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STRATEGY FOR THE DEVELOPMENT OF DIGITAL COMPETENCE IN THE NATIONAL EDUCATION SYSTEM OF UKRAINIAN SOCETY

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Abstract

The article examines the issue of the strategy for the development of digital competence in the national education system of Ukrainian society under the influence of intensive development of ICT and in the context of practical recommendations provided by UNESCO regarding the structure of ICT competence of teachers. It was determined that there is no uniform policy of ICT education transformation in public institutions of Ukraine and there are no ICT standards - competences of participants in the educational process. The conceptual vision of informatization of the national education system of Ukraine is described, in the context of strengthening the role of digital competences and technologies. A comparative analysis of the large-scale informatization of the global education system, which led to the emergence of new methods and forms of education, was carried out. It is emphasized that the national education system of Ukraine is slowly introducing new methods and forms of education, which leads to a decrease in the competitiveness of Ukrainian education in the globalized educational space, and

as a result leads to a decrease in the country's competitiveness in socio-economic and scientific and technical progress as a whole.

Keywords: digital competence; digital divide; digital equality; the national education system; Ukrainian society.

Relevance of the research

The reasons for the emergence of a problem related to the consideration of the issue of building a strategy for the development of digital competence in the national education system of Ukraine are, firstly, the low priority of education as a whole at the state level, and secondly, the disregard of many international strategies and recommendations.

The large-scale nature of informatization of the education system in the modern society of Ukraine led to the emergence of new methods and forms of learning (electronic education, mobile learning, joint learning and learning on educational courses, smart learning, the use of cloud technologies in education, etc.). At the same time, the modern national education system of Ukraine is slowly introducing new methods and forms of education, which leads to a decrease in the competitiveness of Ukrainian education in the globalized educational space. Each industry organization of Ukraine must either adopt the technology of the State's digital competence development strategy or not participate in the race to continue competing. In an age of industrialization, when memorization, specialization, and segmentation increased productivity and profit, the major educational paradigms used in learning offered a framework that guided learning and, especially, teaching. At the beginning of the 1980s, the modern university became a generally accepted concept, and scientific studies, which discuss the role of higher state authorities in the national education system and the impact of this process on the emergence of new competencies in modern specialists, and as a consequence on the economic growth and social development of society, attracted the attention of famous scientists [1, 2, 3, 4, 5]. ICT competence in education not only improves the learning process, but also stimulates changes in the pedagogical process on the path of informatization of education and society as a whole and directly affects the reduction of the «digital divide». Unfortunately, the mentioned changes were not actually systematically reflected in the laws of Ukraine on education. The significant shortcomings of the declared educational policy of the Ukrainian society are the underestimation of the importance of stimulating the ICT initiative of educational institutions, educators, public organizations and private businesses, because in the modern digital society, digital competence is important for ensuring the work of citizens. Unfortunately, there is still a lack of specific State programs in the national education system of Ukraine, a lack of support and research on digital competence that relate to the technological skills of users. In addition, the programs and plans of

the strategy for the development of digital competence in the national education system of Ukraine do not take into account the importance of «digital equality» for people with and without disabilities, and as a consequence, the lack of strategies and support programs for the ability of people with disabilities in higher education to increase their digital competence, which is important for learning strategies and acquisition of digital competence, which in the future can positively affect the level of employment of members of society with disabilities. The above testifies to the actualization of issues related to the formation and development of digital competence in the national education system of Ukraine, the quality of education in the conditions economic crisis situation, improving the digital competence of Ukrainian teachers, and the organic combination of ICT with the spread of the spectrum of teaching methods in online and remote modes.

Analysis of previous research

Since the digital competence development strategy is supported by the main basic information technologies and organizational state structures, an important role is played by digital infrastructures, which are considered as socio-technical systems consisting of technological components. Digital infrastructures depend on the proactive involvement of diverse and heterogeneous stakeholder groups in their use, operation, design and planning. This aspect makes digital infrastructure attractive for ICT needs. The more society participates, the more the digital infrastructure will develop and innovate. A typical participation mechanism is downloads, through which early adopters make the infrastructure useful for public and personal use. This mechanism is seen as an entrepreneurial approach to maximizing the use of limited available resources and allowing random design activity to lead to creative innovation. Digital infrastructure such as cloud computing, data analytics, online communities, social media, 3D printing and digital manufacturers support academic entrepreneurship and lead to the development of new human competencies. In modern conditions, many countries are concerned about the problem of developing new human competencies associated with the acceleration and introduction of ICT in all spheres of socio-economic and socio-political life. In particular, «digital» literacy or «digital competence» is recognized by the EU as one of the 8 key competencies for a full life and activity [6].

In 2016, the EU presented an updated Digital Competence framework (DigComp 2.0), consisting of 21 competencies grouped into 5 competency blocks [7].

The degree of use of ICT in the socio-economic and socio-political life of the country directly depends on the possession of the citizen/person with the relevant digital competences. This forms the so-called «digital divide» is known as the difference in access and use of information and communication technologies, such as the Internet, which is noted both between

individual countries and between individual regions within the same country [8]. According to the results of the Measuring the Information Society Report 2016 study, ITU Ukraine stabilized its lag behind developed countries in the development of the information society, taking 76th place in the rankings for 2015 and 2016. The introduction of modern communication technologies is taking place with a significant delay, in Ukraine's internal and external digital gap is increasing, there is no consolidated state strategy for the development of ICT. All this slows down the pace of creation and exchange of information, knowledge, experience and technologies [9].

Presenting main material

Information literacy, first introduced in 1974 has its origins in the academic disciplines of library and information science [10]. Information literacy received little attention in the literature during the 1980s, but the situation improved significantly in the 1990s [11, 12], when it was proposed to expand this concept and understand information literacy as something much broader than an advanced form of computer skills or bibliographic instruction [12, 13].

According to Jackman and Jones [10], information literacy has come to be considered "a set of critical work and educational skills that reflect the learning challenges inherent in a digital global economy that depends on a highly skilled workforce".

In 2000, the Association of College and Research Libraries (ACRL) developed information literacy standards for higher education and proposed a definition of information literacy as a set of abilities that require people to "recognize when information is needed and have the ability to locate, evaluate, and effectively use the information needed" [14]. Information literacy has come to be seen as related to information technology skills, but has broader implications for the individual, the educational system, and society.

The Australia and New Zealand Institute for Information Literacy (ANZIIL) and the Council of Australian University Librarians (CAUL) have developed the Australia and New Zealand Framework for Information Literacy. This document presents six information literacy standards that define the behaviors and learning outcomes of librarians and educators when teaching and assessing information literacy. The report defines information literacy as "the understanding and set of abilities that enable people to recognize when information is needed and to have the ability to find, evaluate and effectively use the information they need" [15] and "is a 'prerequisite' and 'essential factor' for lifelong learning" [15]. However, the information literacy is not as established as computer literacy and as part of educational provision [16].

At the Vienna Conference "Education for Media and the Digital Age", UNESCO [17] defined media education as education that enables people to "gain an understanding of the means of communication used in their society, how they work and acquire the skills to use of these

media to communicate with others and to access a wide range of texts in all media (print, still images, audio and moving images) that provide people with a rich and varied cultural experience". Media education is a less used term that retains an educational aspect and "refers specifically to means of communication, covering both traditional media (press, radio, television, etc.) and the latest innovations (Internet, mobile phones of the second and third generation, etc.)" [18]. The terms "digital technology" and "new media" to refer to a wide range of technologies that store and transmit information in digital form. These include computers, the Internet and e-mail, mobile phones and other mobile devices and cameras, video games, as well as artificial intelligence, robotics and 3D printing [19]. National Qualifications Framework of Ukraine defines «competence» as a person's ability to perform a certain type of activity, which is expressed through knowledge, understanding, skills, values, and other personal qualities. Thus, the concept of «competence» is a key concept that determines the content, methods and technologies of the learning process, that is, it determines the indicators of the quality of training of graduates of educational institutions. The Law of Ukraine On Higher Education defines competence as a dynamic combination of knowledge, skills and practical skills, ways of thinking, professional, worldview and civic qualities, moral and ethical values, which determines a person's ability to successfully carry out professional and further educational activities and is the result of training at a certain level of higher education. Since the problem of formation and development of digital competence is important for the national education system of Ukraine, relying only on the Law of Ukraine On Higher Education will not be enough in the terminological aspect, and in the future it is necessary to create unambiguous definitions of the main concepts.

In 2008, UNESCO developed the UNESCO ICT Competency Framework for Teachers (ICT-CFT) in cooperation with Microsoft, Intel, Cisco, ISTE, Virginia Polytechnic Institute and Virginia State University [20]. Creation of these recommendations was the first attempt to solve problems in this field at the international level. UNESCO, recognizing the complexity of the process of changes in educational programs, proposed recommendations that combined the requirements for skills in the use of ICT with modern views on pedagogy, curricula and organization of the educational process.

The main goal of the UNESCO project was to improve the methods used by teachers in such a way that they contribute to the education of more knowledgeable citizens, which ultimately affects the socio-economic development of any country.

The UNESCO recommendations took into account the fact that the situation in different countries in terms of the development of skills in the use of ICT by teachers is different, and although all countries should focus their efforts on training teachers in the use of ICT, they will

have to start work in this direction from different levels of ICT use. In particular, the tasks of the UNESCO ICT-CFT project were as follows:

1) to draw up a common core curriculum (defining the various ICT competences of teachers) that teacher training institutions can use to develop teaching materials intended for shared use at the global level;

2) to form a basic set of qualifications that allows teachers to integrate ICT into the educational process;

3) expand and diversify the professional development of teachers, improving their skills in the field of pedagogy, cooperation and implementation of innovations in school based on the use of ICT;

4) reconcile different opinions and develop a terminological apparatus regarding the use of ICT in the training of teachers.

The UNESCO ICT-CFT recommendations recognize the fact that ICT education must go beyond the study of technology and must be adapted to the curriculum, cultural and climatic conditions relevant to individual schools, regions and countries. The UNESCO recommendations also envisage the integration of work on the implementation of ICT in the context of more global initiatives to transform the content and curriculum of education. While the UNESCO ICT-CFT project identifies the competences needed to effectively use technology to support change in education, the development and delivery of relevant training programs must be undertaken by carefully selected public, non-public and private institutions. The next step in the implementation of UNESCO ICT-CFT should be the creation of an educational policy at the international, state and regional levels, which allows these recommendations to be put into practice. The result of this work was the description of the structure of pedagogical ICT-competency which was presented to the public in 2008: 1) Policy Framework; 2) Competency Framework Modules and 3) Implementation Guide lines. Since 2009, UNESCO has been developing approximate curricula and requirements for testing the competence of teachers. The UNESCO recommendations were built taking into account three approaches to school informatization, which are related to the appropriate stages of professional development of teachers who master work in an ICT-rich educational environment: a) Using ICT; b) Learning of knowledge; c) Production of knowledge. Each of the three approaches contains 6 aspects of work.

The intersection of three approaches to learning based on the development of human potential («ICT application», «Knowledge acquisition» and «Knowledge production») and six aspects of work: («Understanding the role of ICT in education», «Curriculum and assessment», «Pedagogical practices», «ICT technical and software tools», «Organization and management of

the educational process», «Professional development») determine the structure of ICT competence of teachers. Thus, it includes 18 modules.

The Ukrainian experience [21] of providing teachers with ICT competences is primarily based on the initiative projects of the Ministry of Education and Culture:

– «Education for the Future» is the largest initiative for training and retraining of pedagogical personnel in ICT and the latest pedagogical technologies. More than 200 000 teachers and students have been trained under the program;

– «The Path to Success», which is intended for high school and high school students and young people aged 16-25 and allows you to master computer literacy, learn critical thinking and cooperation; - Intel ISEF, International Science and Engineering Fair (competition of scientific and technical creativity of schoolchildren, future scientists) – for talented young people and a scientific and methodological project for testing the concept of an innovative model of electronic learning in the environment;

– An e-learning project in the «1 student - 1 computer» model.

Possible measures to improve the system for improving the ICT competence of teachers should be implemented within the framework of the government action plan for 2017 and subsequent years [ ] and the corresponding action plan of the Ministry of Education and Culture:

– Development and approval of the Concept of anticipatory development of digital pedagogy in Ukraine;

– Approval of standards of higher and professional education by pedagogical specialties (specializations) and corresponding educational levels;

– Development of the sectoral framework of qualifications of pedagogical workers;

– Determination of approaches to the creation of a system of voluntary certification of pedagogical workers.

Among the attempts to change the conceptual vision of the informatization of the national education system of Ukraine, it is important to include the Recommendations of the round table “Educational policy in the conditions of the information society” dated May 24, 2016.

The current stage of the national education system of Ukrainian society is characterized by attempts to regulate the computerization of educational institutions in separate directions, to create an informational educational space, to initiate the formation and use of electronic textbooks, to increase the ICT competence of teachers, etc. International initiatives and projects exert a significant influence on the practice of introducing ICT into the educational process in Ukrainian society. Given these challenges, public institutions and policymakers must define their current educational priorities to effectively respond to the changing needs of 21st century learners. The proper acquisition of digital competence or digital literacy, understood from a

holistic and emancipatory perspective is basic key to the active and functional participation of Ukrainian society in the modern world.

Conclusions

The strategy of informatization of education in the national education system of Ukraine should describe all stages: organization, management and implementation of the educational process and should be based on clear requirements for the information support of the Ukrainian education system. Unfortunately, these tasks have not been systematically reflected in the laws of Ukraine on education. The significant shortcomings of the declared educational policy are an underestimation of the importance of stimulating the ICT initiative of educational institutions, educators, public organizations and private business. Unfortunately, the norms of the laws of Ukraine and relevant normative legal acts regarding the development of the information society and the tasks of informatization of education are not fully implemented. The solution of individual educational ICT tasks and ICT development projects, which were carried out through the approval of local bylaws, was not fully implemented. Most of these acts have either lost their validity or have been repealed, in particular, in 2014; state targeted programs that provided for the introduction of modern ICT into the educational process were repealed. Studies show that over time, the regional influence of universities on the creation of new businesses, the transfer of knowledge and the influx of well-educated people makes a significant contribution to the national education system of Ukraine. Various types of activities such as research cooperation with the industry, patent applications, idea generation in new firms, entrepreneurial education of highly qualified individuals and business incubators are tools that contribute to the reduction of internal and external "digital divides" and, as a result, to the growth of competitiveness. the country as a whole.

References:

1. B. R. Clark. 1998. Creating Entrepreneurial Universities: Organizational Pathways of Transformation. Emerald Group Publishing, Bingley.

2. A. Gibb, P. Hannonю Towards the entrepreneurial university? *Int. J. Entrep. Educ*. 2006, 4: 73–110.

3. M. Guerrero, D. Urbano, A. Fayolle. Entrepreneurial activity and regional competitiveness: evidence from European entrepreneurial universities. *J. Technol. Transf.* 2016, 41(1): 105–131.

4. M. Klofsten, D. Jones-Evans. Comparing academic entrepreneurship in Europe-the case of Sweden and Ireland. *Small Bus. Econ.* 2000, 14(4): 299–309.

5. J. Röpke. 1998. The entrepreneurial university: innovation, academic knowledge creation and regional development in a globalized economy. In: Working Paper. Philipps-Universität Marburg, Germany.

6. Verkhovna Rada Ukrainy. Zakonodavstvo Ukrainy [Verkhovna Rada of Ukraine. Legislation of Ukraine], 2006. Pro osnovni kompetentsii dlia navchannia protiahom usoho zhyttia. Rekomendatsiia 2006/962/IeS Yevropeiskoho Parlamentu ta Rady (IeS) vid 18 hrudnia 2006 r. [On basic competences for lifelong learning. Recommendation 2006/962 / EC of the European Parliament and of the Council (EU) of 18 December 2006]. (in Ukrainian) [Electronic Resource] — Mode of access: http://zakon3.rada.gov.ua/laws/show/994_975

7. R. Vuorikari, Y. Punie, Gomez S. Carretero, G. Van den Brande. DigComp 2.0: The Digital Competence Framework for Citizens. Update Phase 1: The Conceptual Reference Model. Luxembourg Publication Office of the European Union. 2016.

8. UNESCO Thesaurus. [Electronic Resource] — Mode of access: http://skos.um.es/unescothes/C01046

9. Measuring the Information Society Report 2016, ITU. [Electronic Resource] — Mode of access: https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2016/MISR2016-w4.pdf

10. L. W. Jackman, L. D. Jones. 2002. Information Literacy, Information Communications Technologies (ICT) and the Nongovermental Organization (NGO)/non profit world: as practitioner's perspective. In Information Literacy Meeting of Experts. Prague, The Czech Republic: UNESCO, the U.S National Commission on Libraries and Information Science, and the National Forum on Information Literacy.

11. D. Bawden. 2001. Information and digital literacies: a review of concepts. Journal of Documentation, 57(2), 218–259.

12. D. Bawden. 2008. Origins and concepts of digital literacy. In C. Lankshear & M. Knobel (Eds.), Digital literacies: Concepts, policies and practices. (pp. 17–32). New York, NY: Peter Lang.

13. D. Bawden, L. Robinson. Promoting literacy in a digital age: approaches to training for information literacy. *Learned Publishing*. 2002, 15(4): 297–301.

14. E. E. Gallardo-Echenique, J. Minelli de Oliveira, L. Marqués-Molias,

F. Esteve-Mon. Digital Competence in the Knowledge Society. *MERLOT Journal of Online Learning and Teaching*. 2015, 11(1): 1–16.

15. A. Bundy. 2004. Australian and New Zealand information literacy framework: Principles, standards and practice (2nd. ed.). Adelaide: Australian and New Zealand Institute for Information Literacy (ANZIIL).

16. A. Martin. Essential E-literacy. *Connected*. 2003, 9: 22–24.

17. Recommendations Addressed to the United Nations Educational Scientific and Cultural Organization / UNESCO // Education for the Media and the Digital Age. Vienna: UNESCO, 1999, 273–274.

18. J. M. Pérez-Tornero. 2004. Promoting digital literacy: Understanding digital literacy (Final report. EAC/76/03). Brussels: European Commission.

19. C. Hague, B. Williamson. 2009. Digital participation, digital literacy and school subjects: A review of the policies, literature and evidence (p. 30). Bristol, UK: Futurelab.

20. A. Grizzle. 2014. Measuring Media and Information Literacy: Implications for the Sustainable Development Goal. In Singh, J., Grizzle, A., et al (2015). Media and Information Literacy for the Sustainable Development Goals. International Clearinghouse on Children, Youth and Media, NORDICOM, University of Gothenburg, Sweden.

21. Zvit Gromadckoi radu pri Minicterctvi osvitu i nauki Ykrainu 2016–2018 rik. [Repot Public Council under the Ministry of Education and Science of Ukraine, 2016–2018 year]. 97p. (in Ukrainian)