

Effectiveness of Distance Learning in Higher Education Institutions under the Martial Law

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Received: June 23, 2022

Accepted: August 16, 2022

Online Published: September 14, 2022

doi:10.5430/jct.v11n6p78

URL: <https://doi.org/10.5430/jct.v11n6p78>

Abstract

The aim of the research was an empirical study of the effectiveness of distance learning in pedagogical HEIs of Ukraine under the martial law. The research involved surveying the subjects of the educational process of Ukrainian HEIs. The survey respondents were the students of pedagogical educational institutions, teachers studying at the advanced training courses, academic staff. The criteria for assessing the effectiveness of distance learning in times of war were the possibility and quality of feedback, access to educational/didactic and methodological content, the possibility and frequency of monitoring performance, consultations, meeting deadlines, interactivity, technical capabilities of Internet access. The survey evidenced the negative impact of the martial law on online learning, the limited interactivity of classes, the unsystematic consultations and monitoring, and poor-quality communication between the subjects of the online educational process. At the same time, the positive impact of the varied approaches of teachers to presenting educational materials to students on the effectiveness of distance learning was confirmed. As a result, students with different technical capabilities were able to access the educational content provided by the curricula. The results of the study can be used by other HEIs of Ukraine in the context of sharing progressive pedagogical practices of distance learning organization in times of war. Further studies involve expanding the research, generalizing the unique experience of higher education of Ukraine in providing distance learning in crisis conditions, and sharing it with the world scientific communities.

Keywords: online education, high school, students, teachers, war, educational process, Ukraine

1. Introduction

The higher education system of Ukraine is undergoing various transformations and faces new challenges. The higher education sector of Ukraine is currently in a crisis situation. The reason is the Russian invasion of the territory of Ukraine on February 24, 2022. The introduction of martial law on the territory of Ukraine imposed a number of forced social restrictions. They also have a destructive effect on the organization of the educational process. This is why the educational process in all institutions was ceased in the territories of active hostilities, while it was organized

in a distance format only in the rear. It is worth noting that the pandemic has provided HEIs with considerable experience in organizing online education. However, the constant threats of rocket and artillery attacks, the temporary occupation of certain territories of Ukraine, the forced internal migration of students and academic staff, relocation of certain HEIs to Ukrainian Government-controlled territories, thus causing inadequate security environment, create additional challenges for distance learning technologies that have already been tested during the pandemic. There is no possibility of visiting educational institutions by both students and academic staff of higher educational institutions even from time to time. This violates the procedure for organizational and pedagogical aspects of the organization of the educational process.

The ongoing hostilities on the territory of Ukraine will also increase the social imbalance in terms of students' access to high-quality Internet or any Internet at all, the possibility of online communication between subjects of the educational process. Some teachers have failed to meet the deadlines for the publication of educational content, and some students have failed to meet the deadlines for completing tests and practical assignments because of the impossibility of timely access of the subjects of the educational process to the Internet. This all makes it difficult to fulfil the schedules of the educational process, the communication format of the subjects of the educational process undergoes significant destruction, the educational and cognitive content is improvised, the format of monitoring students' performance is simplified or distorted. Under these conditions, it is impossible to implement the experience that the domestic and foreign higher education gained in organizing distance learning during the coronavirus pandemic. Therefore, it is urgent to transform the traditional format of distance learning, to bring it into line with the organizational and technical capabilities of the subjects of the educational process. It is also highly important to monitor the effectiveness of distance learning under the martial law.

The aim of the study was the empirical verification of the effectiveness of distance learning in HEIs under martial law. The aim involved the following research objectives:

- empirically establish the challenges of distance learning in HEIs under martial law;
- analyse the transformations of distance education under martial law in Ukraine;
- determine the effectiveness of the transformed format of distance learning in HEIs under the martial law.

2. Literature Review

Foreign and domestic researchers actively discuss the organization of distance education, its problems, prospects, and effectiveness. However, the absolute majority deal with distance learning organization during the pandemic. According to Mishra et al. (2020), the focus of research is the transformation of the traditional educational format into a distance one, analysis of key tools of the new educational landscape, description of the distance learning process itself. The researchers consider the lack of readiness of subjects of the educational process, the development of high-quality educational content, and the transformation of the roles of participants in the educational process to be the main problems of distance learning. Kebritchi et al. (2017) offer the following solutions to these problems: the professional development of teachers, thematic trainings for all subjects of the educational process, organizational and technical support for the development of interactive educational content. The studies analyse students' attendance of online courses, the relationship between students' involvement in the online environment and their attitude to the traditional format of education. Dumford & Miller (2018) consider the online course as a motivational and restraining factor of student activities. Fonte et al. (2021) empirically prove the leading role of teachers in the implementation of distance learning, their stability in achieving its effectiveness. Ali (2020) noted that the effectiveness of distance learning depends on the availability of basic ICT infrastructure in HEIs for the effective online learning, ensuring the readiness and access of all subjects of the educational process to digital technologies, creating conditions for combining the educational ambitions and interests of students.

The characteristics of the subjects of education, internal motivation, quality of institutions and services, quality of infrastructure and system, quality of courses and information, online learning environment are the diagnostic constructs of empirical research on the effectiveness of distance learning. Yudiawan et al. (2021) emphasize the greatest influence of the infrastructure and the quality of the educational system on the quality of distance education. Determinants of students' satisfaction with online learning platforms in their educational institutions are also subject to evaluation (Jiang et al., 2021; Ho et al., 2021). Tang et al. (2021) study the motivation to learning, readiness to study, and student self-efficacy in online learning, while taking into account the gender, demographics, and educational level of the respondents.

Demuyakor (2020) confirms through empirical research the fact that student communities support the distance

learning format, despite the high cost of a quality Internet connection. The technical unpreparedness of the subjects of the educational process, the inadequacy of the teaching style to the online environment, destruction of the subjects of the educational process in the communication were the main empirically established challenges of distance education (Coman et al., 2020; Silenko & Kruk, 2022; Rodinova et al., 2022). Turnbull et al. (2021) also take into account synchronous/asynchronous learning, tool integration, access to technology, online competence of teachers and students, academic integrity, privacy and confidentiality.

According to Coman et al. (2020), ways to solve these challenges are strengthening the technical support of HEIs for online learning, incentives for teachers, overcoming social problems of students in terms of access to the Internet. Volianiuk (2022) states that adaptation and systematic analysis of educational content, high-quality feedback of the subjects of the educational process, and a favourable psychological atmosphere in the educational process play a positive role in solving the problems of distance education.

Redmond et al. (2018) point out that increasing student engagement in distance courses urges the development of tools and strategies to overcome the challenges of online learning and create an optimal online educational environment.

Distance learning is significant popularized in terms of the pandemic, even for students of those majors for which this form of education was a priori unacceptable. Guardia et al. (2021) consider the technological, organizational, and pedagogical trends and challenges of distance education, state the fact of the strategic unpreparedness of many higher educational institutions to provide quality services in a distance format. This is, in particular, military affairs, medical training. According to Woźniak (2021), the challenges of distance education have become catalysts for progressive transformations of student training in these areas.

Müller & Mildenerger (2021) state that higher educational institutions offer a blended learning model in search of a flexible learning format for students, the effectiveness of which approaches traditional offline learning. However, it is impossible to implement blended learning under the martial law in all educational institutions of Ukraine. In this context, as Pakhomova et al. (2021) stated, the idea of building a combined form of the pedagogical process, improving training of all subjects of the educational process to use the possibilities of distance tools — Moodle, Google Classroom, Zoom — is worth noting. The adaptation of the design of educational programmes in accordance with the needs of students and the characteristics of changing times is equally important (Toquero, 2020; Ewing & Cooper, 2021).

In the context of the organization of the educational process in higher educational institutions of Ukraine, the domestic researchers note that the scientific and educational community is not ready for new destructive conditions, as well as the need to take into account security challenges when organizing the educational process. Therefore, Kramarenko et al. (2022) urge the need to adapt the distance learning format to the conditions of martial law, taking into account the subjects' right to access to higher education, maintaining motivation, expanding the scope of ICT and the security competence of participants in the educational process. At the same time, the creation of conditions for the professional development of representatives of scientific and pedagogical communities of Ukrainian higher educational institutions (Petrenko, 2022), support of mental health and physical activity of teachers and students (Slukhenska et al., 2022; Vorobei et al., 2021) play an important role.

In order to solve the problems of distance learning under the martial law, domestic researchers consider it appropriate to involve interested parties, in particular volunteers, IT specialists in supporting the technical component of providing online learning, automation of control functions in the online environment (Rodinova et al., 2022). The main challenges of distance learning in HEIs are violation of consistency, distortion of social contacts, growing psychological destruction, transformation of forms and tools of education (Koshelieva et al., 2022), the impossibility of choosing and varying the means of organizing the educational process because of the lack of security guarantees (Udalova et al., 2022).

The common features of foreign and domestic research on distance learning organization in higher education are its relevance to the global pandemic, the recognition of the need for its proper technical, organizational, scientific and pedagogical support, the search for ways to adapt and optimize distance learning models in changing conditions. However, foreign research provides no positive experience of distance learning in higher education under the martial law. There are some minor developments in this direction in domestic science. But these studies need further elaboration, approval and construction of optimized distance learning models taking into account the informational, technical, psychological and security challenges of the modern educational environment.

3. Methods

3.1 Research Design

The research was conducted from March 28, 2022 to June 30, 2022. The study involved three stages: organizational, implementation, evaluation and final. Organizational stage – March 28, 2022 – April 1, 2022 – involved establishment of contacts with students, determining their technical possibilities for participation in distance learning, conducting explanatory discussions. The implementation stage — April 4, 2022 — June 16, 2022 — provided for the introduction of distance learning taking into account security conditions, capabilities of students and teachers. The evaluation and final stage was conducted from June 18, 2022 to June 30, 2022.

3.2 Participants

The study involved the academic staff and students of pedagogical majors of higher education institutions of Ukraine (Zhytomyr Ivan Franko State University, Ivan Franko National University of Lviv, V.O. Sukhomlynskyi National University of Mykolaiv, Kamianets-Podilskyi National Ivan Ohienko University), academic staff and teachers studying at the advanced training courses of Transcarpathian Institute of Postgraduate Pedagogical Education. Table 1 presents the distribution of respondents of the study in quantitative terms and in terms of educational institutions. The study involved a total of 660 students and 214 representatives of the academic staff.

Table 1. Research Respondents

Educational institution	Zhytomyr Ivan Franko State University	Ivan Franko National University of Lviv	Franko Mykolaiv	V.O. Sukhomlynskyi National University of Mykolaiv	Kamianets-Podilskyi Ivan Ohienko University	Transcarpathian Institute of Postgraduate Pedagogical Education
Academic staff	50	58		46	50	10
Students	160	130		140	160	70

Age of respondents: students — 17-25 years old, teachers — 27-60 years old.

The students had full general secondary education, the academic staff — full higher education (Specialist and Master educational qualification levels), scientific degree — PhD in Pedagogy, PhD in Psychology, Doctor of Philosophy.

The research sample was formed on the following grounds:

- 1) inclusion of respondents in the distance educational process;
- 2) developed ICT competence of the educational process;
- 3) lack of variability in the organization of the educational process under martial law;
- 4) didactic and methodical readiness for distance learning of teachers and students of pedagogical majors.

3.3 Instruments

A survey of all subjects of the educational process (students, course participants, academic staff) was conducted in order to evaluate the effectiveness of distance learning under the martial law. The author's questionnaire (Appendix A) was used for this purpose. The structure of the questionnaire is shown in Figure 1. The questionnaire is universal and concise. This allows completing it via Google services, social networks, by marking messages in messengers.

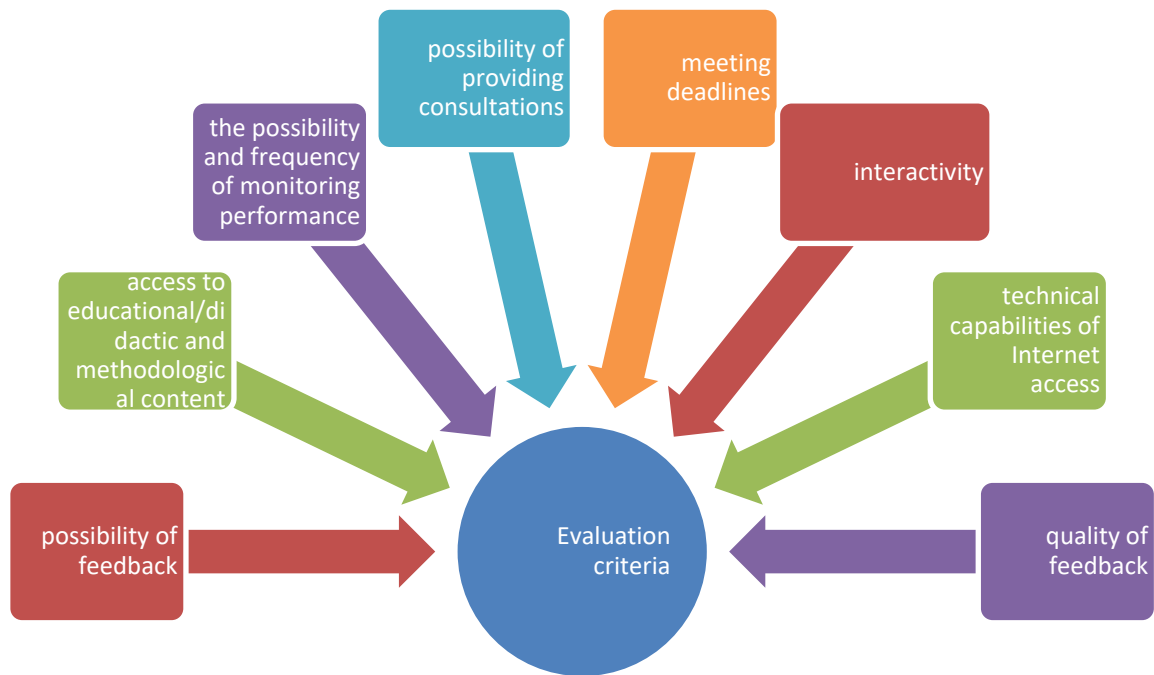


Figure 1. The Structure of the Author's Questionnaire for Determining the Effectiveness of Distance Learning under the Martial Law

3.4 Data Collection

The first — organizational — stage of the research involved finding out the possibilities of accessing the Internet for each of the students by the academic staff and the administration of educational institutions. The format of distance learning under the martial law was explained to students at the same stage. In particular, the predominance of communication between the teacher and the student in real time and out of it, the variability and predicted frequency of the forms of monitoring students' performance were taken into account. The second — implementation — stage of the research involved carrying out the educational process online, but with maximum consideration of the frequency of access to the Internet, the quality of the Internet connection, and the personal safety of all participants in the educational process. The third — evaluative and final — stage of the research involved evaluation of the effectiveness of distance learning during the war by students and academic staff.

3.5 Analysis of Data

The survey was conducted using a Google Form, through Google services, social networks, and by marking messages in messengers (depending on the quality of the respondents' Internet connection). The data were summarized through building the charts. Cronbach's alpha was measured to determine the reliability of the author's questionnaire (Cronbach's alpha — 0.8).

3.6 Ethical Criteria

The administration of higher education institutions obtained informed consent for participation in the study from all subjects of the educational process (students, course participants, academic staff). They were explained the distance learning organization under the martial law, as well as possible inaccuracies and risks.

4. Results

At the implementation stage of the study, the educational process in all HEIs involved in the study was carried out remotely. But the remote format under the martial law had certain differences compared to online learning during the period of pandemic restrictions. When organizing distance learning under the martial law, it was allowed to shift or

adjust the schedules of online classes taking into account security factors. But not all shelters are equipped with Internet access, the Internet connection in the shelter is not always high-quality, so this was taken into account when determining the attendance of online classes by students and the work of teachers. This was similarly taken into account when monitoring students' performance. Communication through instant messengers, including Viber and Telegram, was offered to students without access to high-speed Internet. Lectures, seminars, and practical classes were held in Google Classroom and Zoom if there was a high-quality Internet connection. To monitor academic performance, students were offered surveys in Google forms, blitz surveys in messengers, sending completed assignments to the teacher's e-mail, publishing completed works in teachers' blogs or social networks.

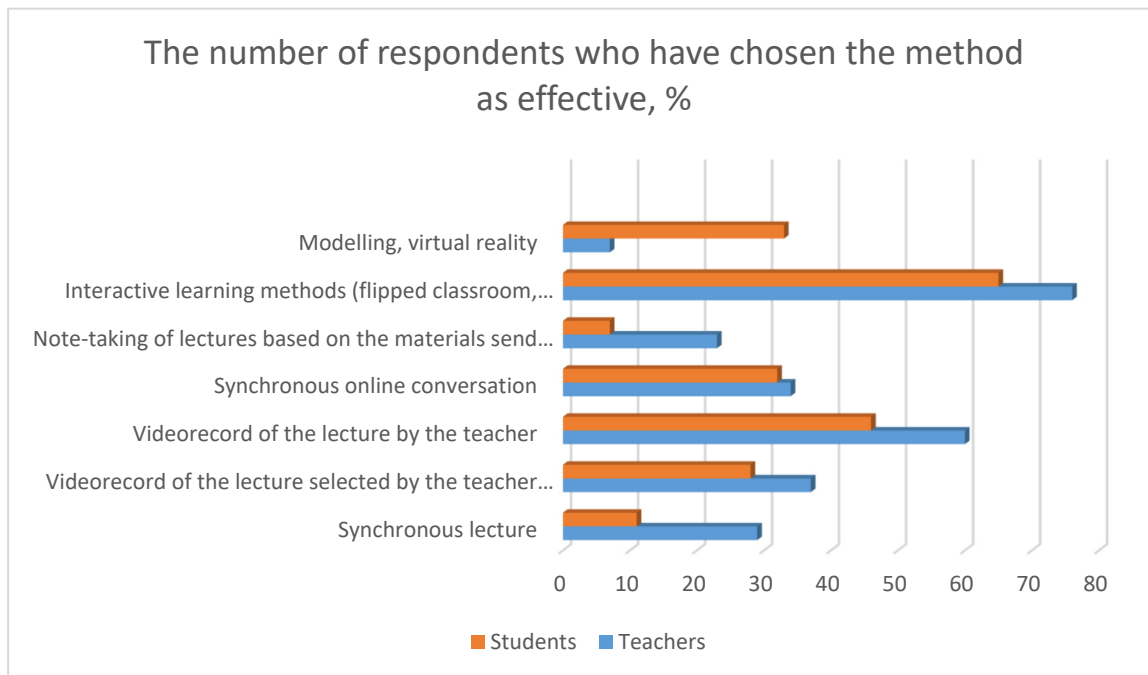


Figure 2. The Number of Respondents

Territorial proximity or remoteness of educational institutions from the line of active hostilities is important for distance learning organization under martial law. In particular, V.O. Sukhomlynskyi National University of Mykolaiv is located in the region bordering the area of active hostilities. Therefore, teachers and students of this HEI faced much more frequent threats of rocket and artillery attacks. This necessitates more frequent and longer stays of the subjects of the education process in shelters without high-quality Internet access. Other HEIs involved in the study are more distant from the line of active military confrontation. Therefore, their teachers and students are not threatened by artillery shelling. However, rocket strikes threaten all without exception. All subjects of the educational process must be in shelters during such threats, being mostly unable to participate in online learning/teaching.

The limited capabilities of teachers in creating educational content, questionnaires, practical materials and choosing ways to convey them to students were taken into account in the organization of the educational process in a remote format under the martial law. As it was impossible for teachers to access remote platforms and provide video broadcasts in real time, they were allowed to publish educational content on personal sites and blogs, social networks, and send to students via messengers and e-mail. The online educational process under the martial law provided for the implementation of an individual approach to the subjects of the educational process, taking into account their technical and technological capabilities, security environment and ICT competence. A survey of its participants was conducted in order to identify the effectiveness of the online educational process. Table 2 provides the results of the survey of respondents (academic staff, students, teachers studying at the advanced training courses) on the evaluation of the effectiveness of distance learning under the martial law.

Table 2. The Results of a Survey of Respondents on the Evaluation of the Effectiveness of Distance Learning under the Martial Law, %

Evaluation criteria	Possibility of feedback	Access to educational/didactic and methodological content	The possibility and frequency of monitoring performance	Meeting deadlines	Possibility of providing consultations	Interactivity	Technical capabilities of Internet access	Quality of feedback
Academic staff	60	97	40	60	33	45	70	39
Students	56	89	37	55	25	41	66	34

The conducted research established the following challenges of distance learning under the martial law. The most pronounced are the limitations of the interactive component of the educational process because of the impossibility of access to high-speed and high-quality Internet connection; difficulties in monitoring of the academic performance and providing consultation to students; low-quality feedback between subjects of the educational process. The following problems are less pronounced: technical possibilities of Internet access, the possibility of feedback, meeting deadlines for holding educational events and completing the assignments set for students. The fact of providing access to the educational/didactic and methodological content to the subjects of the educational process is worth noting. This criterion was rated the highest by the survey respondents. This indicates that teachers use different methods and means of creating and publishing content depending on the students' ability to access it. The students were provided with the opportunity to work with text, tabular, audio, video content depending on technical capabilities. Students participated in online broadcasts of theoretical and practical classes provided a proper Internet connection.

The analysis of the survey data proves the negative impact of the technical capabilities of the subjects of the educational process, the quality of the Internet connection, and the lack of consistent monitoring and consultations between teachers and students on the effectiveness of distance learning under the martial law. But at the same time, the variable possibility of presentation of educational content and the choice of methods and means of communication provided by teachers have a positive impact on the effectiveness of distance learning under the martial law.

5. Discussion

The study found the evaluation of the effectiveness of distance learning in HEIs under the martial law by the subjects of the educational process. The evaluation criteria include the possibility and quality of feedback, access to educational/didactic and methodological content, the possibility and frequency of monitoring performance, consultations, meeting deadlines, interactivity, technical capabilities of Internet access.

Mishra et al. (2020) conducted a similar study on a quantitative and qualitative analysis of the perception of online learning by teachers and students. Foreign studies, like our study, have proven the importance of technical support for the development of distance learning content (Kebritchi et al., 2017), flexibility and individualization of learning as a condition for expanding the access of subjects of the educational process in the implementation of its newest formats (Müller & Mildemberger, 2021). Toquero (2020) notes the importance of adapting educational programmes to the changing educational environment. Demuyakor (2020) studies students' satisfaction with distance learning and their initiative in the distance educational process.

We managed to achieve wide access to educational content in various formats and implement the content of education in difficult conditions thanks to the initiative and perseverance of the respondents of our study. In this way, they worked to overcome the key challenges of distance learning under crisis conditions (Akimov et al., 2021; Redmond et al., 2018). The respondents of our study managed to maintain a certain level of motivation under the conditions of martial law, uncertainty, instability, psychological destructive effects on the personality. Motivation is one of the important criteria in similar studies (Ali, 2020).

The analogy of our study with others is in the evaluation of the shortcomings of the distance learning organization. However, the key difference between our study and similar ones is in the evaluation of the effectiveness of distance learning in higher education under the martial law. The research is a prerequisite for the implementation of Ukraine's unprecedented experience in distance learning organization in times of war.

6. Limitations and Future Recommendations

The main limitations of the study are temporal (within three months), selective coverage of respondents (students of pedagogical majors), regional (several educational institutions in five regions of Ukraine were covered), socio-economic (financial capabilities of the subjects of educational process in providing access to high-quality Internet were not studied). Expanding the research will significantly enrich science with positive practices of distance learning organization in higher education under martial law. The recommendations of the study can be considered the expansion of the target groups of respondents (in terms of adding other majors), the development of scientific and methodological support for distance learning organization in higher educational institutions under martial law. The exchange of experience in distance learning organization under the martial law in scientific and pedagogical communities of Ukrainian higher educational institutions requires a separate analysis.

7. Conclusions

The study involved an empirical analysis of the effectiveness of distance learning in higher educational institutions under the martial law. A questionnaire survey was conducted among students of pedagogical higher educational institutions, teachers studying at the advanced training courses, as well as academic staff of higher educational institutions of Ukraine. The possibility and quality of feedback, access to educational/didactic and methodological content, the possibility and frequency of monitoring performance, consultations, meeting deadlines, interactivity, technical capabilities of Internet access were chosen as diagnostic constructs for evaluating the effectiveness of distance learning under the martial law. The results of the study confirmed the negative impact on the effectiveness of distance learning under the martial law, the limitation of the interactivity of classes, inconsistency of consultations and monitoring, poor-quality communication between teachers and students and between students themselves because of technical difficulties. The variability of the transposition of educational content by academic staff allowed students of higher educational institutions to access it, thereby partially correcting the destructive influence of online learning. The conducted research is a valuable insight into the development of recommendations on distance learning organization in higher educational institutions in Ukraine under the martial law. The promising area of research is the development and testing of an optimal model of distance learning in higher educational institutions of Ukraine under the martial law.

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Appendix A

The author’s universal questionnaire for evaluating the effectiveness of distance learning in higher educational institutions of Ukraine under the martial law

Dear respondent!

You were the subject of a distance educational process during the martial law. Evaluate each of the criteria that we proposed in most cases. Make a corresponding mark in the table (+, -).

Thank you in advance for your honest answers. Your opinion will definitely be taken into account in the further organization of the distance educational process.

Evaluation criteria	Possibility of feedback	Access to educational/didactic and methodological content	The possibility and frequency of monitoring performance	Meeting deadlines	Possibility of providing consultations	Interactivity	Technical capabilities of Internet access	Quality of feedback
Yes								
No								

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