

University of Tartu  
Faculty of Social Sciences  
Institute of Education  
Curriculum of Educational Technologies

Mariia Baior

EXPLORING REMOTE TEACHING STRATEGIES AND CHALLENGES IN  
EMERGENCY REMOTE TEACHING: INSIGHTS FROM UKRAINIAN TEACHERS  
DURING THE 2022 RUSSIAN INVASION OF UKRAINE

MA thesis

Supervisor: Associate Professor of Educational Technology, Leo Aleksander Siiman

Tartu, 2023

**ABSTRACT**

This thesis investigates the use of remote teaching strategies and challenges in emergency remote teaching (ERT) during a time of 2022 Russian full-scale invasion of Ukraine, through the perspectives of Ukrainian teachers. The focus of the research was to define what remote teaching strategies, involving technology, were used by Ukrainian teachers to continue learning in emergency situation, what challenges teachers faced and whether the ERT experiences during the COVID-19 pandemic helped teachers to adapt to the challenges of ERT during the full-scale invasion. The study employed a mixed-methods approach, using a survey to collect data. Results indicate that teachers used various strategies and technologies to teach during the invasion, facing several challenges. The study found that ERT experiences during the COVID-19 pandemic helped teachers to adapt to the challenges of ERT during the indicated period. The theoretical and practical implications of these findings are discussed, and suggestions for future research are provided.

*Keywords: educational technologies, emergency remote teaching, war, Ukrainian teachers, distance learning, blended learning, COVID-19 pandemic, teaching strategies, digital skills, challenges, adaptation, synchronous, asynchronous, technology integration, teacher professional development.*

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## INTRODUCTION

The term “Emergency Remote Teaching” was introduced by Hodges et al. (2020) who stated that emergency remote teaching is not of the same value as online learning, distance learning or e-learning. They considered it to be a temporary shift to an alternate delivery mode of teaching due to crisis circumstances.

Emergency situations that result in damage to educational buildings or cause the closure of schools because of dangerous environmental, health or political conditions can be a threatening interruption to education. It is well-known that the COVID-19 pandemic has raised a variety of challenges that education systems worldwide were not prepared for (Gresham et al., 2021) and were forced to undertake emergency remote teaching (ERT) in response, which increased the use of digital technologies. Thus, ERT as a field of exploration has especially surfaced during the period of COVID-19 pandemic. There are a range of remote teaching practices in all levels of education researched during this period that highlight the adaptability of teachers despite a lack of preparation for such an emergency. While the whole world mostly overcame the pandemic and thus teachers and learners returned to the usual format of teaching and studying, Ukrainian educators and students were shocked with another kind of emergency – Russia’s full-scale invasion of Ukraine in February 2022.

As it is in practice teachers are expected to instantly respond to the call for emergency remote teaching and sometimes technological tools can solve some problems. Thus some studies have looked at how several types of tools would complement teaching and learning activities affected by the learning disruption (Bozkurt, A., Sharma, R.C.), which include questions about access to Wi-Fi infrastructure, pedagogical strategies, certain technologies, teachers’ and students’ digital skills etc. However, some studies research ERT in a specific context and provide answers and solutions which are hardly to replicate in a different context.

As mentioned above, since technology is often utilized as part of an emergency response by continuing education using emergency remote teaching, the purpose of this study is to determine how educational technology has been used by Ukrainian teachers to continue teaching at secondary schools in a situation of ERT during a war in Ukraine and what challenges teachers faced and what could have helped them to provide a better remote teaching. Thus, the results of this research will provide insight from teachers on how to adapt and optimize the use of educational technologies during a specific emergency situation and what kind of support could be provided to teachers in this regard.

## THEORETICAL OVERVIEW

### **The influence of the war on the organization of the educational process in Ukraine**

The full-scale invasion of the Russian Federation into Ukraine, which is presented below as an emergency situation for the educational process, began on February 24, 2022. The war created significant constraints and challenges in distance learning, which teachers faced both at the onset of the full-scale war and during the first semester of the 2022/2023 school year. Following the start of the full-scale invasion on February 24, 2022, (Kohut et al., 2023) the Ministry of Education and Science (MoES) advised all educational institutions to declare a two-week vacation. Most schools went on vacation, but some worked online.

When schools closed, teachers suddenly had to teach remotely again. This meant that teachers, parents, and students were suddenly faced with an already experienced mode of studying and teaching. Despite the fact that during the full scale war it was two years after the initiation of the first lockdown which means that Ukrainian teachers were already experienced with the ERT, though there were new challenges not inherent in that new crisis situation. One of the main struggles for teachers was to design lessons that are reachable by learners who were in various learning environments at home, at bomb shelters or even in occupied territories, which were not conducive for learning. The access to remote learning and teaching was limited and sometimes impossible since students and teachers could be in different regions where the security situation could be also different.

By March 14 (Kohut et al., 2023), the educational process had resumed in 13 oblasts under the conditions permitted by the security situation, mainly through distance learning. In 8 oblasts, the educational process partially resumed, as some institutions extended their holidays, while in three oblasts and Kyiv, the educational process was completely suspended.

The students and teachers could return to their study and teaching when they had the Internet access and possibilities. At the same time, during an air raid, teachers stopped classes and asked children to go to a shelter or a safe place. After the interruption, lessons were resumed according to the schedule. The teachers tried to adjust the schedule to the schedules of power outages — for example, rescheduling part of the lessons to a time when there is light. So the alternatives for learning methodologies and educational technologies was in demand.

Throughout the spring of 2022 (Kohut et al., 2023), the situation changed almost every week, and the number of schools where classes were suspended decreased. As of April 2,

83% of schools were conducting classes through distance learning, while 60 schools used a mixed mode of instruction. In 8% of schools, the educational process was still suspended. According to the MoES, as of May 7th, 3,752,792 students joined the learning, which was 89% of the total number of students in the 2021/2022 academic year. 61% of schools have finished the academic year as of June 9; 28% were still working to finish the curriculum. By the end of June, 91% of students had finished the academic year and 92% of schools had finished the educational process. The educational process in the new 2022/2023 school year began in 12,996 schools. The level of security in the area, the availability of a school's own shelter, and the state of the school building all played a role in determining the mode of education. According to the MoES, as of December 2022, 36% of schools were providing distance learning, 36% were providing a blended mode of learning, and 28% were providing learning in classrooms. Only 5 oblasts — Donetsk, Luhansk, Zaporizhzhia, Kherson, and Kharkiv — provided distance learning exclusively. Kharkiv oblast in particular chose to implement distance education for the entire 2022–2023 academic year. Additionally, the vast majority of schools in the Dnipropetrovsk and Mykolaiv oblasts (92% and 87%, respectively) operated remotely, and the majority of the remainder operated in a mixed mode. The majority of classroom-based schools were located in the western part of the country in the oblasts of Ivano-Frankivsk (73%), Lviv (63%), Ternopil (61%), Chernivtsi (54%), and Zakarpattia (48%). The majority of the educational activities in the remaining schools in these oblasts were conducted in a mixed format.

### **The Concept of Emergency Remote Teaching**

The Concept of Emergency Remote Teaching (ERT) is considered to be a temporary response to an emergency situation, currently that situation in Ukraine is the war, in which students and teachers are forced to teach and learn in a distant format and digitally if it is possible. ERT differs from usual online and distance education, since the learning and teaching process is interrupted because of physical or digital barriers. Such conditions create a tremendous challenge for teachers to support students and provide proper teaching.

“Emergency remote teaching (ERT) is meant to be a temporary shift from the normal modes of teaching. It happens when teaching becomes remote (or distant). This takes what would have otherwise been face-to-face or hybrid teaching and transforms it to become digital education.” (Emergency Remote Teaching, 2021).

There are many researches on remote teaching practice across the ERT period during COVID-19 pandemic and lots of lessons learned. However, there is a need to better understand what teaching strategies, involving technology, teachers are using in different types of emergency situations and how this may inform future practice. Thus a case of Ukrainian teachers using remote teaching strategies during a full-scale war may contribute to the research problem.

Many researchers state that most teachers were not prepared to use e-learning in a crisis situation, and that it requires a lot of ICT skills and knowledge as well as support from external (Müller et al., 2021). Bond (2020) found that there are many factors that affect e-learning success, and it's not an easy task for any of the stakeholders involved. Most of the problems were solved by teachers, who were often the only ones responsible for the effectiveness of educational activities mediated by digital media. Bond says that in order to successfully move from a crisis mode of learning to a more methodical mode, it is needed to take into account a variety of factors, including skills and knowledge in technology, the support which teachers may need, the feedback they need, professional development opportunities, teacher's well-being, use of technology, experience with technology and professional networks. Finally, teachers need to invest some time in this process and make sure that students have easy access to technology, as well as the content knowledge and motivation to learn using it.

In emergency remote teaching (Chuah, K. M., & Mohamad, F. S., 2020), the planning stage is largely focused on searching for resources which would be plausible to be shared through technology-based platforms available for both students and teachers. While the teachers are familiar with the textbook materials, during emergency remote teaching, they spent time looking for resources on platforms like YouTube and Vimeo that would provide comprehensive input for their students. While planning for a lesson, the teachers would determine the learning goals, to match the resources they could find and disseminate. According to Crompton H., Burke D., Jordan K., Wilson S. it is important to remember that ERT can also be delivered without the use of the Internet or its partial use.

While referring to Marienko, M., Sukhikh, A., during the planning and organization of the educational process in institutions of general secondary education during martial law, it is necessary to take into account the specific features of each specific region, and namely: proximity to the occupied territories; the number of employees of general secondary education institutions who are in Ukraine, the number of employees in general secondary education institutions who have gone abroad; availability of devices for teachers and students

to organize the educational process using digital technologies and a permanent Internet connection. Therefore, the best option for the organization will be one of the distance learning modes: synchronous, asynchronous or bichronous. At the same time, it should be noted that the synchronous mode of operation is possible only in certain regions of Ukraine, since it involves the simultaneous connection of all participants in the educational process in real time. Numerous air alarms make the classic educational process in synchronous operation impossible, as interruptions will be forced during the announcement of an air alarm. Instead, the combination of different modes of operation is more characteristic of the bichronous mode, which allows you to continue the learning process anywhere.

The difference between the bichronous (Kurysh, 2021) and the asynchronous mode of online learning is that students, if possible, can connect to a pre-planned event in real time. That is, all the basic conditions for the organization of the asynchronous mode are preserved, but they can include the possibility of conducting classes in real time (for example, consultations on a separate topic, both individual and group). It is also possible to view a video recording of consultations conducted by the teacher, such consultations are stored on the platform as additional educational material.

Thus, the main objective of this qualitative research is to define what remote teaching strategies, involving technology, were used by Ukrainian teachers to continue learning in emergency situation.

This thesis explores the following research questions:

RQ1: What remote teaching strategies, involving technology, were used by teachers to continue school studying during the war as an emergency situation?

RQ2: What challenges did teachers face while teaching remotely during the war and what could have helped them to provide a better remote teaching?

RQ3: Did remote teaching experiences during the pandemic help teachers adapt to the challenges of emergency remote teaching during the full-scale invasion?

To address the research questions, qualitative research methods were employed that enabled us to understand teachers' experience and insights while using ERT during the war and to define their needs that could support them during that period and conditions.

## METHODOLOGY

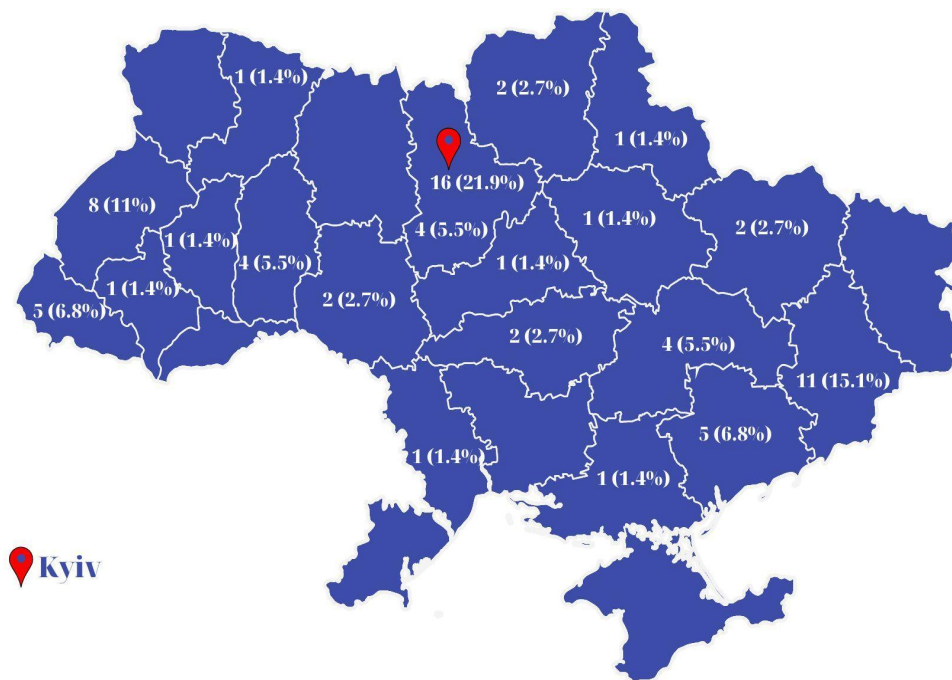
### Sample

The principles of forming a sample were based on representativeness. The sample is representative of the population in terms of geographical representation from different regions of Ukraine where the format of conducting an educational process differs strictly. The main emphasis was on the eastern territories of Ukraine, where the studying process is still conducted in an online format.

As for the procedure of forming a sample, we started with defining the population of interest – school teachers who were or are conducting online learning during the war as an emergency situation. Since we selected participants based on this specific criteria, namely school teachers who conducted online learning in different regions of Ukraine, so the sampling method we used in this case was purposive sampling, also known as judgmental or selective sampling. This method allowed us to select respondents who are knowledgeable about the research topic and can provide valuable insights and perspectives. There were two ways that teachers were contacted to take the survey. The first way was through direct contact where teachers were selected and then contacted with a message request to take a survey. This was mainly done via social media Facebook and some other messaging platforms as Viber and Telegram. The second way was through social media where the link for the survey was shared in some teacher groups on Facebook and on Facebook personal pages, allowing anyone interested to take the survey. Since the survey was anonymous, it was not possible to measure what percentage of contacted teachers decided to participate. However, it could be stated that more than a third part of the directly contacted teachers took the survey. Thus, a combination of targeted messaging and social media outreach was used to reach participants for the survey. The sample size was determined to be no less than 50 respondents representing different regions of Ukraine, especially the East of Ukraine, where the educational process is still conducted in online format because of the security situation.

The actual sample size consisted of 73 educators from all the regions of Ukraine. The fact that the actual sample size exceeded the minimum sample size is a positive indication that the survey had a relatively good response rate. The purposive sample was intended to include specific demographics, namely different regions of Ukraine, especially the East of Ukraine. It should be noted that the actual sample is truly representative of the intended purposive sample. The educators were 71 (97.3%) school teachers, 1 (1.4%) defectologist, 1 (1.4%)

tutor. Among the respondents, 26 (35.6%) worked in primary schools (grades 1–4) and the rest 47 (64.4%) worked in secondary and high schools (grades 5-11). Most of the sample, 38 (52.1%), consisted of educators with teaching experience of more than 20 years, while 15 (20.5%) had teaching experience up to 20 years, 13 (17.8%) up to 10 years and 5 (6.8%) up to 5 years. The biggest part of respondents, 67 (91.8%), live in big cities, 2 (2.7%) are from small cities, 3 (4.1%) respondents are from villages and 1 (1.4 %) respondent is from temporarily occupied territory. The Figure 1 shows geographic representation of respondents.



*Figure 1. Geographic representation of respondents*

## Data collection

To begin with, it should be noted that the paper by Shamir-Inbal, T., & Blau, I. (2021) and Hershkovitz et al. (2023) were taken as a basic papers for our research due to their relevant research questions on conducting ERT strategies during the COVID-19 pandemic.

The data of our research was collected in April 2023, almost a year later when the educational process in the distance format had already resumed in most of the Ukrainian schools after the full-scale invasion. To address the research questions, the mixed research method (qualitative and quantitative research) was employed that enabled us to understand teachers' use of remote teaching strategies to continue school studying during the war as an emergency situation. Qualitative data were collected using a 5-point Likert scale

questionnaire. Likert scale results were analyzed by identifying the most common responses. It represents the number of respondents who chose each option and the average total responses each option received. Results were analyzed by standard methods with Likert scale processing.

According to the Creswell, J.W. and Creswell, J.D., a mixture of qualitative and quantitative research enable to use the combination of the strengths of both methods to gain a deeper understanding of a research question. Thus, this method helped us to explore and understand teachers' experiences, strategies and needs. By combining these approaches, we were able to overcome the limitations of each method. For example, quantitative data provided us with statistical evidence, while qualitative data provided us with rich insights into teachers' experiences and strategies.

Through an online survey that was distributed directly to teachers, through internal teacher groups and externally on the social media platform Facebook, teachers were asked to share their pedagogical strategies for using educational technologies during the war as an ERT. The survey was translated into Ukrainian and shared in Google Forms format. The survey included 33 close-ended questions with multiple choice answers and Likert scale 5-rating multiple choice options (Appendix 1) and also open-ended questions.

The survey was created with a such questions that could help to answer the research questions. Thus, the survey had four parts: general information of respondents, the use of technologies, teachers' needs during ERT in wartime, and ERT experience during COVID-19. Moreover, the survey was partially based on existing research on this topic. For example, a combination of questions which were intended to discover the teachers' needs during the indicated ERT period were taken from the survey conducted by the Institute of Digitalization of Education of the National Academy of Sciences of Ukraine and the State Scientific Institution "Institute of Modernization of the Content of Education" of the Ministry of Education and Culture of Ukraine on "Readiness and needs of teachers regarding the use of digital tools and ICT in war conditions: 2023". As of April 2023, the analytical materials of the survey were still not published. Also, to discover the challenges and benefits of ERT and pedagogical strategies for ERT we based our questions on the existing research by Shamir-Inbal, T., & Blau, I. (2021). Facilitating Emergency Remote K-12 Teaching in Computing-Enhanced Virtual Learning Environments During COVID-19 Pandemic - Blessing or Curse?

It is important to note that using questions from existing research or surveys can be a useful starting point for creating a new questionnaire. However, it is also important to ensure

that the questions are relevant to the specific research question being investigated and that they are appropriate for the target population.

Within our survey, participants were asked to indicate what was the format of providing the educational process in the school from the time of the full-scale invasion until the end of the school year (May-June 2022), what is the current format of providing the educational process at their schools, what technologies were they using to teach remotely during the indicated period of ERT, whether their ERT was mostly carried out in a synchronous, asynchronous, or blended mode, what were the key challenges they faced that hindered/hinders them from conducting remote teaching and whether the COVID-19 pandemic helped them to adapt to the challenges of martial law. The questionnaire combined both multiple-choice and open-ended questions. Here are some examples of open-ended questions that were used in order to better understand teachers' practices: Could you please share which of these platforms/services that have gone free you used/are using? Could you share which digital tools you used to assess student achievement, if so? If you think about your struggles during that period, while teaching remotely, what could have helped you deal with them?

### **Data analysis**

Before the analysis took place, the data was cleaned and organized. This involved checking for missing values, removing duplicates, and ensuring that the data is in a format that can be easily analyzed. Descriptive analysis was used to summarize and describe the data. The analysis of the results were divided into the following blocks:

- The use of technologies during the ERT period
- Challenges and needs during the ERT period
- The impact of ERT experience during COVID-19

As a final step in data analysis, the interpretation of the results and reporting of the findings took place. This involved summarizing the key findings, discussing the implications of the results, and making recommendations for future research.

## RESULTS

### The use of technologies during the ERT period

While analyzing the format of the educational process in schools from February 24, 2022, until the end of the school year (May-June 2022), the data shows that out of 73 respondents, 3 (4.1%) reported conducting a stationary format, 45 (61.6%) reported a remote format, and 25 (34.2%) reported a mixed format (a combination of in-person and online).

The data from the question on the current format of the educational process in schools shows that out of 73 respondents, 20 (27.4%) reported a stationary format, 23 (31.5%) reported a remote format, and 28 (38.4%) reported a mixed format. One respondent reported other formats such as homeschooling, while another reported different formats such as online, offline, and externship.

*Table 1: The format of educational process in schools from February 24, 2022*

Educational Format	Stationary	Remote	Mixed	Other (homeschooling)
February 24, 2022 - end of school year (May-June 2022)	4.1%	61.6%	34.2%	-
Current Format	27.4%	31.5%	38.4%	2.7%

For the analysis of the devices used for remote teaching during the indicated period of ERT (24.02.2022 - until now) the data shows that out of 73 respondents, 26 (35.6%) reported using a PC, 10 (13.7%) reported using a tablet, 65 (89%) reported using a laptop, and 42 (57.5%) reported using a smartphone. One respondent reported using a graphics tablet and another reported using a Chromebook. This type of analysis is useful for understanding the prevalence of different devices used for remote teaching during the indicated period. It can help schools and educators make informed decisions about the type of devices they may need to provide to students and teachers to ensure effective remote learning.

*Table 2: Devices used for remote teaching during the indicated period*

Devices Used for Remote Teaching	PC	Tablet	Laptop	Smartphone	Graphics tablet	Chromebook
Number of respondents	26	10	65	42	1	1

Concerning the use of digital tools to conduct lessons during distance and blended learning the data shows that out of the 73 respondents, Zoom was the most commonly used tool at 71.2%, followed by Google Meet and Viber at 60.3%, Learningapps.org at 64.4%, Padlet at 47.9%, Google Classroom at 54.8%, and Kahoot at 49.3%. Other tools such as electronic diary, email, Mentimeter, Мій клас (My class), and school site were also used by a significant percentage of respondents. Some of the other tools mentioned were used by a smaller percentage of respondents. This type of analysis is useful for understanding the most popular digital tools used for distance and blended learning during the indicated period. It can help schools and educators make informed decisions about the types of digital tools they may want to use or explore for future distance and blended learning.

*Table 3: Digital tools used to conduct lessons during distance and blended learning*

Digital Tools	Percentage of Respondets
Zoom	71.2%
Google Meet and Viber	60.3%
Learningapps.org	64.4%
Padlet	47.9%
Google Classroom	54.8%
Kahoot	49.3%
Electronic diary	1.4%
Email	1.4%
Mentimeter	1.4%
My class	1.4%
School site	1.4%

To conduct online lessons 79.5% of respondents used their own developed materials for online teaching. The most popular online resources were YouTube (71.2%), Na urok (67.1%), Vseosvita (53.4%), and Learning.ua (45.2%). Around one-third of respondents used open online lessons (28.8%) and All-Ukrainian school online (34.2%). Other resources included materials shared on Facebook groups (43.8%), Classtime (21.9%), EdEra (24.7%), and Prometheus (19.2%). TEDx and Khan Academy were used by only 1.4% of respondents.

*Table 4: The use of online resources for online teaching*

Online Resources	Percentage of Respondents
Own developed materials	79.5%
YouTube	71.2%
Na urok	67.1%
Vseosvita	53.4%
Learning.ua	52.2%
Open online lessons	28.8%
All-Ukrainian school online	34.2%
Materials shared on Facebook groups	43.8%
Classtime	21.9%
EdEra	24.7%
Prometheus	19.2%
TEDx, Khan Academy	1.4%

The main factors that influenced the selection of digital technologies for teaching during distance and blended learning were the previous experience of use, availability, and functionality. About 76.7% of the respondents stated that their previous experience of use of the technology was a major factor in their selection process, while 75.3% cited availability as a factor. Additionally, 61.7% of the respondents mentioned functionality as a key factor that influenced their selection of technologies. Technical competence was also a factor for about 49.3% of the respondents. Other factors mentioned by the respondents were the Ukrainian language interface, free-of-charge access, and the option to have access with a smartphone.

*Table 5: Factors influencing the selection of digital technologies by teachers*

Factors Influencing Selection of Digital Technologies for Teaching	Previous experience of use	Availability	Functionality	Technical competence	Other factors (language interface, free-of-charge access, access with a smartphone)
Percentage of Respondents	76.7%	75.3%	61.7%	49.3%	1.4%

The majority of teachers (63%) spend the most time on the selection of educational materials when preparing for distance teaching. This is followed by checking homework (46.6%), preparation of video materials (45.2%), and design of materials (39.7%). This suggests that finding appropriate and engaging materials for students may be a challenging aspect of distance teaching.

*Table 6: Time spent for the preparation for distance teaching*

<b>Teacher Preparation Activities for Distance Teaching</b>	<b>Selection of educational materials</b>	<b>Checking homework</b>	<b>Preparation of video materials</b>	<b>Design of materials</b>
Percentage of Respondents	63%	46.6%	45.2%	39.7%

Most of the respondents used the synchronous mode of distance learning, with 64.4% of them indicating its use. The asynchronous mode was used by slightly fewer respondents, with 54.8% of them reporting its use. The bichronous mode, which combines both synchronous and asynchronous modes, was used by 31.5% of the respondents. It is worth noting that some respondents may have used multiple modes of distance learning depending on their teaching needs and circumstances, and that the total percentages add up to more than 100%.

*Table 7: Mode of distance learning during the indicated ERT period*

<b>Modes of Distance Learning during the ERT in war conditions</b>	<b>Synchronous</b>	<b>Asynchronous</b>	<b>Bichronous</b>
Percentage of Respondents	64.4%	54.8%	31.5%

The most commonly used tool for asynchronous teaching during the distance learning format is working with online resources (64.4%). Communication in messengers is also a popular choice (61.6%), suggesting that many teachers are using these tools for student-teacher communication and feedback. Educational games were used by a smaller number of teachers (12.3%), suggesting that this tool is less commonly used for asynchronous teaching. Finally, the "Other" category includes a variety of tools, such as recording own videos, using the school LMS system, own author's multimedia technology, Google

Classroom, and YouTube, indicating that teachers have been using a diverse range of tools to support asynchronous teaching.

*Table 8: The most commonly used tool for asynchronous teaching*

<b>Tools Used for Asynchronous Teaching</b>	<b>Working with online resources</b>	<b>Communication in messengers</b>	<b>Educational games</b>	<b>Other</b> (recording videos, school LMS, own multimedia technology, Google Classroom, YouTube)
Percentage of Respondents	64.4%	61.6%	12.3%	1.4%

The majority of respondents (90.4%) have had to prepare multiple formats of the same lesson to accommodate for air alarms and power outages. This highlights the challenges that teachers face in ensuring that students have access to learning materials and can continue their education despite disruptions. It also suggests that teachers need to be versatile and adaptable in their teaching methods, being able to switch between face-to-face and distance learning formats seamlessly to provide continuity of education for their students.

With the beginning of the full-scale invasion, many foreign and Ukrainian educational platforms/services opened free access for educators and students. The majority of respondents (82.2%) reported that they have used or are using the free access to educational platforms/services offered during the full-scale invasion. This shows that educators are taking advantage of these opportunities to enhance their teaching and support their students' learning during a difficult time. It also suggests that the availability of free resources has been helpful in providing access to quality educational materials to those who may not have had access to them otherwise.

The majority of respondents rated this opportunity as either helpful (26%) or very helpful (34.2%), indicating that they found the free access to educational platforms and services to be beneficial for their preparation for work. However, a significant number of respondents (11%) rated it as not helpful to them.

Following this, the respondents were asked to indicate which of the listed platforms/services they used or are using that have become available for free during the time of full-scale invasion. The responses provide insights into which platforms and services were most popular among the surveyed teachers. Zoom appears to be the most widely used

platform, followed by Learning.ua, Liveworksheets.com, and Classtime. Other popular options include Mozaweb, Quizizz, Wordwall, free premium access to Canva, Classtime, Twinkl, Pearson, Khan Academy. The responses indicate that many teachers are taking advantage of the free access to these resources to support their remote teaching.

Concerning the assessment of student achievements, so based on the responses, it appears that the majority of teachers (84.9%) assessed or are assessing student achievement during distance learning in synchronous mode, which means that they likely used methods such as quizzes, tests, and discussions during live video sessions. However, a significant number of teachers (67.1%) also assessed student achievement in asynchronous mode, which may have included methods such as assignments, projects, and online assessments that students could complete at their own pace. The small percentage of teachers who selected "Other" may have used a combination of both synchronous and asynchronous modes to assess student achievement.

*Table 9: The mode of students' achievements assessment*

<b>Assessment of Student Achievements</b>	<b>Percentage of Teachers</b>
Synchronous Mode	84.9%
Asynchronous Mode	67.1%
Other (combination of both)	1.4%

Most respondents who assessed student achievement during synchronous distance learning used tests on platforms such as Google Classroom, Na urok, and Moodle (76.8%). Additionally, a significant number of respondents used oral forms of assessment, such as presentations and project defenses, using Skype or Zoom video tools individually or in groups (71%). Some respondents also used written works using video tools like Skype and Zoom (39.1%) and participated in online seminars and forums using Skype or Zoom video tools or in chats on distance learning platforms or Facebook groups (26.1%).

*Table 10: The form of students' achievements assessment*

<b>Form of Assessment</b>	<b>Percentage of Respondents</b>
Tests on platforms	76.8%
Oral forms of assessment	71%

Written works	39.1%
Online seminars and forums	26.1%

Taking into account the most used synchronous assessment methods, so the most popular method were tests on platforms like Google Classroom, Na urok, and Moodle. The second most popular method was participation in oral forms of assessment using video tools like Skype and Zoom, and the third most popular method was written works using video tools. For those who used asynchronous assessment methods, the most common method was tasks on one of the platforms without a time limit, followed by sending completed tasks to the teacher via email or messaging apps, and then videotaping or audio recording oral responses and sending files to the teacher via electronic means.

It appears that a majority of the respondents (67.1%) were using some form of digital instrument to assess their students' achievement during distance learning. This suggests that many teachers have adapted to using technology to support their teaching and assessment practices during the pandemic. On the other hand, 32.9% of the respondents indicated that they were not using any digital instruments to assess their students' achievement. It is possible that these teachers relied on traditional methods of assessment such as written tests, essays, and oral presentations, or that they may have faced challenges with access to technology or training in using digital instruments for assessment.

*Table 11: The use of digital instruments for students' achievements assessment*

<b>Use of Digital Instruments for Assessment</b>	<b>Percentage of Respondents</b>
Yes	67.1%
No	32.9%

It seems like a diverse set of digital tools were used to assess student achievement, including learning management systems like NaUrok and Vseosvita, interactive quiz tools like Quizizz and Kahoot, and formative assessment tools like Classtime and Mentimeter. It's great to see that teachers are using a variety of tools to meet the needs of their students and assess their progress in different ways. There were some other tools mentioned only once, which means that they may not have been widely used or may have been specific to certain teachers or subjects: Learning.apps, Google Classroom, Wordwall, Padlet, Giis, Wizer, Plickers, Genially, Learning.ua, Quizlet.

The majority of respondents (60.3%) delivered feedback on students' assignments through comments on the learning platform, such as Google Classroom or Moodle. Direct communication via messengers, such as WhatsApp or Viber, was the second most popular method, with 57.5% of respondents using it. Automated tests for self-control and audio/video feedback in the synchronous mode were also commonly used by respondents, with 42.5% and 38.4% respectively. Audio/video feedback in asynchronous mode was the least commonly used method, with only 20.5% of respondents using it. Other methods mentioned by respondents included commentaries on the Google Classroom platform.

*Table 12: Methods of delivering feedback on students' assignments*

<b>Method of Delivering Feedback</b>	<b>Percentage of Respondents</b>
Comments on learning platform (e.g., Google Classroom, Moodle)	60.3%
Direct communication via messengers (e.g., WhatsApp, Viber)	57.5%
Automated tests for self-control	42.5%
Audio/video feedback in synchronous mode	38.4%
Audio/video feedback in asynchronous mode	20.5%
Other methods mentioned by respondents (commentaries on the Google Classroom platform)	1.4%

### **Challenges and needs during the ERT period**

The most common challenge reported was the lack of material and technical support, both for the teacher (28.8%) and for students (58.9%). This was followed by issues related to internet connectivity, with 45.2% of respondents reporting their own lack of high-quality internet and 71.2% reporting the same issue among students. Power outages were also a major challenge, with 75.3% of respondents reporting difficulties in this area. Maintaining contact with students was a difficulty for 32.9% of respondents while assessing student success in a distance format was a challenge for 20.5%. Some respondents also reported difficulties related to their own digital competence (11%) and unpreparedness for teaching in a distance format (2.7%). In terms of student factors, 16.4% of respondents reported insufficient digital competence among students. Other challenges mentioned included the extra time required to prepare materials for distance lessons, student motivation to learn, and the lack of live contact

between students and teachers. Overall, the results highlight the numerous challenges faced by teachers in adapting to remote teaching during the war.

*Table 13: Challenges faced by teachers during the ERT period*

<b>Challenges During ERT Period</b>	<b>Percentage of Respondents</b>
Lack of material and technical support	Teacher: 28.8%
	Student: 58.9%
Internet connectivity issues	Teacher: 45.2%
	Student: 71.2%
Power outages	75.3%
Maintaining contact with students	32.9%
Assessing student success	20.5%
Teacher's own digital competence	11%
Unpreparedness for distance teaching	2.7%
Insufficient digital competence among students	16.4%
Extra time required to prepare materials for distance lessons	1.4%
Student motivation to learn	1.4%
Lack of live contact between students and teachers	1.4%

Based on the responses provided, the majority of the participants, 45 out of 73 (61.6%), attended training to improve their remote teaching all the time. 23 participants (31.5%) attended such training sometimes, while only 4 participants (5.5%) did not attend any training

to improve their remote teaching. One teacher was reported to be a trainer on teachers' digital competence. This suggests that a significant proportion of teachers recognized the importance of attending training to enhance their skills in remote teaching, which may have helped them better adapt to the challenges posed by the war.

In terms of professional development needs for providing ERM, the highest number of respondents (44 or 60.3%) expressed a need for familiarization with new online tools and services for student creativity. Creating and editing educational videos was also a significant need, with 33 (45.2%) respondents indicating that this was an area where they required further development. Other areas of need included practical help in mastering new tools (26 or 35.6%), improvement of the methodology of conducting online lessons (23 or 31.5%), and mastery of assessment tools in the conditions of distance learning (16 or 21.9%).

*Table 14: Teachers' professional development needs*

<b>Professional development</b>	<b>Percentage of Respondents</b>
Attended training to improve remote teaching	All the time: 61.6%
	Sometimes: 31.5%
	Did not attend: 5.5%
<b>Professional development needs</b>	<b>Percentage of Respondents</b>
Familiarization with new online tools and services for student creativity	60.3%
Creating and editing educational videos	45.2%
Practical help in mastering new tools	35.6%
Improvement of the methodology of conducting online lessons	31.5%
Mastery of assessment tools in conditions of distance learning	21.9%

Based on the responses, the majority of the participants (71.2%) believe that there are a sufficient number of online didactic materials for preparing for remote classes in wartime conditions, while 21.9% think otherwise. This suggests that most of the participants may have had access to a variety of online resources and materials that they found useful in preparing for remote classes during wartime conditions. However, the minority who believe that there are not enough online didactic materials may have faced challenges in finding appropriate and relevant resources to support their teaching.

Concerning the general suggestions for the improvement of online didactic materials and resources, teachers reported having more methodologically verified and scientifically based materials, interactive support for textbook paragraphs, thematic educational video films with relevant tasks, and the development of online lessons, audio, and video for the program. Some teachers also expressed interest in gamification and having access to services for the implementation of educational topics such as databases and computer graphics.

Teachers were also asked what could have helped them to deal with the struggles during that period while teaching remotely. The answers are:

- improving skills in working with technical equipment would have been beneficial, as it would have made it easier for them to navigate the various tools and platforms used for distance learning;
- having access to paid functional services could have streamlined the process and saved time;
- having a good internet connection is crucial for effective distance learning, as it allows for smooth video conferencing and access to online resources;
- having an electronic resource that combines an electronic diary and an educational platform, with the integration of convenient applications, would have been helpful. This would have made it easier to keep track of student progress and communicate with them and their parents;
- receiving practical workshops would have been beneficial, as they would have provided hands-on training and support for teachers;
- having better material and technical support for the teacher would have been helpful in dealing with the various technical issues that arose during remote teaching;
- having ready-made developments for lessons, didactic and video material would have saved time and effort in lesson planning. The availability of high-quality online resources with ready-made development of lessons on topics in which you can

change/add something of your own would have been useful for teachers to supplement their own materials and provide a variety of resources for their students;

- having more quality materials for knowledge testing, psychological support, and technical support would have been helpful in ensuring that students received a well-rounded education and that teachers had the resources they needed to support their students.

### **The impact of ERT experience during COVID-19**

From the responses, it appears that a large majority of respondents (75.3%) agreed with the statement that their distance-learning experience during the COVID-19 pandemic helped them adapt to the challenges of ERT during the war. The distribution of responses is positively skewed, with most respondents rating their agreement as a 5 out of 5. Only a small minority of respondents (1.4%) completely disagreed with the statement. The mode response was 5, indicating that the most common response was the complete agreement with the statement.

Talking about the impact of the COVID-19 pandemic on the respondents' digital skills in teaching, specifically whether they have become more active and confident in using digital tools and services before and during the full-scale invasion. The answer options were on a 5-point scale, ranging from 1 (completely disagree) to 5 (completely agree), and the results show that 0.0% of respondents chose 1, 2.7% chose 2, 8.2% chose 3, 17.8% chose 4, and 71.2% chose 5.

*Table 15: The impact of the COVID-19 pandemic on teachers' digital skills*

	<b>Agreement with COVID-19 pandemic distance-learning experience helping to adapt to ERT during the war</b>	<b>Agreement with the fact that after the COVID-19 pandemic teachers began to use digital tools and services more actively and confidently</b>
Completely disagree (1)	1.4%	0.0%
Somewhat disagree (2)	0.0%	2.7%
Neither agree nor disagree (3)	9.6%	8.2%
Somewhat agree (4)	13.7%	17.8%
Completely agree (5)	75.3%	71.2%

Moreover, based on the given responses, 26% of the respondents used synchronous distance learning format, 1.4% used asynchronous format, and 71.2% used both synchronous and asynchronous formats during the COVID-19 pandemic.

*Table 16: Modes of distance learning during the COVID-19 pandemic*

<b>Modes of Distance Learning during the COVID-19 pandemic</b>	<b>Synchronous</b>	<b>Asynchronous</b>	<b>Bichronous</b>
Percentage of Respondents	26%	1.4%	71.2%

## **DISCUSSION**

### **Interpretation of the results and comparison with the literature**

In this study the following research questions were investigated:

RQ1: What remote teaching strategies, involving technology, were used by teachers to continue school studying during the war as an emergency situation?

RQ2: What challenges did teachers face while teaching remotely during the war and what could have helped them to provide a better remote teaching?

RQ3: Did remote teaching experiences during the pandemic help teachers adapt to the challenges of emergency remote teaching during the full-scale invasion?

Once the analysis was complete, the following research conclusions which were reached are presented hereunder.

To begin with, the results presented are an analysis of the format of the educational process in schools from February 24, 2022, until the end of the school year (May-June 2022), as reported by 73 respondents. Concerning the first research question, the study found that the remote format was one of the main formats of conducting the educational process.

Additionally, the data on the current format of the educational process in schools shows that a mixed format prevails. The study also explored the devices used for remote teaching and found that the most commonly used devices were laptops and smartphones, and the most popular digital tools used for distance and blended learning were Zoom, Google Meet, and Viber.

The analysis of the study also found that most teachers used their own developed materials for online teaching, and the most popular online resources were YouTube, Na urok,

Vseosvita, and Learning.ua. The study found that previous experience of use, availability, and functionality were the main factors that influenced the selection of digital technologies for teaching during distance and blended learning. Furthermore, the majority of teachers spent most of their time on the selection of educational materials when preparing for distance teaching.

The study found that most respondents used the synchronous mode of distance learning, with 64.4% indicating its use, and the asynchronous mode was used by slightly fewer respondents. The most commonly used tool for asynchronous teaching during the distance learning format was working with online resources. The study also explored the challenges that teachers faced in ensuring that students have access to learning materials and can continue their education despite disruptions such as air alarms and power outages. The results indicate that teachers need to be versatile and adaptable in their teaching methods to overcome the challenges they face during distance and blended learning.

It was also found that the majority of respondents also reported that they have used free access to educational platforms/services offered during the full-scale invasion, where the majority of respondents found this support as very helpful.

We have also found that the majority of teachers assessed student achievement during distance learning in synchronous mode, using methods like quizzes and tests during live video sessions. The most popular synchronous assessment methods were tests on platforms like Google Classroom, while oral assessments using video tools like Skype and Zoom were also common. Feedback on assignments was often delivered through comments on learning platforms or direct communication via messengers. These findings demonstrate teachers' adaptability in using digital tools for assessment. However, 32.9% of teachers did not use digital instruments for assessment, potentially due to limited access or preferences for traditional methods. Future research can explore ways to support these teachers and investigate the effectiveness of different assessment tools and strategies in emergency remote teaching.

While answering the second research question, the results of the survey suggest that remote teaching during wartime conditions posed several challenges for teachers, with the most common being the lack of material and technical support for both teachers and students, internet connectivity issues, power outages, maintaining contact with students, and assessing student success in a distance format. However, a significant proportion of teachers recognized the importance of attending training to enhance their skills in remote teaching, which may have helped them better adapt to the challenges.

The survey also highlighted the professional development needs of teachers in providing remote education, including familiarization with new online tools and services for student creativity, creating and editing educational videos, practical help in mastering new tools, improvement of the methodology of conducting online lessons, and mastery of assessment tools in the conditions of distance learning.

This is noteworthy, as the research by Shamir-Inbal, T. and Blau, I. (2021) had concluded that teachers faced challenges in adapting their teaching methods to the new medium of remote learning, particularly in relation to the varying levels and needs of their students. They had to navigate the integration of both synchronous and asynchronous activities in a blended learning approach, requiring careful planning and implementation.

Most of the participants believed that there were sufficient online didactic materials for preparing for remote classes in wartime conditions, although a minority expressed a need for more resources. Teachers recommended having more methodologically verified and scientifically based materials, interactive support for textbook paragraphs, thematic educational videos with relevant tasks, and the development of online lessons, audio, and video for the programme. Some teachers also expressed interest in gamification and having access to services for the implementation of educational topics such as databases and computer graphics.

To deal with the struggles of teaching remotely during wartime conditions, teachers suggested improving skills in working with technical equipment, having a good internet connection, using an electronic resource that combines an electronic diary and an educational platform, providing practical workshops, better material and technical support for the teacher, and more quality materials for knowledge testing, psychological support, and technical support. To note, the research by Hershkovitz et al. (2023) emphasized that emotional difficulties in times of emergency may serve as an important hindering factor, that is why psychological or psychosocial support is of high value for teachers.

Here we can conclude that the survey provides valuable insights into the challenges faced by teachers during remote teaching in wartime conditions and their professional development needs, as well as their suggestions for improving online didactic materials and resources.

Concerning the third research question, the first set of results suggests that the majority of respondents found that their distance-learning experience during the COVID-19 pandemic helped them adapt to the challenges of martial law. This indicates that the experience of learning remotely during a pandemic may have had some positive effects on their ability to adapt to difficult circumstances. The positively skewed distribution of responses indicates that

most respondents rated their agreement with the statement as high, with a mode response of 5 indicating that complete agreement was the most common response. Only a small minority of respondents completely disagreed with the statement. While comparing with the research of Shamir-Inbal, T. and Blau, I. (2021) the majority of teachers also expressed favorable views regarding their engagement in distance learning and teaching amidst the COVID-19 emergency. They regarded the experience as a chance for professional growth, recognizing that it was a situation they were compelled to adapt to due to the circumstances.

The second set of results focuses on the impact of the COVID-19 pandemic on the respondents' digital skills in teaching. The results suggest that the majority of respondents (71.2%) completely agreed that they became more active and confident in using digital tools and services before and during the full-scale invasion. The percentage of respondents who chose 1 or 2 suggests that very few disagreed with the statement. The distribution of responses is also positively skewed, with most respondents rating their agreement as a 5 out of 5. This means that these results indicate that the pandemic may have had a positive impact on the digital skills of the respondents in teaching. This is also apparent within the sample of the research by Hershkovitz et al. (2023), as participants exhibited notably high levels of self-perceived teaching success in emergency remote teaching the COVID-19 pandemic and self-efficacy in incorporating technology into their teaching practices.

The comparison of applying different modes of distance learning (synchronous, asynchronous and bichronous) during the COVID-19 pandemic and the full-scale invasion reveals some interesting insights. During the COVID-19 pandemic, a higher proportion of teachers (26%) used synchronous distance learning format, which means the importance of real-time interaction and engagement in the remote teaching context. Additionally, a significant majority of teachers (71.2%) utilized both synchronous and asynchronous formats, which emphasizes the need for flexibility and varied instructional methods to meet the diverse needs of students. The same findings were revealed in a previous research (Shamir-Inbal, T., Blau, I., 2021) where most of the teachers claimed that they preferred to use blended learning (46, 35%), while fewer teachers reported that they employed mainly synchronous ERT (39, 29%) during the COVID-19 pandemic.

On the other hand, during the full-scale invasion, the majority of respondents relied on the synchronous mode of distance learning (64.4%), suggesting the significance of immediate interaction and feedback in an emergency situation. The usage of the asynchronous mode (54.8%) may indicate the challenges faced by teachers in providing synchronous learning opportunities during a crisis, so they were forced to opt for asynchronous mode because of

constant power outages and inability to connect to the Internet in order to conduct synchronous activities.

So these findings demonstrate the adaptability of teachers in utilizing different modes of distance learning based on the specific circumstances. This knowledge can inform future educational strategies and interventions during crisis situations, emphasizing the need for a balanced and comprehensive approach to remote learning.

To sum up, it appears that the research objectives have been met for each of the research questions.

### **Implications of the research**

The potential implications for future research based on this study are numerous. Firstly, future research could focus on investigating the impact of the COVID-19 pandemic on teachers' digital skills and their preparedness for emergency remote teaching situations. Additionally, further research could investigate the effectiveness of different remote teaching strategies, such as synchronous versus asynchronous learning, in emergency situations like war.

The limitations of this study include the small sample size and the fact that the study was conducted in a specific context (specific regions during a specific time period). These limitations could be addressed in future research by using a larger and more diverse sample size and conducting the study across multiple regions to increase the generalizability of the findings. Furthermore, future research could include interviews or focus groups with teachers to gain a deeper understanding of their experiences and challenges during emergency remote teaching situations.

### **Significance of the research**

This study contributes to the understanding of the use of educational technologies in emergency remote teaching, specifically during a war. By examining the experiences and perspectives of Ukrainian teachers, this research sheds light on the challenges and strategies used in providing remote education during a crisis.

The theoretical implications of this study lie in the insights it provides on the use of technology in emergency situations. The study highlights the importance of adapting to technology, utilizing a variety of strategies, and the need for ongoing professional development to prepare for future emergencies. These insights can be applied to inform future

research on the use of technology in emergency remote teaching in other contexts and countries.

From a practical perspective, this study provides useful information for educators and policymakers in crisis situations. The findings suggest that it is possible to provide remote education in emergency situations with the use of technology, but that it requires careful planning, appropriate infrastructure, and ongoing support for educators. This information can inform the development of policies and practices related to emergency remote teaching, and provide guidance for educators who may need to adapt to such situations in the future.

Thus, the significance of this research lies in its contribution to the understanding of the use of educational technologies in emergency remote teaching, and its potential to inform future policies and practices in this area.

### **Suggestions for future research**

Based on the limitations and implications of the study, there are some suggestions for future research:

- Further investigate the impact of specific educational technologies on emergency remote teaching during war or other emergency situations.
- Further study by conducting semi-structured interviews that are more locally focused to provide the appropriate support to address the problems.
- Concentrate on the interaction between learners and the role of parents in ERT.
- Examine the experiences and perspectives of students and parents on emergency remote teaching during war or other emergency situations.
- Compare the emergency remote teaching experiences and challenges of teachers in different regions or countries facing similar emergency situations.
- Explore the effectiveness of different training and professional development programmes in preparing teachers for emergency remote teaching during war or other emergency situations.
- Analyze the role of educational leaders and policymakers in facilitating emergency remote teaching during war or other emergency situations.

By addressing these questions, future research can provide more comprehensive insights into the use of educational technologies in emergency remote teaching and help inform the development of more effective strategies and policies in similar contexts.

## ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my supervisor, Associate Professor of Educational Technology, Leo Aleksander Siiman, for his invaluable guidance, support, and feedback throughout the course of this project. His expertise, patience, and dedication have been instrumental in the completion of this thesis.

I would also like to extend my thanks to the Ukrainian teachers who participated in the survey, without whom this research would not have been possible. Their insights and perspectives have provided valuable data that helped shed light on the challenges faced by educators in Ukraine during these difficult times.

Finally, I would like to dedicate this paper to all teachers of Ukraine and acknowledge their strength and devotion in such terrifying times of Russian aggression against Ukraine. Their unwavering commitment to education and to the well-being of their students is truly inspiring. Their hard work and dedication are essential to building a brighter future for Ukraine.

## AUTHOR'S DECLARATION

*I hereby declare that I have written this thesis independently and that all contributions of other authors and supporters have been referenced. The thesis has been written in accordance with the requirements for graduation theses of the Institute of Education of the University of Tartu and is in compliance with good academic practices.*

Signature: *M. Baior*

Date: May 31, 2023

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## APPENDICES

### Appendix 1. Research questionnaire

#### General information

##### 1. What subjects are you teaching?

primary school subjects  
geography teacher  
physics teacher  
chemistry teacher  
biology teacher  
teacher of mathematics  
computer science teacher  
economics teacher  
teacher of the history of Ukraine and world history  
teacher of law and civic education  
teacher of Ukrainian language and literature  
teacher of foreign literature  
foreign language teacher  
physical education teacher  
labor training teacher  
music teacher  
art teacher  
teacher of the basics of health  
teacher of defense of Ukraine  
Other

##### 2. What grades are you teaching?

1-4

5

6

7

8

9

10

11

Other

**3. How many years of teaching experience do you have?**

up to 5 years

up to 10 years

up to 20 years

20 and more

Other

**4. In which settlement is the school where you teach?**

city

urban village

village

Other

**5. In which region of Ukraine do you live?**

Crimea

Vinnitsia region

Volyn region

Dnipropetrovsk region

Donetsk region

Zhytomyr region

Transcarpathian region

Zaporizhzhia region

Ivano-Frankivsk region

Kyiv region

Kirovohrad region

Luhansk region

Lviv region

Mykolaiv region

Odesa region

Poltava

Rivne region  
Sumy region  
Ternopil region  
Kharkiv region  
Kherson region  
Khmelnyskyi region  
Cherkasy region  
Chernivtsi region  
Chernihiv region  
Kyiv  
Sevastopol  
Other

#### **The use of technologies during the ERT period**

- 6. What was the format of providing the educational process in the school where you teach from the time of the full-scale invasion of Russia into Ukraine (February 24, 2022) until the end of the school year (May-June 2022)?**

stationary  
remote  
mixed (stationary and remote)  
Other

- 7. What is the current format of providing the educational process at the school where you teach?**

stationary  
remote  
mixed (stationary and remote)  
Other

- 8. What devices were you using to teach remotely during the indicated period of ERT (24.02.2022 - until now):**

PC

tablet  
laptop  
smartphone  
I had nothing  
Other

**9. What digital tools did you use/are using to conduct lessons during distance and blended learning?** *You can choose several answer options*

Zoom  
Google Meet  
Skype  
Viber  
Tik-Tok  
Microsoft Teams  
Padlet  
Cisco Webex  
Google Classroom  
Classtime  
ClassDojo  
Edmodo  
Jitsi Meet  
Moodle  
Telegram  
Twitter  
WhatsApp  
E-Diary  
MyClass  
School site  
Mentimeter  
Learningapps.org  
Kahoot  
WhatsApp  
Email

Facebook

Own blog

Other

**10. What online resources and services did you use/are using to conduct lessons? *You can choose several answer options***

Open online lessons

All-Ukrainian school online

Vseosvita

Own developed materials

Own video lessons

Materials shared on Facebook groups

Materials from blogs

Na urok

Online courses

Digital education "Diia"

Classtime

Edpuzzle

TED

EdEra

Prometheus

Youtube

Learning.ua

Other:

**11. Based on what factors were you selecting technologies:**

previous experience of use (during the COVID-19 pandemic, or before)

availability

functionality

technical competence

**12. What part of your preparation for distance teaching took/takes the most time?**

selection of educational materials

design of materials

preparation of video materials

checking homework

Other:

**13. Which of the distance learning modes did you have to use/still use while teaching during the specified period (February 24, 2022 - until now)?**

synchronous

asynchronous

bichronous (the conditions for organizing the asynchronous mode are preserved, but the possibility of conducting classes in real time is added to them as needed (for example, consultations on a separate topic, both individual and group))

Other

**14. If you chose the asynchronous mode option, what tools/services did/are you using for asynchronous teaching during the distance learning format?**

Communication in messengers

Work with online resources (for example, All-Ukrainian school online, Na urok, etc.);

Educational games ("365° on the scale of media literacy", "Adventures of Literatus" and "Mediaznaiko", etc.)

Other

**15. Have you ever had to prepare multiple formats of the same lesson (face-to-face, synchronous or asynchronous distance learning) at the same time, in case of air alarms and power outages, so that students can catch up on the material if they missed it?**

Yes

No

**16. With the beginning of the full-scale invasion, many foreign and Ukrainian educational platforms/services opened free access for educators and students. Have you used/are you using any of these opportunities?**

Yes

No

Other

**17. If you answered yes, please rate how much this opportunity helped your preparation for your work. Rate from 1-5, where 1 - didn't help at all, 5 - helped a lot**

1 2 3 4 5 (Likert scale)

**18. Could you please share which of these platforms/services that have gone free you used/are using?**

**19. How did you assess/are assessing student achievement during distance learning?**

In synchronous mode

In asynchronous mode

Other

**20. If you chose the synchronous assessment mode, which of the methods below did you use?**

- tests on GoogleClassroom, Na urok, Moodle platforms etc
- written works using Skype, Zoom, etc. video tools;
- participation in oral forms of assessing (presentation and defense of projects, etc.) using Skype, Zoom video tools individually or in groups;
- participation in online seminars and online forums using Skype, Zoom video tools or in chats on distance learning platforms (for example, Moodle) in closed Facebook groups, etc.;
- Other

**21. If you chose the synchronous assessment mode, which of the methods below did you use?**

- tasks on one of the platforms (GoogleClassroom, Naurok, Moodle, etc.) without a time limit (in case of air alarm or power outages);
- written works in the text (Word, etc.) or in notebooks and send files with completed tasks to the teacher by e-mail, in one of the messengers (Viber, WhatsApp, Facebook, etc.) or by other means of mail communication (in the absence of technical teaching aids or access to the Internet);
- videotape or audio record oral responses and send files to the teacher via electronic means, etc.
- Other

**22. Were you using any digital instruments to assess students' achievement?**

Yes

No

Other

**23. Could you share which digital tools you used to assess student achievement, if so?**

**24. In what way were you delivering feedback on students' assignments?**

Direct communication via email

Direct communication via messengers

Comments on the learning platform

Automated tests for self-control

Audio and video feedback format in synchronous mode

Audio and video feedback format in asynchronous mode

No feedback

Other

## **Challenges and needs during the ERT period**

### **25. What were the key challenges you faced that hindered/hinders you from conducting remote teaching?**

your lack of material and technical support  
insufficient material and technical support of students  
your lack of high-quality Internet  
lack of high-quality Internet among students  
difficulties in maintaining contact with students  
power outages  
sometimes I had a complete lack of internet connection  
sometimes students had a complete lack of Internet connections  
lack of time due to the increased workload for the teacher  
my insufficient level of digital competence  
insufficient level of digital competence of students  
my unpreparedness for teaching in a distance format  
difficulties with assessing the success of students in a distance format  
Other

### **26. Were you attending any training to improve your remote teaching?**

Yes, all the time  
Yes, sometimes  
No, not once

### **27. What are your needs for professional development in terms of providing ERM?<sup>1</sup>**

improvement of the methodology of conducting online lessons  
creating an educational video, recording and editing a lesson video  
creating and maintaining my own blog  
familiarization with new online tools and services for student creativity  
ensuring accessibility to online courses, webinars

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<sup>1</sup> From the survey of the Institute of Digitalization of Education of the National Academy of Sciences of Ukraine together with the State Scientific Institution "Institute of Modernization of the Content of Education" of the Ministry of Education and Culture of Ukraine on "Readiness and needs of teachers regarding the use of digital tools and ICT in war conditions: 2023"

mastery of assessment tools in the conditions of distance learning  
mastery of tools for providing feedback in distance learning conditions  
quick online consultations on the use of ICT  
practical help in mastering new tools  
Other

**28. Do you think there are a sufficient number of online didactic materials for preparing for remote classes in wartime conditions?<sup>2</sup>**

Yes

No

**29. If you marked "No", please write which materials you would like to receive**

**30. If you think about your struggles during that period, while teaching remotely, what could have helped you deal with them?**

### **The impact of ERT experience during COVID-19**

**31. Do you agree with the statement that your distance learning experience during the COVID-19 pandemic helped you adapt to the challenges of martial law? Rate from 1-5, where 1 - completely disagree, 5 - completely agree.**

1 2 3 4 5 (Likert scale)

**32. What distance learning format did you use during the COVID-19 pandemic?**

synchronous

asynchronous

both

Other

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<sup>2</sup> From the survey of the Institute of Digitalization of Education of the National Academy of Sciences of Ukraine together with the State Scientific Institution "Institute of Modernization of the Content of Education" of the Ministry of Education and Culture of Ukraine on "Readiness and needs of teachers regarding the use of digital tools and ICT in war conditions: 2023"

**33. To what extent do you agree that since the COVID-19 pandemic, you have become more active and confident in using digital tools and services in teaching before and during the full-scale Russian invasion of Ukraine? Rate from 1-5, where 1 - completely disagree, 5 - completely agree.**

1 2 3 4 5 (Likert scale)

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*Mariia Baior*  
**31/05/2023**