

**CHALLENGES AND PROSPECTS FOR THE DEVELOPMENT OF ONLINE  
EDUCATION IN UKRAINE: IMPLEMENTATION EXPERIENCE AND WAYS  
OF FURTHER DEVELOPMENT**

*DESAFIOS E PERSPECTIVAS PARA O DESENVOLVIMENTO DA EDUCAÇÃO EM  
LINHA NA UCRÂNIA: EXPERIÊNCIA DE IMPLEMENTAÇÃO E FORMAS DE  
DESENVOLVIMENTO FUTURO*

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### **ABSTRACT**

Due to the rapid development of technologies, the study of the problem of the implementation of online education acquires special importance. In Ukraine, this process is accompanied by separate challenges and opportunities that require detailed analysis. The main goal of the study is to study the prospects and problems of the development of online education in Ukraine through the analysis of qualitative and quantitative data collected from literary sources and surveys of participants. Therefore, the study uses a mixed approach to studying the problem. The date range of literature selection: from 2018 to 2024, including some works from 2015. The survey was conducted from January 2024 to May 2024 among 77 participants: 45 students and 32 teachers from various educational institutions of Ukraine. Therefore, the analysis showed that the implementation of the online system faces challenges, in particular, infrastructure problems, technical difficulties and energy interruptions are noticeable. Also, based on the survey, students noted a low level of motivation. The conclusions emphasize the importance of implementing innovative solutions in the online education support environment and offer various recommendations for further steps in the system of improving this approach. Thus, the study contains an important practical component for the development of the following mechanisms for improving the quality of online education in Ukraine.

**Keywords:** online environment, Ukraine, problems, advantages, promising solutions.

### **RESUMO**

Devido ao rápido desenvolvimento das tecnologias, o estudo do problema da implementação do ensino em linha adquire especial importância. Na Ucrânia, este processo é acompanhado por desafios e oportunidades distintos que exigem uma análise pormenorizada. O principal objetivo do estudo é estudar as perspectivas e os problemas do desenvolvimento do ensino em linha na Ucrânia através da análise de dados qualitativos e quantitativos recolhidos de fontes literárias e de inquéritos aos participantes. Por conseguinte, o estudo utiliza uma abordagem mista para estudar o problema. O intervalo de datas da seleção da literatura: de 2018 a 2024, incluindo alguns trabalhos de 2015. O inquérito foi realizado de janeiro de 2024 a maio de 2024 entre 77 participantes: 45 estudantes e 32 professores de várias instituições de ensino da Ucrânia. Por conseguinte, a análise mostrou que a implementação do sistema em linha enfrenta desafios, em particular, problemas de infra-estruturas, dificuldades técnicas e interrupções de energia. Além disso, com base no inquérito, os estudantes notaram um baixo nível de motivação. As conclusões sublinham a importância da implementação de soluções inovadoras no ambiente de apoio à educação em linha e oferecem várias recomendações para novas etapas no sistema de melhoria desta abordagem. Assim, o estudo contém uma componente prática importante para o desenvolvimento dos seguintes mecanismos de melhoria da qualidade do ensino em linha na Ucrânia.

**Palavras-chave:** ambiente em linha, Ucrânia, problemas, vantagens, soluções prometedoras.

## Introduction

Recently, online education has become a chief element of the educational process in Ukraine, especially given the challenges posed by the COVID-19 pandemic and the war. At the same time, the experience of introducing online education, as defined in some works, shows that it can be an effective tool for improving the quality of education, especially in critical conditions (BOIKO et al., 2024; TURCHYN et al., 2023). However, some authors emphasize a number of problems faced by online education. These include uneven access to technical means, insufficiently qualified teacher training (the so-called digital competence), and the important need to adapt curricula and methods to new conditions (BYRKO et al., 2022; SHEVCHENKO et al., 2020). Therefore, the challenges and prospects for the development of online education in Ukraine attract the attention of both educators and government agencies, as this issue is of strategic importance for the future functioning of Ukrainian education (MESHKO et al., 2023).

Thus, this research problem is particularly important in the modern scientific field. In particular, on the one hand, the development of technology opens up new opportunities for access to knowledge, and on the other hand, there are a number of obstacles that need to be overcome. Despite these difficulties, the prospect of developing online education in Ukraine is relevant. Professional qualified teacher training and its further development, as well as the creation of high-quality e-learning materials, can be key steps towards the integration of online education into the national education system.

Therefore, the purpose of this study is to analyze the main challenges and prospects for the development of the online education system in Ukraine through the analysis of implementation features. The main objectives of the study are: characterization of the current state of study of this research problem; identification of the major challenges to the progress of the online learning environment; formation of promising areas for its further improvement and reform.

## Literature review

Current research has identified the impact of digital and electronic technologies on the development of education. Contemporary authors have described various theoretical aspects of digitalization in the Ukrainian educational space, identifying key problems and mechanisms for solving them (BAKHMAT et al., 2022; SHEVCHENKO et al., 2020). Taking into account recent research, BUSHMAN (2022) determined that the widespread use of e-learning tools will play an important role in future education. DOVHAL, TUKHTAROVA, VOLOKITINA (2021) identified the main mechanisms for implementing a distance education system, determined its effectiveness and functionality. GALYNSKA and BILOUS (2022) characterized the main challenges faced by higher education in Ukraine during the war. In the context of distance learning, the authors identified limited access to the Internet, technical problems, and emotional difficulties for students.

JAMALOVA, and BÁLINT (2022) identified how students accept e-learning during the COVID-19 pandemic. Using technology acceptance models to understand the key factors that influence the success of e-learning adoption, these scholars proved the important role of electronic special programs that support students. At the same time, KRYLOVA-GREK and SHYSHKINA (2021) described the main achievements, challenges, and prospects for implementing an online learning system in Ukrainian higher education institutions. The researchers also discussed some technical aspects and issues of teacher training. KULIKOWSKI; PRZYTUŁA and SUŁKOWSKI (2021) also drew attention to some problems with the implementation of online education. Besides, MARCHENKO (2023) described some of the difficulties faced by education in Ukraine in general during the war. The researcher approached this problem comprehensively and drew attention to both individual institutional issues and the effectiveness of implementing various innovative means of supporting education.

At the same time, LARSARI (2023) determined the effectiveness of implementing a blended approach (a combination of traditional and online systems). The study provides results on the effectiveness of this approach. Also,

MAHALLI; NURKAMTO; MUJIYANTO; YULIASRI (2019) discusses the features of implementing a blended learning model and characterizes the role of online work. Some innovative tools are presented in the work of MERENIUK and PARSHYN (2023), which highlights the role of an innovative approach to the development of modern textbooks.

NAZARENKO (2015) determined the effectiveness of blended learning compared to traditional learning based on a case study, examining the advantages and disadvantages of these techniques. Thus, modern authors have described various aspects of the introduction of electronic technologies that ensure the effective functioning of the education system. However, this problem is not fully covered and needs to be studied more thoroughly by considering the peculiarities of implementing this form of education and ways to further improve it.

## **Methodology**

The study was implemented during 01.2024 - 05.2024. Data collection was carried out in stages. First, the main literature for the study was found, on the basis of which the theoretical framework of the research problem was characterized. The criteria for including the literature were based on relevance and relevance to the topic. There was also a specific date range<sup>6</sup> from 2018 to 2024. This was done in order to include only relevant information relevant to the study of this problem. At the same time, several older papers were included, as they contain great value for the study.

Participants were included in the study through a random sampling. The experiment involved all willing students who had experience of learning on online platforms. In total, 45 students and 32 teachers from different educational institutions of Ukraine took part in the study. A total of 77 participants (see Table 1-2).

Table 1 – Demographic data for students

Age	%	Gender (M)	Gender (F)	Bachelor	Master	Other
Up to 20 years old	50%	55%	45%	90%	5%	5%
20-25 years old	43%	65%	35%	60%	30%	10%
25-30 years old	7%	70%	30%	30%	50%	20%

Source: Authors' development.

Table 2 – Demographic data for teachers

Age	%	Gender (M)	Gender (F)	Teaching experience (0-5 years)	Teaching experience (5-10 years)	Teaching experience (10+years)
Up to 20 years old	0%	-	-	-	-	-
20-29 years old	10%	60%	40%	80%	20%	0%
30-39 years old	30%	50%	50%	10%	70%	20%
40 years and older	60%	45%	55%	0%	10%	90%

Source: Authors' development.

Therefore, the study includes participants with different teaching experience and education levels in order to comprehensively describe the problems of implementing online education in Ukraine.

### Instruments

The main tool for studying the peculiarities of online education in Ukraine is a survey conducted among students and teachers. The questions concerned the frequency of use of online education tools, learning platforms, and the identification of the main difficulties and promising solutions to improve the education system.

1. How often do you have online classes?
2. What platforms do you use for learning?
3. What difficulties have you encountered during online learning/teaching?
4. How do you assess the effectiveness of online learning compared to traditional learning? (rate from 1 to 5).

5. What are the advantages of online education?
6. What do you think could be improved in online education in Ukraine?  
(Select all that apply)
  - Improving the level of technical support
  - Improvement of teaching materials
  - Increasing interaction between students and teachers
  - Development of motivational programs for students

### **Date Analysis**

The data analysis was carried out taking into account modern technologies and methods. In particular, the content analysis of modern literature was used to characterize the main technologies used in online education. A thematic analysis of the responses of the participants of the experiment was also carried out, which characterized the attitude of students and teachers to the online education system. A comparative analysis of the results obtained with some results of other scholars is also used.

### **Results**

The system of online education has become an important element of the global educational background, especially with the spread of the COVID-19 pandemic and the Russian-Ukrainian war. Since the advent of online learning, there are no longer any physical or geographic barriers to learning (PARLIŃSKA, 2022). It has allowed students from Ukraine to access education despite of their location or social status (TRUITT & KU, 2018; SHEVCHENKO et al., 2020).

Online education promotes learning at one's own pace and the choice of courses or learning materials that meet the exact needs and interests of learners. For students, it allows for individualized learning and self-education. Numerous online resources and channels exist in Ukraine that offer learning and remote education options. Specifically, a number of universities are developing their own

online learning environments. When asked how often online classes are held, the majority of respondents indicated several times a week (54.55%). Some times a month, 10.39% of respondents take online classes several times a month.

Table 3 – Frequency of online education

Every day	11	14.29%
2-3 times a week	42	54.55%
Once a week	15	19.48%
2-3 times a month	8	10.39%
Once a month	1	1.29%

Source: Authors' development.

Thus, a high frequency of using online learning was found among the surveyed students and teachers. The most common platform for teaching and learning is Zoom (54 people indicated it). Microsoft Teams and Google Meet also play an important role. Learning environment management platforms are also important. Moodle and Google Classroom are the most popular.

Table 4 – The main platforms for implementing online education

Platform	N	%
Learning platforms		
Zoom	54	70,13%
Microsoft Teams	13	16,88%
Google Meet	10	12,99%
Organizational platforms		
Moodle	42	54,55%
Google Classroom	27	35,06%
Others	8	10,39%

Source: Authors' development.

The list of issues that participants in the educational environment encounter is substantial, even though governments and educational institutions at different levels have quickly adapted to the online education system. In particular, in the context of online education, an important and noticeable challenge is the accessibility of education for students studying in areas lacking the requisite infrastructure (Internet and mobile connectivity) (15% of respondents). Separately, the issue of availability of special gadgets that are necessary in the online learning



environment is also a critical issue. Since the full-scale invasion, blackouts have become an important challenge (noted by 25% of respondents).

Other important difficulties that were mostly mentioned by students were the lack of a high level of motivation and insufficient level of learning materials (10% and 13% respectively). It should be noted that the implementation of online education requires teachers to have both appropriate digital training (digital competence) and the use of various interactive materials. The use of multimedia technologies contributes to greater student engagement in learning. Other notable problems are low level of interaction with teachers or students (10%) and problems with time management (3%) (See Table 5).

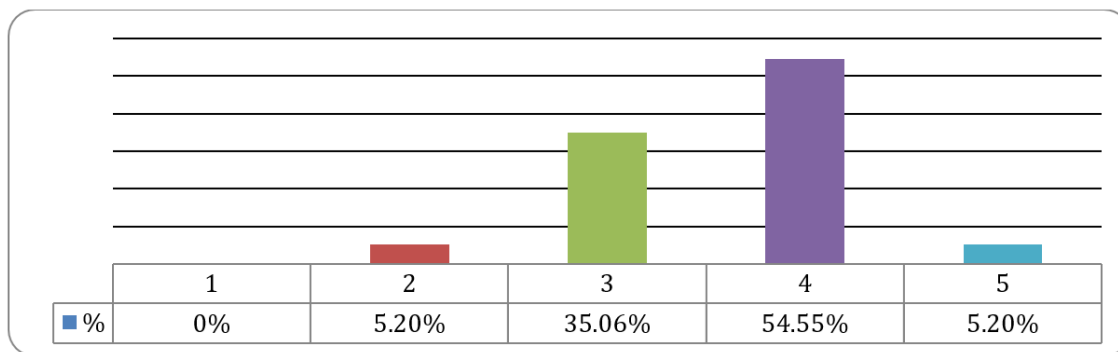
Table 5 – Main difficulties in implementing online education in Ukraine

Challenges	Description	%
Technical problems	Low Internet speed, lack of electricity, lack of appropriate material support	40%
Lack of motivation	Low level of interest in learning, lack of motivation	13%
Problems with time organization	Unwillingness to organize their time and study space, lack of time	18%
Interaction with the teacher-student	Low level of interaction between students and teachers, lack of proper support	10%
Insufficient level of educational materials	Presentation of educational materials is not interesting, interactive and does not contribute to the formation of new knowledge	19%

Source: Authors' development.

Thus, there are a number of different challenges that need to be addressed. At the same time, modern teachers and students generally rate the effectiveness of online learning highly. In particular, when asked how do you rate the effectiveness of online learning compared to traditional learning, most respondents indicated 4 points (54.55%). The level of effectiveness was also rated at 5, 3, and 2 points.

Figure 1 – Survey results of a on the effectiveness of online learning compared to traditional



Source: Authors' development.

This state of evaluation is explained by the advantages of online education. In particular, this system of education is flexible and accessible to everyone. Another important advantage is access to a wide range of resources. In particular, it is possible to use online libraries and courses from other universities. There are also savings in the material and technical resources of the educational institution and the funds of the students themselves.

Therefore, taking into account the advantages, the using of online learning provides a more adaptive and flexible approach to learning. The respondents were also asked to point out some areas for improving the development of online education. In particular, 12 people emphasized improving the quality of learning materials and increasing interaction between all participants in the learning process.

Another important area is the development of qualified motivational programs for students (27 people). The most important factor was improving the level of technical support (38 people). Thus, promising areas for the development of online education include improving the interaction between all participants in the learning.

It is also necessary to develop the digital skills of teachers in order to effectively develop competitive graduates within the space of the Fourth Industrial Revolution (NEDERMEIJER, 2023; PARLIŃSKA, 2022). It is important that digital competence covers several important areas: collaboration, information and media literacy; creation of interactive digital learning content; cybersecurity.

Table 6 – Enhancing education: Innovative strategies and technologies

Vector	Description
Innovative approach to the management system	Fighting bureaucracy and changing the educational institution into one that supports talented teachers. Granting gifted scientists more opportunities
Use of modern technologies	To improve the level of motivation, it is proposed to use modern technologies, including virtual reality, artificial intelligence, and simulation technologies
Formation of a flexible virtual environment	Formation of a flexible innovative virtual educational environment that will be designed to improve each student's unique strengths and accommodate for their own demands
Improving the digital competence of teachers	Development of information and media literacy, communication and collaboration skills, creation of interactive digital learning content, and skills to ensure a safe digital environment

Source: Authors' development.

Thus, these areas demonstrate only some promising solutions. The formation of a flexible virtual educational environment can be realized through the use of tutoring, a technique for individualized instruction that entails setting up the necessary frameworks for a subject's admission into the learning process. Innovative tutoring practices in higher education will enable Ukrainian universities to better integrate into the European educational community.

## Discussion

The results offer an understanding of online education as an important element of the modern digital space against the backdrop of the spread of the consequences of the global COVID-19 pandemic and, which is extremely relevant for Ukraine, the deepening of Russian aggression. The obtained results establish that online education was an important step towards providing students from Ukraine with quality access to education, and that this process did not take into account their current location, social status, or other circumstances. Similar democracy in

determining the impact of online education on modern educational processes was also emphasized by other researchers (OPRYSHKO et al., 2024).

Also, the obtained results confirm the opinions of scientists that online education contributes to the development of specific learning trajectories, which is determined by taking into account the specific needs and interests of the students of education (ŠEBO; PAL'OVÁ, 2020). The positive effect is facilitated by the frequency of using online technologies: the absolute majority of respondents noted a high frequency (2-3 times a week) of using online technologies. These data are adjusted with surveys conducted by other scientists.

For example, Rajab (2018) noted that during the military crisis, there was no recorded decrease in the quality of education received due to the transition to the use of digital technologies in education, and the frequency of their use only improves the desired effect in education. It is obvious that this trend will continue, as the integration of online technologies into educational processes will only grow.

The obtained results indicate the popularity of the Zoom platform for conducting classes. Probably, this can be explained by the fact that in the conditions of the pandemic, Ukrainian teachers turned to a simple and effective online tool. In other countries, it is difficult to confirm or deny such data. In particular, some researchers prefer Zoom for organizing the educational process (RAJAB, 2018), others point to the importance of Microsoft Teams (VAUGHAN, 2021).

However, overall, all studies concluded that Zoom, Microsoft Teams, and Google Classroom are the leading platforms for organizing learning in the digital age. At the same time, during the operation of these services, technical problems are most often noted. In Ukrainian conditions, they are most often caused by problems of the consequences of war, in particular, unstable connection or periodic blackouts.

Other researchers who looked at challenges in a more stable environment primarily pointed to challenges related to the need to independently control one's time and the lack of appropriate competence (PANASENKO, 2023). Considering the fact that this item became the second in the proposed results, it is also relevant, although in the conditions of war it is inferior to more important problems.

The information that the use of online education in critical environments is important is supported by research studies that explore the challenges and benefits of this learning format. Modern scholars also emphasize the importance of developing accessible infrastructure (BUT & PANCHENKO, 2016). The studies also emphasize the importance of developing and maintaining motivation, which affects students' engagement in the learning process. Besides, the study by TRUITT & KU, Heng-Yu (2018) found differences in students' perceptions of blended learning, which includes online elements. The researchers also emphasized the importance of developing motivation.

The study also points to problems with time management, which is a key factor for the success of online learning. Further, the work of PARLIŃSKA (2022) emphasized the importance of effective time management in online learning. This study also demonstrated the existence of similar difficulties in implementing online education. Hence, this study reflects the current challenges and benefits of online education in Ukraine, focusing on technical aspects. Comparative analysis with other studies makes it possible to realize that many of the problems and benefits of online education are universal for many countries, but there are also specific features in Ukraine due to the spread of the Russian-Ukrainian war.

The high efficiency ratings that online learning received from the respondents also correspond to the indicators of other researchers (BARBER, 2023; PICCIANO, 2018). Probably, the further evolution of online education may be connected with the use of separate educational applications formed on the basis of training programs for future specialists (POLITOVA et al., 2022; RYCHKA, 2024). Accordingly, the issue of using digital technologies, in particular artificial intelligence technologies, is relevant in the future.

Besides, the proposed study has certain methodological limitations. First of all, we are talking about subjectivity, which is inherent in every survey. Taking into account different aspects of the use of online technologies demonstrates that the issues that are important in their educational institutions may be relevant for different respondents. This creates a larger slice of the real problems of educational institutions than the wishes of the respondents. However, such a limitation indicates

more the need for further research of the proposed problem rather than demonstrating difficulties with the already obtained results.

## Conclusions

Thus, online learning is an central form of growth of the Ukrainian education system. However, a number of difficulties have been identified that stand in the way of its implementation. In particular, there is a significant problem with the availability of the necessary technologies and Internet connection, which is a significant limitation for many participants in the educational development. In addition, the lack of high-quality mobile communication and Internet in some regions hinders the organization of online classes. In the space of widespread digitalization, difficulties arise with technical support and reliability of electricity supply. These aspects affect the quality of receiving educational services. On the other hand, the low level of motivation among students and teachers and the lack of quality educational materials are noticeable.

The low level of interaction between the participants of the educational process and problems with time management require the development of innovative approaches to stimulate active interaction in order to improve the system of online education and time control. The research proposed the following vectors for the further development of this system: an innovative approach to the management system, the use of modern technologies, the formation of a flexible virtual environment and the improvement of digital competence. Besides, the further development of online education in Ukraine requires a comprehensive approach to solving certain technical, social and organizational issues.

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