

UDC 37.011.2:004  
DOI: <https://doi.org/10.17721/2616-7786.2023/9-1/14>

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## DEVELOPMENT OF DIGITAL COMPETENCE OF CITIZENS FOR LIFELONG LEARNING

**Background.** *The conceptual foundations of the development of digital competence for lifelong learning and the analysis of its regulatory and legal regulation have been clarified; identification of educational practices that most effectively satisfy the social and educational needs of citizens for the development of digital competence in the system of informal education. The purpose of the article is to define educational practices for the development of citizens' digital competence. It was found that the development of digital competence of citizens is based on the idea of competence; a trend towards constant updating of normative documents has been established; educational practices have been determined that will meet the needs of citizens regarding the development of digital competence in the system of non-formal education.*

**Methods.** *The theoretical analysis of scientific works on the problems of developing citizens' digital competence was chosen as the research method. The search for information using scientific metric databases Google Scholar, Scopus, Web of Science, by keywords was applied; government and parliamentary information platforms and portals; theoretical analysis of scientific works on the problems of developing citizens' digital competence; content analysis of regulatory and legal documents, analytical materials, instructional and informational materials and their formalization, comparison of the capabilities of remote platforms; generalization of the received data and development of proposals.*

**Results.** *Based on the results of the research, it was found that in the European educational space, the idea of competence is accepted as the conceptual basis for the development of citizens' digital competence. It has been established that today it has been developed into an innovative idea of cross-cutting key competences through a combination of formal, informal and informal education. Tendencies for constant updating of the legal regulation of the development of digital competence have been revealed.*

**Conclusions.** *Educational practices aimed at the greatest satisfaction of the social and educational needs of specialists in the development of digital competence in the system of non-formal education are highlighted, which are divided into traditional and innovative forms, combining a wide range of various educational and online platforms for distance and online learning, under the guidance of a teacher or independent performance of tasks.*

**Keywords:** *citizens, digital competence, development, educational practices, key competences.*

### Background

**Problem statement.** The relevance of the research problem is due to the growing role and importance of information as a resource for the development of human potential in the 21st century, which causes the need for intensive use of the global information and communication space both for professional development and everyday life activities of the individual, stimulates the active creation of digital educational ecosystems for the generation of education and science, expands the intellectual capabilities of scientists and specialists in increasing the efficiency of national economies.

The COVID-19 pandemic became a driver for the progress of innovations, the development and implementation of technologies, aimed at accelerating the green and digital transformation of industry, strengthening its sustainability, and the war against Ukraine, launched by the Russian aggressor, gave an impulse to expanding of the capabilities of the defense and industrial complex in a global context, which in its turn, caused a large-scale technological renewal of workplaces and not only at enterprises of the military and industrial complex, but also at enterprises that produce consumer goods, as well as in the service sector.

If Industry 4.0 (driven by technology) is aimed at minimizing human intervention in the technologization of processes and giving priority to their automation, that is, a person is to some extent forced to compete with the machine, displacing the first of many scenarios, then Industry 5.0 (driven by socio-engineering) requires the search for business models, that use the least amount of

resources to get the most benefit and the most improvement of the present, and man and machine must work together in order to make the best decisions for the company from an economic point of view. Therefore, the philosophy of Industry 5.0 can be applied to education, which is now called Education 5.0 and which meets current business needs, integrated with industrial and technological developments (Andres et al., 2022). At the same time, the digitalization of the economy and society as a whole sets new benchmarks in the professional training of personnel, the development of digital competence in working professionals for employment and career growth on a permanent basis and in the adult population in order to ensure the possibility of effective use of digital technologies in any field of activity.

**Analysis of recent sources and publications.** The issue of training specialists for various branches of the economy in the conditions of digital transformation of society was covered in the works of Ukrainian and foreign scientists O. Hlazunova, V. Kovalchuk, M. Kushnir, L. Lypych, D. Lukyanenko, Ye. Mishchuk, A. Petrenko, O. Khilukha, A. Darányi, T. Ruppert, H. Schildermans. At the current stage of human progress, the problem of developing digital competence in adult education, which is raised by scientists N. Avsheniuk, O. Anishchenko, N. Aristova, O. Banit, L. Lukianova, H. Mykhailyshyn, L. Mandro, M. M. M. Alemany, B. Andres, A. Estes, G.-P. Laura Icela, F. Sempere-Ripoll, R.-M. Maria Soledad and E.-G. Juan Antonio, acquires specific importance. The formation of digital competence of future teachers of higher education institutions was studied by both domestic (N. Andrushchenko, V. Bykov, V. Kobal,

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S. Tkachov, O. Ovcharuk, L. Petrenko, Yu. Romanyshyn) and foreign scientists: M. Svenssona, R. Baelob, J. Portillo-Berasaluce, U. Garay, E. Tejada, N. Bilbao, etc.

It must be noted that today the European digital agenda is actively being formed. This is indicated by a number of accepted documents:

The Action Plan for Digital Education is an updated political initiative of the European Union (EU) that establishes a common vision for high-quality, inclusive and accessible digital education in Europe and is aimed at supporting the adaptation of education and training systems of member states to the digital age;

The political program "Digital Decade: Digital Goals for 2030" with specific goals and objectives for 2030 guides the digital transformation of Europe;

Principles and recommendations for strengthening the social dimension of higher education in the European Higher Education Area (2020);

The European Declaration of Digital Rights and Principles, which represents the EU's commitment to a safe and sustainable digital transformation that is human-centered in accordance with the EU's fundamental values and fundamental rights;

Digital competence framework (DigComp 2.1: The Digital Competence Framework for Citizens) and recommendations in the field of digital competences from European and international institutions;

Manifesto for Adult Education in the 21st Century (European Association..., 2019) etc. Therefore, the problem of developing the digital competence of specialists for lifelong learning is quite relevant at the present time, and the issue of optimizing these processes in the conditions of digitalization of society, management, technologization of production and the service sector requires more in-depth research.

**The purpose of the article** is to clarify the conceptual foundations and analyze the regulatory and legal regulation of the development of digital competence for lifelong learning; identification of educational practices that most satisfy the social and educational needs of citizens for the development of digital competence in the system of informal education.

#### Methods

The search for information using scientific metric databases Google Scholar, Scopus, Web of Science, by keywords was applied; government and parliamentary information platforms and portals; theoretical analysis of scientific works on the problems of developing citizens' digital competence; content analysis of regulatory and legal documents, analytical materials, instructional and informational materials and their formalization, comparison of the capabilities of remote platforms; generalization of the received data and development of proposals.

#### Results

**Presentation of the main material.** In the European educational space, the idea of competence remains the leading strategy for the development of education in the 21st century. Adopted in 2006, the European reference framework of key competences for lifelong learning (Recommendation of the European Parliament ..., 2006) in the context of dynamic globalization transformations was modernized, and in 2018 the European Union adopted its updated version at the level of the conceptual vision of competences and their list and essential characteristics (EUR-Lex, 2019). In this version, O. Lokshyna notes, that the position of the EU, regarding the understanding of the

essence of competence as a "combination of knowledge, skills and attitudes" and the interpretation of all these three components, is confirmed. At the same time, the innovation became "the idea of cross-cutting key competences" – it is about declaring the integrity of the educational space for acquiring competences through the combination of formal, non-formal and informal education (Lokshyna, 2019, p. 24). In the Recommendations of the Council of the EU, key competences are interpreted as competences that all individuals need for personal fulfillment and development, employment, social integration, sustainable lifestyles, successful living in peaceful societies, managing a healthy lifestyle and active citizenship. They are acquired in the perspective of education throughout life, from early childhood throughout adulthood, as well as by means of formal, non-formal and informal education in all contexts, covering the family, school, workplace, social environment and other communities (EUR-Lex, 2019, p. 7). Compared to the definition, given in the European Framework of Reference for Key Competences for Lifelong Learning (2006), it has been modified to respond to the rapidly changing digital context, enriched with the realities of media literacy and critical thinking, primarily in the context of social media use. In its modern interpretation, it covers information literacy, the ability to communicate and collaborate, media literacy, digital content creation (including programming), security (including digital well-being and competences related to cyber security), intellectual property, related to problem solving and critical thinking (Lokshyna, 2019, p. 27).

Summarizing, we should note that the implementation of competence-oriented education, aimed at preparing for lifelong learning, involves: the use of various learning methods and contexts; support of teachers and other educational personnel in the process of implementation of the competence approach; assessment and validation of competences acquired by citizens in non-formal education (EUR-Lex, 2019, p. 12).

The narrative of our study requires clarification of the updated definition of digital competence, which in the European Framework of Reference for Key Competences for Lifelong Learning (2018) is formulated as confident, critical and responsible use and interaction with digital technologies for learning, work and participation in public life. The relevance of solving the problem of formation and development of digital competence is indicated by the development and adoption of the European conceptual reference model of digital competences for citizens DigComp 2.1: The Digital Competence Framework for Citizens. Based on it and in accordance with the recommendations in the field of digital competences from European and international institutions, in 2021 the Ministry of Digital Transformation of Ukraine developed a Digital Competence Framework for citizens of Ukraine (Ministry of Digital Transformation, 2021). Description of the Framework adapted to the national, cultural, educational and economic characteristics of Ukraine. The Framework currently contains 4 dimensions, 6 domains, 30 competencies and 6 levels of digital competence acquisition.

The presented Framework can be used to develop a strategy for the formation of digital abilities and skills, modernization of existing and creation of new educational programs, development of digital competence of teachers and specialists of various fields at different levels, taking into account the descriptors specified in the content part of the framework of digital competences for citizens of Ukraine

(Ministry of Digital Transformation, 2021, p. 13–16) both in formal (Petrenko, 2023) and non-formal education.

Thus, the need to develop digital competence among specialists in various fields and Ukrainian citizens in general today is one of the urgent tasks that prompts scientific-pedagogical and pedagogical teams, management of enterprises, companies, institutions and organizations, mayors of cities and heads of communities, representatives of public organizations to search for effective ways to solve it. In this regard, we consider it appropriate to refer to the Manifesto for Adult Education in the 21st Century, updated in 2019 by the European Adult Education Association (EAEA). It demonstrates the benefits of adult education, reflects EAEA's vision of ways for adults to acquire all the necessary skills, knowledge and competences that will contribute to the development of a knowledge society capable of coping with modern challenges. It emphasizes that the permanent development of the adult population requires sustainable investments in education at all levels – European, national, regional and local. In the manifesto, nine European problems, the solution of which is possible precisely through the education of adults, are formulated. In the context of our research, we should highlight among them: *life skills for people*, the acquisition of which opens up new opportunities for employment and training, activation of creative abilities and creation of new groups in social networks (with different interests, preferences, etc.); *employment and work* involving on-the-job training, which in modern society is considered as one of the key factors in the participation of specialists in lifelong learning (it contributes to the improvement of innovation and productivity of employees, entrepreneurs and volunteers and makes companies more successful); *digitalization* as a tool for eliminating the digital divide, continuous development of digital competence as it has a key role for personal self-realization, employment, social integration and active citizenship; *sustainable development* through the creation of appropriate conditions in adult education for the acquisition of competences, free access to information, creation of space for discussions, expansion of opportunities for creative development and the development of new approaches necessary for the socio-economic progress of communities and the country as a whole, because "the paradigm change is possible only owing to critical, conscious and innovative citizens" (European Association ..., 2019).

The indisputable leading role of digital competence in the "system of key competences for lifelong learning" is indicated by N. Aristova, since "the level of its formation and development guarantees success in professional development and career growth for an individual as a professional of the future society" (Aristova, 2022, p. 59).

Returning to the topic of our research, we should note that non-formal education, according to the definition given in Article 8 of the Law of Ukraine "On Education", is interpreted as education that is obtained according to educational programs and "does not involve the awarding of state-recognized educational qualifications by education level, but can be completed with assigning professional and/or awarding of partial educational qualifications" (Verkhovna Rada of Ukraine, 2017). For the most part, the forms of non-formal education are various courses, in particular, advanced training courses, groups based on interests, art schools, as well as mastery schools (for example, "Na urok" or author's schools of sculptors, artists, etc.),

associations (associations of doctors, teachers of foreign languages, entrepreneurs, etc.), seminars (scientific-methodical, practical, scientific-methodological, professional, development of specific competencies – financial, entrepreneurial, social rehabilitation, etc.), lectures (modern history of Ukraine, anti-corruption, protection of ecology, etc.), clubs (patriotic education, sports dance, intellectual clubs), tourism stations, naturalistic stations, etc., the activities of which are focused on self-determination, self-development and acquisition of new knowledge, deep informativeness in matters of personal interest. In present conditions of today's Ukraine, webinars, online seminars and online conferences, online trainings, various massive open online courses (MOOC) on various platforms (Coursera, MIT Open CourseWare, EdX, Khan Academy, UMass Boston Open Courseware, Prometheus), etc. have become widely popular.

It should be noted, that nowadays anyone who wants to acquire knowledge, improve his or her professionalism, gain additional knowledge or become competent in a new field, including developing his or her digital competence as a basis for lifelong learning, can do it without leaving his home if the Internet is available. This fully corresponds to modern trends in the development of education. But for the effectiveness of self-education activities, it is worth mastering the techniques and models of effective self-education.

Regarding the development of digital competence, we consider it appropriate for pedagogical and scientific-pedagogical workers to contact higher education institutions, regional institutes of postgraduate education, scientific and research institutions of the National Academy of Pedagogical Sciences of Ukraine, which offer advanced training courses. The most popular educational and online platforms that offer to increase the level of one's digital competence are published on the website of the Ministry of Education and Science of Ukraine (Ministry of Education and Science of Ukraine, 2023). Increasing the level of digital competence for those, working at various enterprises, companies, organizations and institutions is possible at corporate universities, educational and course complexes, in-house trainings, etc.

In addition, it is advisable to use educational services for the development of citizens' digital competence in the "DIYA" application, where the test for self-assessment of the level of formation of a citizen's digital competence is posted, the criteria, descriptors and levels are highlighted and characterized as well. After registering, each person can receive lessons in the format of video films with the participation of famous Ukrainians. Based on the results of the self-assessment of the level of one's own digital competence, a certificate indicating the level of possession of digital competence will be sent to the e-mail: basic (A1 – at the basic level and with its help a person is able to: understand where one's own digital competence needs to be improved or updated; A2 – at a basic level and with autonomy and appropriate guidance where necessary, the individual is able to: understand where own digital competence needs to be improved or updated); average (B1 – independently solving direct problems, the person is able to: explain where and how to improve or update his own digital competence; B2 – according to his own needs and solving clearly defined and non-standard problems, the person is able independently: discuss where his or her own digital competence needs to be improved or updated; determine how to support others to develop their digital

competence; determine how to stay abreast of digital evolution); high (C1 – in addition to helping others, a person is able to: demonstrate where and how his or her own digital competence needs to be improved or updated; demonstrate various ways of supporting others in order to develop their digital competence; suggest how to stay abreast of digital evolution; C2 – at a high level, in accordance with own needs and the needs of other people, and in complex contexts, a person is able to: decide which ways are most suitable to improve or update their own digital competence needs; assess the development of digital competence of others; choose the most appropriate opportunities, how to be aware of new developments) (Ministry of Digital Transformation of Ukraine, 2021, p. 48).

Every year, since 1980, the United Nations Development Program has been ranking according to the Education Index. In 2022, Australia topped the list in the ranking with the following indicators: expected duration of education (in years) is 21.1 and average duration of education in years is 12.7. New Zealand, Iceland, Sweden and Belgium also entered the top five according to the Education Index out of 191 countries of the world. In this list of countries of the world, Ukraine ranks 58 out of 191 and has the following indicators: expected duration of education (in years) is 15.0 and average duration of education in years is 11.1. As we know, this Index is considered to be the one of the key indicators of social development and is used to calculate the Human Development Index (UNDP, 2023, p. 59). Economically developed countries annually increase the financing of national education systems, because the level of education of the population is considered as the evidence of stable development of society.

Summing up, we should note that nowadays there are many different forms, methods and programs that provide high-quality educational services on open, free platforms. Therefore, every motivated citizen can find an interesting and convenient offer for himself or herself and even draw up his or her own individual development plan with a teacher (mentor, coach) either independently or in a group, in a traditional form (offline), remote, mixed or online. At the same time, it should be taken into account, that any skill turns into a stable skill under the conditions of multiple repetitions, that is, constant use in practical activities. Therefore, it can be hypothetically assumed that the scientific and practical interest in the study of digital competence as a sign of a professional of the future at the general pedagogical and purely didactic levels will only grow in the conditions of the development of a digital society.

### Discussion and conclusions

According to the results of the research, it was found that in the European educational space, the conceptual basis for the development of digital competence of citizens for lifelong learning is the competence idea, which is based on the understanding of the essence of competence as a "combination of knowledge, skills and attitudes", which was later developed into an innovative idea of cross-cutting key competencies by combining formal, non-formal and informal

education. Based on the results of the analysis of the legal regulation of the development of digital competence for lifelong learning, it is possible to assert the existence of the tendency to constantly update regulatory documents: declarations, regulations, recommendations, requirements, criteria, etc. Educational practices that most effectively satisfy the social and educational needs of specialists in the development of digital competence in the system of non-formal education have been identified as well. According to their forms, they can be divided into: traditional and innovative. The latter are represented by a wide range of various educational and online platforms for distance and online learning (either group or individual), under the guidance of a teacher (mentor or coach) or independent performance of tasks.

We consider *the research perspectives* in studying the motivational readiness of citizens to develop their digital competence.

**Contribution of the authors:** Larysa Petrenko – conceptualization, research methodology, analysis of literary sources; Marzena Walasik – analysis of sources, preparation of a literature review.

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Отримано редакцією журналу / Received: 14.11.23

Прорецензовано / Revised: 02.12.23

Схвалено до друку / Accepted: 10.12.23

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## РОЗВИТОК ЦИФРОВОЇ КОМПЕТЕНТНОСТІ ГРОМАДЯН ДЛЯ НАВЧАННЯ УПРОДОВЖ ЖИТТЯ

**Вступ.** З'ясувано концептуальні основи розвитку цифрової компетентності для навчання упродовж життя та аналіз її нормативно-правового регулювання; виявлення освітніх практик, які найбільш ефективно задовольняють соціально-освітні потреби громадян з розвитку цифрової компетентності у системі неформальної освіти.

**Методи.** Пошук інформації з використанням наукометричних баз даних Google Scholar, Scopus, Web of Science, за ключовими словам; інформаційних урядових і парламентських платформ та порталів; теоретичний аналіз наукових праць з проблем розвитку цифрової компетентності громадян; контент-аналіз нормативно-правових документів, аналітичних матеріалів, інструктивних і інформаційних матеріалів та їх формалізації, порівняння можливостей дистанційних платформ; узагальнення одержаних даних і розроблення пропозицій.

**Результати.** За результатами проведеного дослідження з'ясовано, що в європейському освітньому просторі концептуальними основами розвитку цифрової компетентності громадян прийнято компетентнісну ідею. Встановлено, що нині вона розвинута до інноваційної ідеї наскрізності ключових компетентностей шляхом поєднання формальної, неформальної та інформальної освіти. Виявлено тенденції до постійного оновлення нормативно-правового регулювання розвитку цифрової компетентності.

**Висновки.** Висвітлено освітні практики, спрямовані на найбільше задоволення соціально-освітніх потреб фахівців з розвитку цифрової компетентності у системі неформальної освіти, які за формами поділяють на традиційні та інноваційні, що об'єднують широке коло різних освітніх і онлайн-платформ для дистанційного й онлайн навчання, під керівництвом викладача або самостійного виконання завдань.

**Ключові слова:** громадяни, ключові компетентності, освітні практики, розвиток, цифрова компетентність.

Автори заявляють про відсутність конфлікту інтересів. Спонсори не брали участі в розробленні дослідження; у зборі, аналізі чи інтерпретації даних; у написанні рукопису; в рішенні про публікацію результатів.

The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses or interpretation of data; in the writing of the manuscript; in the decision to publish the results.