usage on Academic Performance: Evidence from a Randomized Trial at the United States Military Academy”, *Economics of Education Review*, vol. 56, pp. 118–132, 2017. doi: [10.1016/j.econedurev.2016.12.005](https://doi.org/10.1016/j.econedurev.2016.12.005) (in English).
- [24] “Digital Competence Framework for Educators (DigCompEdu)”. [Online]. Available: <https://ec.europa.eu/jrc/en/digcompedu> (accessed 2017) (in English).

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ЦИФРОВІЗАЦІЯ УНІВЕРСИТЕТСЬКОЇ ОСВІТИ: ДИДАКТИЧНИЙ АСПЕКТ

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Анотація. Цифрові технології, що інтенсивно розвиваються, трансформують базові процеси, які вивчає дидактика вищої школи: способи взаємопов'язаної діяльності викладач – студент; студент – знання, уміння та навички, необхідні для засвоєння та формування; викладач – методика викладання навчального матеріалу. Цілі навчання, поставлені інформаційним суспільством, зміщують акцент з освоєння системи знань та розвитку професійних умінь на розвиток компетентностей, становлення суб'єктності студентів, їх готовності до інноваційної діяльності. У процесі цифровізації освітнього процесу

відбувається перехід від організації діяльності викладання та навчання – до організації процесів проектування, формування та освоєння індивідуальних освітніх маршрутів. Вирішення сучасних освітніх завдань вимагає від викладача осмислення трансформацій, що стосуються усіх складових, наявних у структурі дидактичної теорії: мети, змісту, форми, технологій та засобів освітнього процесу. Сучасна система вищої освіти змінюється в бік відкритої системи освітніх модулів. Процеси цифровізації призводять до домінування інфографічних форм подачі матеріалу замість нарративних (текстових) форм. Різноманітність форм організації навчальної діяльності в умовах цифрового освітнього середовища істотно зростає, вони набувають динамічного характеру (групи змінного складу, перехід від командної до індивідуальної роботи та інші). Активна модернізація університетської освітньої практики ставить перед викладачем нові теоретичні завдання, серед яких: пошук механізмів здійснення наступності між традиційними формами організації освітнього процесу та інноваціями з урахуванням особливостей пізнавальної, мотиваційної сфер так званого «цифрового покоління». Перехід від викладання як провідної діяльності педагога до різноманіття педагогічних функцій у цифровому освітньому процесі актуалізує оволодіння викладачем інформаційними технологіями освітнього процесу, формування на їх основі власного професійного стилю.

Ключові слова: дидактика вищої освіти; викладач університету; цифровізація; «цифрові аборигени»; «цифрові емігранти»; цифрова компетентність викладача.



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