DOI:10.17951/j.2023.36.3.7-18

ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA

VOL. XXXVI, 3 SECTIO J 2023

Vasyl Stefanyk Precarpathian National University, Department of Pedagogy
and Educational Management named after Bohdan Stuparyk

LIUBOV PROKOPIV, VIKTORIIA STYNSKA

ORCID: 0000-0001-8661-510X, liubov.prokopiv@pnu.edu.ua
ORCID: 0000-0003-0555-3205, viktoriia.stynska@pnu.edu.ua;

Higher Education Digitalization in the Context of Globalization Changes

Cyfryzacja szkolnictwa wyższego w kontekście zmian globalizacyjnych

HOW TO QUOTE THIS PAPER: Prokopiv, L., & Stynska, V. (2023). Higher Education Digitalization in the Context of Globalization Changes. *Annales Universitatis Mariae Curie-Skłodowska. Sectio J, Paedagogia-Psychologia*, *36*(3), 7–18. DOI: 10.17951/j.2023.36.3.7-18

ABSTRACT

The article deals with the issue of digitalization in the educational systems of the world and Ukraine. Based on the SWOT analysis, the authors identify the advantages and disadvantages of digitalization of the Ukrainian educational system.

The main areas of digitalization include the introduction of immersive, cloud, Internet technologies, online courses, gamification of education, and development of digital libraries. Among the benefits of digitalization are the following: digitalization stimulates the senses of sight and hearing; interactive learning improves the quality of education; improves the ability to work with learning materials; presentational e-contents are convenient; ensures the quality of educational services in the context of lockdown or military conflicts.

The authors have found that the most common types of digital education are webinars, individual online consultations, work on online platforms, and self-study of educational content. Among the strengths of digitalization, the authors identify constant systematic work, training of specialists who are competitive in the labor market, openness and presentability, modernization of technical support, creation of a single information space, etc.

Among the disadvantages of digitalization are: limited communication, low activity in the classroom, loss of motivation, loss of progress due to insufficient digital competencies, not always high-quality networking, not always qualitative networking, and not always qualitative networking.

Keywords: digitalization of education; digital learning; education student; SWOT-analysis

INTRODUCTION

At the current stage of our country's development, the content of education is being modernized, including in the digital sphere, to meet the dynamics and requirements of the 21st century. The pandemic, war, and conflicts of recent years have shown how important digital transformation in education is. It has become a topic of discussion in academic circles at a difficult time for Ukrainian education. At the current stage of development of the Ukrainian educational system, new teaching technologies have been developed to preserve and develop Ukrainian education based on the best traditions. The relevance of our study is also confirmed by the fact that the events of recent years have demonstrated the importance of digital transformation for every participant in the educational process, educational institutions, society, and states. Analysis of recent publications and research. The basis of digitalization is distance learning. Scientists have studied this issue in their research to gain a full understanding of the concept of digitalization of education in the context of the development of modern society.

ANALYSIS OF RECENT PUBLICATIONS

Ukrainian researchers (V. Bykov (2016), D. Galkin, N. Dukhanina, G. Lesyk (2021), M. Leshchenko (2016), M. Tolmach (2021), P. Tolochko (2019) its.) worked on studying the features of digitalization.

The subject of digitalization is examined by Kovalenko (2021), who focuses on the epidemic of distance learning of a foreign language in higher education institutions. She is attempting to comprehend the fundamentals of the terms "remote learning" and "distance education".

The special characteristics of the topic "foreign language" are the main focus. The organizational and methodological models of distant learning, which are efficient forms of knowledge organization in higher education institutions, are thoroughly analyzed by the author. She provides evidence for the benefits of online courses (Kovalenko, 2021).

Kovalenko (2021) considers the issue of digitalization, in particular, distance learning of a foreign language in a pandemic in higher education institutions. She is working on understanding the essence of the concepts of "distance education" and "distance learning". The focus is on the specific features of the subject "foreign language". The author analyzes in detail the organizational and methodological models of distance learning, effective forms of knowledge organization in higher education institutions. She substantiates the advantages of online classes.

Chaika and Shyshak (2021) support the idea of "digitalization" as a process that involves converting industry information and communication to digital format. It also discusses the experiences of foreign nations (Estonia, Austria,

and Great Britain) with implementing digital transformation in their respective industries. Analysis of education is conducted (use of digital educational information platforms designed to ensure effective communication between students, their parents, teachers, and school administration; active application of digital technologies in education process; and mandatory study of programming and information technologies in general secondary education) the article examined the characteristics of the digitalization of the primary school educational process.

This work is a consistent stage of the authors' achievements in the field of education in Ukraine (Prokopiv, 2014; Karpenko & Prokopiv, 2023). All of the above suggests the need for a detailed analysis of the digitalization of education at the present stage.

The purpose of the article is to analyze the experience of countries around the world in the digitalization of education, to reveal the advantages and disadvantages of digitalization of the educational space, based on theoretical developments and the results of SWOT analysis.

To achieve this goal, the comparative analysis, systematic approach and dialectical method were used.

ANALYSIS OF SCIENTIFIC RESEARCH

The global COVID-19 pandemic and the implementation of strict lockdowns in early 2020 have had a different impact on education around the world. This has led to the need to quickly implement changes in educational processes and develop innovative approaches. Many countries have already introduced emergency curricula and programs for their education systems (OECD, 2020).

In fact, this impact indicates an acceleration of current changes, not a change in their direction. The pandemic and war have led to the fact that predictions of the future have already become a reality. First of all, it concerns the trends towards automation and digitalization. They can be tracked in the World Economic Forum's report The Future of Jobs 2020 (The Future of Jobs., 2020). The report covers employers' plans for 2020–2025. The Future of Jobs study summarizes the results of quantitative and qualitative (in-depth interviews) surveys. The survey data indicate the need to develop databases, cloud technologies, artificial intelligence, etc. The introduction of digital technologies will facilitate not only the use of gadgets, but also subject-to-subject interaction.

It is important for us to understand the term "digitalization". Today, there is no single definition of this concept. Just as there is no such thing as "analog" or "digital" education. Digitalization is just a process of transformation that changes what was previously considered unchangeable. However, since digitalization is taking place in many areas, not just education, we talk about digitalization when not only the object but also the process is digitized. Digitalization in education

means the creation of digital educational content. The terms "digitalization" and "digital transformation" are synonymous (Kravchenko, 2021).

Zhosan (2020) understands digitalization as "the complete digitization of all sectors of the economy and society, as well as the ability to collect relevant information, analyze it and translate it into action" Zhonsan (2020, p.44).

Ukraine is changing rapidly due to the intellectualization of education. What competencies do learners need in the digital, information world? In recent years, the way we communicate and receive information has changed significantly, with computers no longer serving as the primary medium. When mobile devices are always at hand, the question arises: how important is the knowledge gained in educational institutions?

The consequences of the war have changed our attitude to digital tools and remote work. Over the past year, 84% of about 800 respondents to our survey (about 8,000 people), both teachers and students, were forced to perform some of their duties outside of educational institutions.

We believe it is advisable to study the experience of the world's leading countries that have achieved results in this area in order to use them in the practice of Ukrainian educational institutions. The European experience makes it possible to implement new approaches to digitalization, in particular, to develop the ability to create content, develop online materials, etc. Scientists and practitioners are constantly working on developing programs for the digitalization of education. For example, the Chinese educational system is switching to online classes. In the United States, working and consulting groups are being set up to help educators and students learn in a new and complex reality. Many countries have closed offline education at both the national and regional levels (Italy, France, Germany, Portugal, etc.).

According to a survey conducted by UNESCO and the World Bank, more than 1.5 billion students have switched to online learning in recent years due to the COVID-19 pandemic (UNESCO, 2020).

Let's analyze the results of the quality of knowledge gained during the digitalization of education. In the first half of the year, according to the data, students in 108 countries missed about 47 days of school. This information indicates that the pandemic and difficult life changes have damaged educational systems.

How to get out of this situation? There are two aspects of digitalization: the development of digital education in high- and low-income countries. Almost all respondents from high-income countries confirmed the need for digitalization through online platforms, television and the Internet (UNESCO, 2020). In high-income countries (Canada, the USA, New Zealand, and EU member states), digitalization has become the norm, and online learning is considered as traditional. Nevertheless, 4/5 of the respondents belong to low-income countries (Korea,

Syria, etc.). They have not achieved a high level of digitalization. The Ukrainian educational system is becoming more active in this regard, and digitalization is proceeding at a rapid pace (*Pro zatverdzhennia Polozhennia*…, 2019; *Nakaz Ministerstva osvity*…, 2021).

It should be noted that improving digitalization in many areas of life changes the requirements for the Ukrainian education system. On the one hand, learning how to use digital education properly is an important educational goal, and on the other hand, it is the basis for studying educational components.

Digitalization of education also immerses educational technologies. The use of immersive learning technologies (augmented, virtual and mixed reality), cloud technologies, mobile and Internet technologies, distance education, massive open online courses, gamification of the educational process, development of electronic libraries are the main directions of digitalization of the educational process (Dukhanina & Lesyk, n.d.).

A useful example is that after the introduction of digital education, in particular distance learning, in 2020 in the Republic of Poland, only a third of students used computers or smartphones daily to study or deepen their knowledge, while the majority studied traditionally, making notes by hand in a notebook, and electronic equipment was used mainly for entertainment (Dukhanina & Lesyk, n.d.).

According to research, digitalization of education makes learning collaborative and interactive. Virtual and augmented reality are just a few examples of transformative technologies that help educators create engaging classes.

ANALYSIS OF EMPIRICAL STUDIES

We conducted a SWOT analysis in three Ukrainian universities (Vasyl Stefanyk Precarpathian National University, Ivan Franko Drohobych State Pedagogical University). About 2,000 respondents took part in the survey. The analysis focused on the state of digital education and the level of online education by degree of immersion. It made it possible to understand the benefits of digitalization, identify opportunities to outline prospects, and develop recommendations for the use of certain types of education (see Figure 1).

As you can see from the chart, the average percentage of satisfaction with the level of digital education is approximately 75.5%. In today's world, this is far too low. How can we change this situation? We believe that it is worth working hard and moving on to the direct creation of accredited qualification centers and officially approved virtual courses.

We have studied the satisfaction of higher education students with digital education platforms and some aspects of educational support, which will allow us to identify the strengths and weaknesses of the digitalization of education (Figure 2).

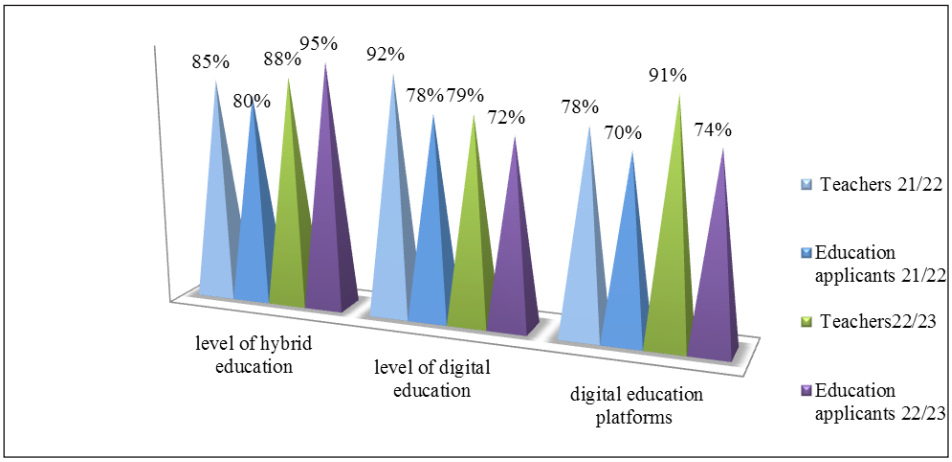

Figure 1. Satisfaction with the digitalization of education and its support

Source: Authors' own elaboration.

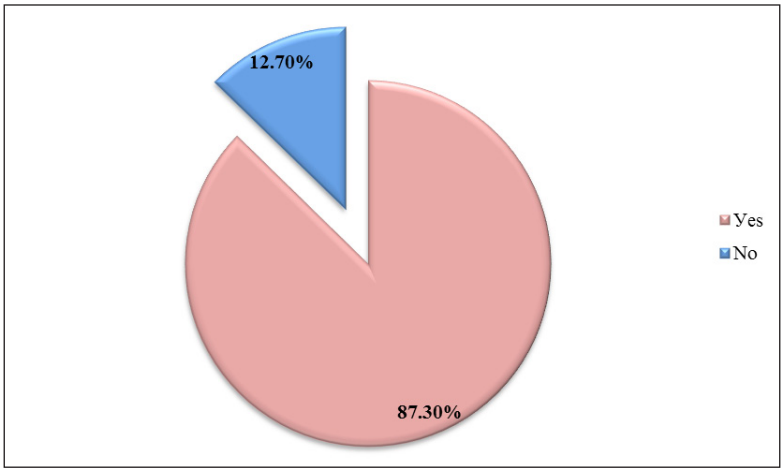

Figure 2. Satisfaction with digital education platforms

Source: Authors' own elaboration.

Here, it is necessary to work on such components of digitalization as flexibility, productivity, adaptation of students to personal needs, international cooperation, focus on research, etc.

In this context, let us identify the main trends of digital transformation in education:

1. Digitalization improves the quality of education. Modern traditional education is commonplace. However, traditional forms of education make it difficult

to understand the level of knowledge of each individual. Digitalization makes it possible to use active, personality-oriented learning and conduct online classes. Since students work directly with technical learning tools, the teacher can understand the level of knowledge of each individual through electronic media. Everyone sees each other's work and tasks. This opens up more opportunities to ask students' opinions for the sake of overall learning awareness.

2. Almost all higher education students now have digital devices, so acquiring digital skills is natural. Digitalization in society continues. In addition, you can get more than just an acquaintance. The Internet always has a huge amount of information.
3. The digitalization of education reduces the workload of teachers by eliminating unnecessary paperwork and automating it. This will relieve the teaching staff of difficulties in checking assignments, as it will be easier to share educational content in electronic format, and the use of gadgets eliminates the need for students to work with papers during classes. In addition, automated checking changes the workload of teachers and allows them to spend more time with students. Active communication contributes to a better understanding of students' problems and increases the likelihood of their prompt resolution.
4. Implementation of the concept of "No Paper or Book" to preserve the environment and reduce the burden on students. Digitalization of education facilitates the provision of educational services in the context of lockdown or military conflicts (as in Ukraine). It is believed that digitizing education is good for the environment. Now that environmental issues are coming to the fore, we dare say that education should be digitized as soon as possible.
5. Digital education is the education of the future. The challenges of digitalization mean that many new opportunities are opening up for us, as well as the development of innovative educational services that will have both a positive and negative impact on the quality of life.

McKinsey, for example, conducted a survey among more than 2,500 teachers from eight countries (including Canada, France, Germany, Japan, the United Kingdom, the United States). In the study, educators were asked to rate the effectiveness of digital technologies. The results showed that the highest score was 6.6. (*Online learning gets*…, 2021).

A study conducted by the Center for Population Sciences at the University of Oxford showed that despite the fact that digital education is very high here, younger students lost 20% of the expected progress, despite the high quality of distance education (Shkarlet, 2021).

Another fact, as the survey showed, is the growing demands for rapid change and new digital tools. We analyzed the results of a Clickmeeting survey conducted in Poland. It was found that a little more than half of the respondents are not

satisfied with digital learning, including distance learning. Nevertheless, despite the variety of interactive educational technologies, such as virtual, mixed or augmented realities, video formats, games, and online communication between teachers and students, the need for guided learning has increased.

Today, the need for hybrid education has increased. This prompts us to think about the need to combine offline and online learning elements.

After the pandemic and the war, the hybrid version of education can be implemented, because digital learning platforms and technical support remain in higher education institutions. It is necessary to organize digital literacy training for all educators, cooperate with other HEIs, and participate in faculty and student mobility. Potentially, such cooperation will help create a common information space and a single cohesive network of connections. In addition, access to international platforms with training courses provides access to high quality education in Ukraine. Hybrid learning is essential to ensure a modern and effective educational process. The main figures that confirm this need are presented in the diagram (Figure 3).

Yet the digitalization of education has both advantages and challenges. One example is that 3.6 billion people on the planet do not have access to the Internet. The most vulnerable are people with disabilities, marginalized groups, women, children and youth from socioeconomically disadvantaged backgrounds, or those living in areas or countries currently at war or conflict. Lack of access to the Internet limits educational opportunities, leading to digital divide and gaps in the quality of education (Shkarlet, 2021).

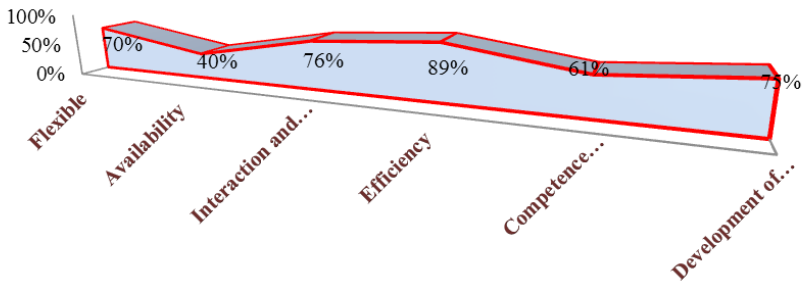

Figure 3 The need to combine offline and online learning

Source: Authors' own elaboration.

The UN Strategy for the period up to 2030 actualizes this topic. In particular, the Strategy emphasizes that everyone should have safe access to the Internet, especially children and youth, and that improving the quality of life is linked to the development of digital skills. The Strategy emphasizes reducing inequality in education and developing digital skills (Shkarlet, 2021).

Let us analyze the shortcomings of the digitalization of the educational space:

- the lack of full-fledged digital educational ecosystems, logistical problems in education, in particular, access to the Internet and access to the necessary devices;
- participants of the educational process still do not achieve the expected progress in civic learning;
- the workload of teachers is increasing due to the lack of digital competencies.

CONCLUSIONS

Thus, studying the experience of digitalization in the leading countries of the world, we can highlight the changes that can be traced in Ukrainian education today in this direction:

- educational institutions, especially higher education institutions, should not only provide education, but also serve as a platform for innovation, which is impossible without the integration of science and practice;
- combining the resources of higher education institutions, governmental and non-governmental organizations, and commercial organizations to design and implement joint projects, develop online platforms for learning and research;
- the possibility of creating educational trajectories adapted to individual needs;
- the use of non-traditional education at the same level as traditional education, which can be explained by the growth of innovative competencies.

Based on the survey and SWOT analysis, we offer recommendations and suggestions for the use of online and offline learning:

1. Develop a technological infrastructure for the successful implementation of the hybrid model.
2. To train the teaching staff. This includes skills in using video conferencing platforms, creating online materials, and organizing real-time interaction with students.
3. Develop a clear structure and organization of hybrid learning that defines the distribution of time between online and offline activities, methods of assessment and feedback, and the role of interactive online resources and platforms.
4. Create incentives for students to actively participate in the digitalization of education, such as joint projects, discussions, and group assignments, etc. This will promote interaction, cooperation, and engagement in the educational process.
5. Increase access to education for students regardless of their location. This is especially important for those who live remotely or have limited opportunities to attend classes.

Thus, digitalization is seen as one of the key components of improving education in Ukraine. It not only affects the effectiveness of learning, but also

offers many advantages. Among these benefits are that learning material becomes easier to understand; education is of better quality; teachers work more efficiently, which reduces their workload; and the concept of "no paper notebooks and books" contributes to environmental preservation.

The research we have conducted has confirmed that the problem of digitalization of higher education of the future is very relevant, and therefore it is necessary to continue to research these issues. In particular, to improve the quality of education, we need to study the features of digital teacher training in the world's leading countries.

REFERENCES

Bykov, V., & Leshchenko, M. (2016) Tsyfrova humanistychna pedahohika vidkrytoi osvity [Digital humanistic pedagogy of open education]. *Teoriia i praktyka upravlinnia sotsialnymy systemamy*, *4*, 115–130.

Chaika V.M., & Shyshak A.M., (2021). Didzhytalizatsiia pochatkovoi osvity: problemy i perspektyvy. [Digitalization of primary education: problems and prospects]. *Pedagogical Almanac*, (50), 38–47. **DOI: 10.37915/pa.vi50.301**

Dukhanina, N., & Lesyk, G. (n.d.). Tsyfrovizatsiia osvitnoho protsesu: problemy ta perspektyvy [Digitization of the educational process: problems and prospects]. https://ela.kpi.ua/bitstream/123456789/49235/1/p.406-409.pdf

Karpenko, O., & Prokopiv. L. (2023). Onlain navchannia u zakladakh vyshchoi osvity v umovakh rosiisko-ukrainskoi viiny.[Online learning in higher education institutions in the context of the Russian-Ukrainian war]. *Aktualni pytannia humanitarnykh nauk: mizhvuzivskyi zbirnyk naukovykh prats molodykh uchenykh Drohobytskoho derzhavnoho pedahohichnoho universytetu imeni Ivana Franka rs* [Humanities science current issues: Interuniversity collection of Drohobych Ivan Franko State Pedagogical University], *63*(2), 203–209. [in Ukrainian]. **DOI: 10.24919/2308-4863/63-2-33**

Kovalenko A. (2021). Dystantsiine navchannia inozemnoi movy za umov pandemii: spetsyfika form i metodiv roboty [Distance learning of a foreign language in pandemic conditions: specifics of forms and methods of work]. *Aktualni pytannia humanitarnykh nauk* [Topical issues of the humanities], *35*(3), 250–255. [in Ukrainian]. **DOI: 10.24919/2308-4863/35-3-37**

Kravchenko, S. (2021). Tendentsii rozvytku shkilnoi osvity u ShA [Trends in the development of school education in the USA]. In: O. Lokshina N., *Naukovo-praktychna konferentsiia vseukrainskoho rivnia "Zmist i tekhnolohii shkilnoi osvity"* [Content and technologies of school education] (pp. 174–219). Kyyiv : KONVI PRINT in Ukrainian].

OECD. (2020). *Education responses to COVID-19: Embracing digital learning and online collaboration*. OECD. https://read.oecd-ilibrary.org/view/?ref=120_120544-8ksud7oaj2&title=Education_responses_to_Covid-

Online learning gets failing grades from teachers across the globe. (2021). McKinsey & Company. https://www.mckinsey.com/featured-insights/sustainable-inclusive-growth/chart-of-the-day/online-learning-gets-failing-grades-from-teachers-across-the-globe.

Prokopiv, L. (2014). *Informatsiini tekhnolohii navchannia: navchalno-metodychnyi posibnyk* [Information technologies of education: a study guide]. Ivano-Frankivsk: Play.

Redakcja CEO. (2021). Cyfryzacja edukacji – przyszłość edukacji w hybrydowej rzeczywistości. *CEO Magazyn*. https://ceo.com.pl/cyfryzacja-edukacji-przyszlosc-edukacji-w-hybrydowej-rzeczywistosci-64964

Shkarlet, S. (2021). *Syfrova transformatsiia osvity i nauky ye odniieiu z kliuchovykh tsilei MON na 2021 rik* [The digital transformation of education and science is one of the key goals of the Ministry of Education and Science for 2021]. https://mon.gov.ua/ua/news/cifrova-transformaciya-osviti-i-nauki- ye-odniyeyu-z-klyuchovih-cilej-mon-na-2021-rik-sergij-shkarlet [in Ukrainian].

Tolmach, M., (2021). Onlain-navchannia yak vyklyk dlia mystetskoi osvity. [Online Learning as a Challenge for Art Education]. *13-ta Mizhnarodna konferentsiia z osvity ta novykh tekhnolohii navchannia Onlain-konferentsiia* [13th International Conference on Education and New Learning Technologies Online Conference] 23 May 2023, Kyyiv: KIPH, 2023, 5–6. [in Ukrainian].

Tolochko, S., (2019). Vymohy tsyfrovoho suspilstva do kompetentnosti pedahohiv u systemi pisliadyplomnoi pedahohichnoi osvity [The requirements of the digital society for the competence of teachers in the system of postgraduate pedagogical education]. *Innovatsiyna pedahohika* [Innovative Pedagogy], *12*(2), 178–181. [in Ukrainian]. **DOI: 10.32843/2663-6085.2019.12-2.40**

UNESCO, (2020). *What have we learnt? Overview of findings from a survey of ministries of education on national responses to COVID-19*. **DOI: 10.1596/34700**

World Bank Country and Lending Groups – World Bank Data Help Desk. (date accesse: 03.12.2023). https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

Zhosan, H. (2020). Stan rozvytku didzhytalizatsii v Ukraini [The state of development of digitalization in Ukraine]. *Ekonomichnyi* analiz [Economic analysis], *1*(2), 44–52. [in Ukrainian]. **DOI: 10.35774/econa2020.01.02.044**

LEGAL ACTS

Nakaz Ministerstva osvity i nauky Ukrainy pro zatverdzhennia Polozhennia pro elektronni osvitni resursy, No. 1060. [Order of the Ministry of Education and Science of Ukraine on approval of the Regulations on electronic educational resources, No. 1060]. (2012). https://zakon.rada.gov.ua/laws/show/z1695-12#Text [in Ukrainian]

Pro zatverdzhennia Polozhennia pro dystantsiine navchannia: Nakaz MON Ukrainy, No. 466 [On approval of the Regulation on distance learning: Order of the Ministry of Education and Science of Ukraine, No. 466]. (2013). https://zakon.rada.gov.ua/ laws/show/z0703-13#Text. [in Ukrainian].

ABSTRAKT

Artykuł analizuje problematykę digitalizacji w systemach edukacyjnych świata i Ukrainy. Autorzy na podstawie przeprowadzonej analizy SWOT określili wady i zalety digitalizacji ukraińskiego systemu edukacji. Zidentyfikowano główne obszary digitalizacji: wprowadzenie technologii immersyjnych, chmurowych, internetowych, kursów online, grywalizacji edukacji, rozwoju bibliotek cyfrowych. Wśród zalet digitalizacji wyodrębnia się: digitalizacja stymuluje narządy wzroku i słuchu; interaktywne uczenie się podnosi jakość kształcenia; poprawia się umiejętność pracy z materiałami edukacyjnymi, prezentacyjne e-treści są wygodne, zapewniona jest jakość świadczenia usług edukacyjnych w warunkach lockdownu lub konfliktów zbrojnych.

Zbadano, że najbardziej rozpowszechnionymi rodzajami edukacji cyfrowej są webinaria, indywidualne konsultacje on-line, praca na platformach internetowych oraz samodzielne przetwarzanie treści edukacyjnych. Mocne strony digitalizacji określa się jako ciągłą pracę systemową, szkolenie specjalistów, którzy są konkurencyjni na rynku pracy, otwartość i reprezentatywność, unowocześnienie zaplecza technicznego, stworzenie jednolitej przestrzeni informacyjnej itp. Wskazuje się na wady digitalizacji: ograniczona komunikacja, mała aktywność

na zajęciach, utrata motywacji, brak postępów z powodu niewystarczającego poziomu kompetencji cyfrowych, nie zawsze wysokiej jakości treści online. Analizując doświadczenia digitalizacji w wiodących krajach świata, nacisk kładzie się na zmiany w ukraińskiej edukacji: współpraca, udział w mobilnościach edukacyjnych, możliwość interakcji uczestników procesu edukacyjnego, tworzenie wspólnej przestrzeni informacyjnej i e-sieci połączeń, możliwość nauki równoległej, dostęp do międzynarodowych platform ze szkoleniami.

Słowa kluczowe: digitalizacja edukacji; cyfrowe uczenie się; uczeń (poszukiwacz); analiza SWOT