

# Challenges facing distance learning during martial law: results of a survey of Ukrainian students

Serhiy O. Semerikov<sup>1,2,3,4,5</sup>, Tetiana A. Vakaliuk<sup>3,2,1,5</sup>, Iryna S. Mintii<sup>2,1,3,5</sup> and Svitlana O. Didkivska<sup>7</sup>

<sup>1</sup>Kryvyi Rih State Pedagogical University, 54 Gagarin Ave., Kryvyi Rih, 50086, Ukraine

<sup>2</sup>Institute for Digitalisation of Education of the NAES of Ukraine, 9 M. Berlynskoho Str., Kyiv, 04060, Ukraine

<sup>3</sup>Zhytomyr Polytechnic State University, 103 Chudrivska Str., Zhytomyr, 10005, Ukraine

<sup>4</sup>Kryvyi Rih National University, 11 Vitalii Matusevych Str., Kryvyi Rih, 50027, Ukraine

<sup>5</sup>Academy of Cognitive and Natural Sciences, 54 Gagarin Ave., Kryvyi Rih, 50086, Ukraine

<sup>6</sup>Lviv Polytechnic National University, 12 S. Bandera Str., Lviv, Ukraine, 79013, Ukraine

<sup>7</sup>Krakow University of Economics, 27 Rakowicka Str., Krakow, 31-510, Poland

**Abstract.** Cataclysms such as the COVID-19 pandemic or the Russian invasion of Ukraine have had an irreversible impact on all spheres of human life. Therefore, it is crucial to monitor the needs of participants in specific processes to be able to respond to them dynamically. In this regard, a survey was conducted with 331 respondents from 13 institutions of higher education in Ukraine. The questionnaire consisted of four blocks: general questions (age, gender, educational institution, year of study, location, etc.), technical block (availability of technical means, access to the Internet, etc.), psychological block (respondents' state), and educational block (availability of opportunities to continue educational activities). To answer some questions, a sample was made by regions of Ukraine to understand whether there is a significant difference between regions where active hostilities are taking place and regions that are conditionally safer. The article aims to present the results and analysis of the answers and offer suggestions for teachers on implementing educational activities based on the obtained results. The survey showed that teachers of higher education institutions take into account the peculiarities of the current situation in Ukraine. Most institutions implemented blended/distance learning to ensure all participants' safety in the educational process. Among the recommendations are the introduction of video recording of online classes and increased use of non-formal education opportunities, particularly MOOC courses.

**Keywords:** survey, Ukraine, blended learning, distance learning, MOOC courses, martial law

## 1. Introduction

The onset of a full-scale Russian invasion of Ukraine has sparked further debate on implementing distance and blended learning. This issue was previously brought to the fore in 2019 by the COVID-19 pandemic, which underscored the importance of researching effective educational organization methods [28, 29]. While most countries are reverting to traditional formats,

✉ [semerikov@gmail.com](mailto:semerikov@gmail.com) (S. O. Semerikov); [tetianavakaliuk@acnsci.org](mailto:tetianavakaliuk@acnsci.org) (T. A. Vakaliuk); [mintii@acnsci.org](mailto:mintii@acnsci.org) (I. S. Mintii); [d2023@student.uek.krakow.pl](mailto:d2023@student.uek.krakow.pl) (S. O. Didkivska)

🌐 <https://kdpu.edu.ua/semerikov> (S. O. Semerikov); <https://acnsci.org/vakaliuk/> (T. A. Vakaliuk);

<https://acnsci.org/mintii/> (I. S. Mintii); <https://scholar.google.com/citations?user=HPA0kfQAAAAJ> (S. O. Didkivska)

📞 0000-0003-0789-0272 (S. O. Semerikov); 0000-0001-6825-4697 (T. A. Vakaliuk); 0000-0003-3586-4311 (I. S. Mintii); 0000-0002-4004-6631 (S. O. Didkivska)



© Copyright for this paper by its authors, published by Academy of Cognitive and Natural Sciences (ACNS). This is an Open Access article distributed under the terms of the Creative Commons License Attribution 4.0 International (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

leveraging insights from this global experiment [7, 13], the war-induced situation in Ukraine calls for innovative and unconventional solutions.

As reported by the United Nations High Commissioner for Refugees, by the end of 2020, over 80 million individuals globally were displaced due to persecution, conflict, and human rights abuses [24], a figure that has doubled in the past decade [4]. This number has since escalated, with millions of Ukrainians seeking refuge from their homeland. As of February 2023, Ukrainian refugees exceeded 17 million, with over 8 million finding temporary protection or similar national schemes in Europe [25–27]. By the end of 2021, child displacement reached a post-World War II high of 36.5 million, according to UNICEF, not accounting for those displaced by natural disasters [23]. As of June 2022, over 2.3 million Ukrainian children were living abroad [18]. The UN, host governments, and NGOs strive to provide refugees essential services, including education. However, many Ukrainian refugees opt to continue their education in Ukrainian while also integrating local education where possible.

## 2. Theoretical background

Under the current circumstances, the practical organization of education in Ukrainian institutions necessitates a comprehensive analysis of various factors, including social, technical, and psychological aspects. Gathering data to understand the needs and capabilities of all educational stakeholders and the specifics of educational organization is a standard practice. The period following the COVID-19 quarantine restrictions saw a surge in studies analyzing online survey results. Most of these studies acknowledge that students appreciate teachers' efforts to facilitate learning during the pandemic and recognize the pros and cons of blended/distance learning. For instance, an online survey conducted at Poznan University of Medical Sciences, Poland, revealed that students appreciated the time-saving, convenience, and flexibility offered by online learning but faced technical and psychological challenges [19].

A study conducted at the University of Lahore, University College of Medicine and Dentistry, Pakistan, highlighted the benefits of comfort and accessibility while pointing out issues with efficiency and maintaining academic integrity [15]. The study recommended special attention to training teachers in interactive teaching methods and reducing cognitive load. A global study covering 200 medical colleges across India emphasized the need for improved information and communication infrastructure and precise learning planning [21]. The necessity for a reliable course assessment system was also noted by Warfvinge et al. [31].

Mouna, Fatima and Ouidad [14] pointed out the technical challenges higher education students face in Morocco, including a lack of computing resources and proper network infrastructure. The study also highlighted students' low digital competence levels and inconsistencies among teachers regarding using learning platforms. The psychological impact of isolation during the crisis was also noted.

The study by Ali [1] focused on students with special educational needs. The findings were consistent with previous studies but emphasized the need for appropriate educational resources and software/hardware to teach relevant skills and include e-learning courses in educational programs.

Alzahrani [3] conducted a comparative study on full-time and online learning outcomes

during the COVID-19 pandemic, revealing an improvement in university students' performance. A study at the College of Arts and Sciences, Qatar University, Qatar, incorporated structured interviews alongside an online survey, underscoring the significance of problem-based learning and just-in-time teaching [22]. A survey covering most Chinese provinces or municipalities (30 out of 34), various majors, and different universities found that online learning could potentially diminish the academic performance of first- and second-year students [12]. Prolonged periods of online learning (e.g., more than 29 days) were identified as a negative factor.

The experience gained from a study at Delft University of Technology, Netherlands, suggested increasing student activity, socialization, and motivation through learning activities presented on a research society's website and through group dating [20]. Yuan, Ji and Zhong [32] from the University of York, United Kingdom, emphasized the need for continuous improvement in online learning, including the flipped classroom method.

Research focusing on teachers' needs and capabilities is another significant area. For instance, Keim et al. [8] (Northern Italy) focused on teachers' emotional well-being during the COVID-19 pandemic. Similarly, Kotini-Shah et al. [10] analyzed work-life balance and productivity among teachers during the pandemic. The study found that the pandemic did not affect all teachers equally. Those early in their careers were negatively impacted by increased workload and stress. Oprisan et al. [16] found that burnout prevalence increased during the COVID-19 pandemic. Alswedani, Mehmood and Katib [2] presented questions for planning online, in-class, and blended learning in Saudi Arabia during the COVID-19 pandemic.

One of the challenges of distance learning is the low level of digital competence among students and teachers. This topic was extensively researched by Ovcharuk and Ivaniuk [17], who proposed specific measures for developing digital competence and professional development among teachers.

Few targeted studies analyze educational applicants' needs and opportunities during wartime. Most such studies focus on preparing psychological workers for the medical field. For example, Challoner and Forget [5] analyzed the impact of civil war on medical education in Liberia. Beckmann et al. [4] analyzed psychotherapist training in post-conflict regions (using Kurdistan in Iraq as an example), while Kizilhan [9] explored psychotherapists' work in Iraq's crisis region.

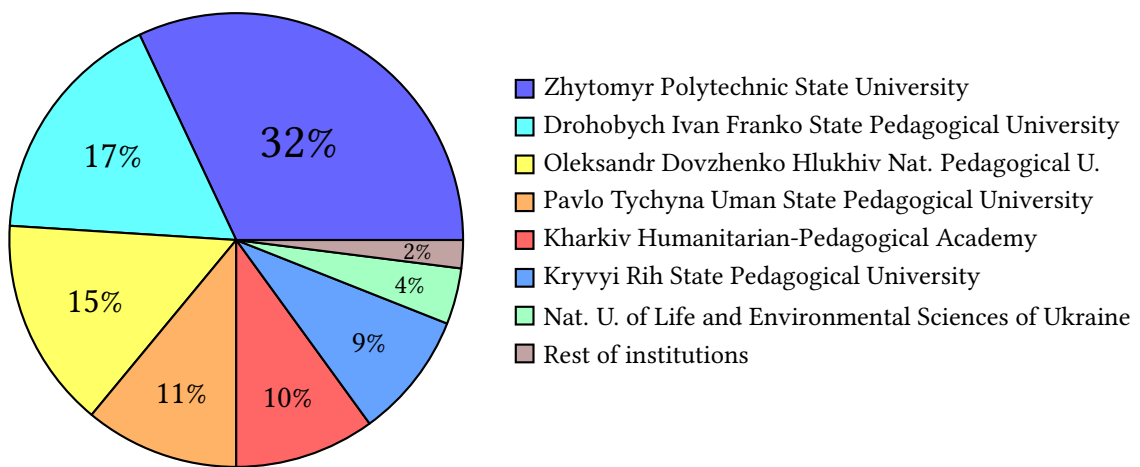
Chen et al. [6] explored the dynamics of public sentiment in cyberspace concerning the Russian-Ukrainian war. Due to time constraints, the study analyzed the evolutionary dynamics of public opinion, using Chinese Weibo texts as a case study. However, the scenarios examined in this study differ significantly from the current educational situation in Ukraine. Consequently, the *aim* of this article is to scrutinize student perspectives on education under martial law.

### 3. Methodology

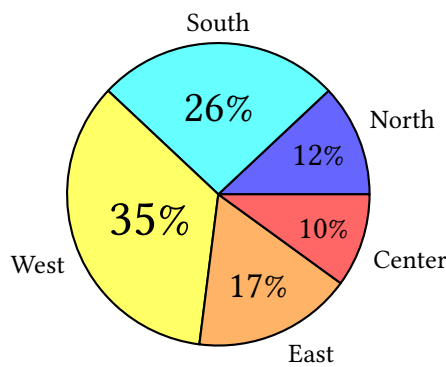
The authors surveyed students across various regions of Ukraine during the full-scale invasion (April-May 2022). The survey encompassed 331 respondents from 13 higher education institutions in Ukraine, distributed across different regions. The percentage distribution of respondents by institution is illustrated in figure 1, and by region in figure 2:

- Donbas State Pedagogical University;
- Drohobych Ivan Franko State Pedagogical University;

- International Humanitarian University;
- Kharkiv State Academy of Design and Arts;
- Kryvyi Rih State Pedagogical University;
- Municipal Establishment “Kharkiv Humanitarian-Pedagogical Academy” of the Kharkiv Regional Council;
- National University of Life and Environmental Sciences of Ukraine;
- Oleksandr Dovzhenko Hlukhiv National Pedagogical University;
- Pavlo Tychyna Uman State Pedagogical University;
- South Ukrainian National Pedagogical University named after K. D. Ushynsky;
- Vinnytsia Mykhailo Kotsiubynskyi State Pedagogical University;
- Zhytomyr Ivan Franko State University;
- Zhytomyr Polytechnic State University.



**Figure 1:** Percentage of respondents by institutions of higher education in Ukraine.



**Figure 2:** Percentage of respondents by regions of Ukraine.

As figures 1 and 2 illustrate, the respondents were from various parts of Ukraine, including regions less affected by the military invasion (such as the western regions), the most affected (eastern and southern regions), and those under aggression in the initial months (northern and central regions).

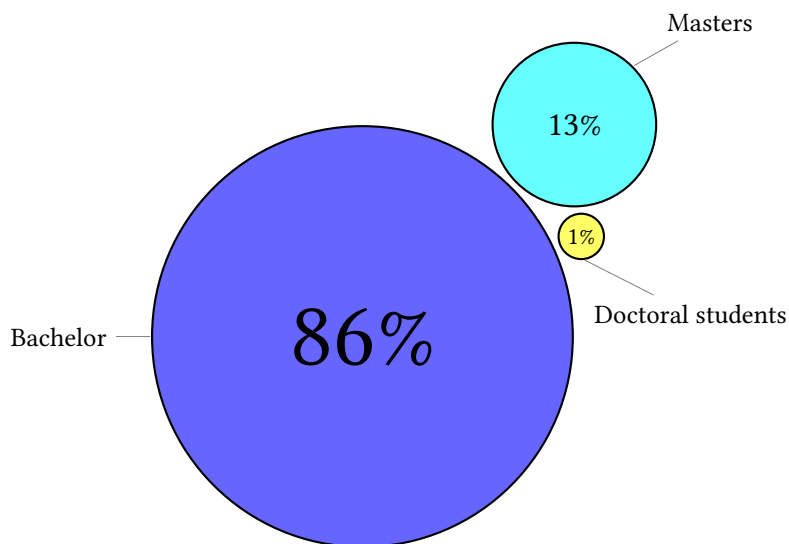
Regarding gender distribution, 181 (54.7%) of the respondents were female, and 150 (45.3%) were male.

The survey consisted of 33 questions addressing various aspects of distance learning during martial law, including general, technical, psychological, and educational aspects.

For subsequent analysis of the results, we will compare the responses based on gender and location. This is due to the location's decisive role in resuming the educational process under active hostilities or air threats and how gender influences the perception of the current situation and issues related to mobilization.

## 4. Results

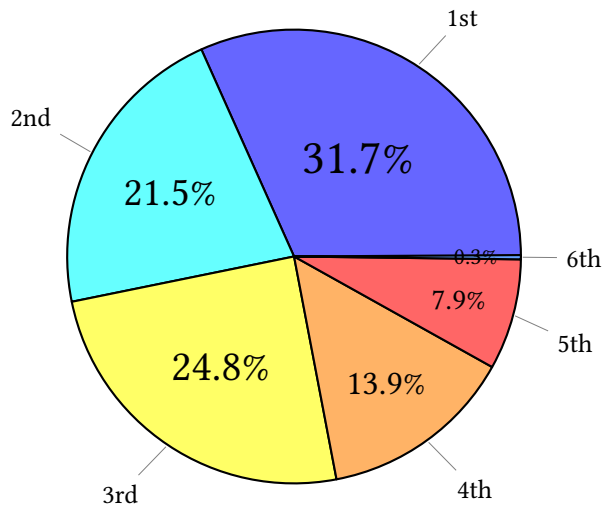
The survey included students from various educational levels (figure 3): Bachelors (286 respondents, 86%), Masters (43 respondents, 13%), and Doctoral students (2 respondents, 1%). The distribution by year of study was as follows (figure 4): 1st year – 105 (31.7%), 2nd year – 71 (21.5%), 3rd year – 82 (24.8%), 4th year – 46 (13.9%), 5th year – 26 (7.9%), and 6th year – 1 (0.3%).



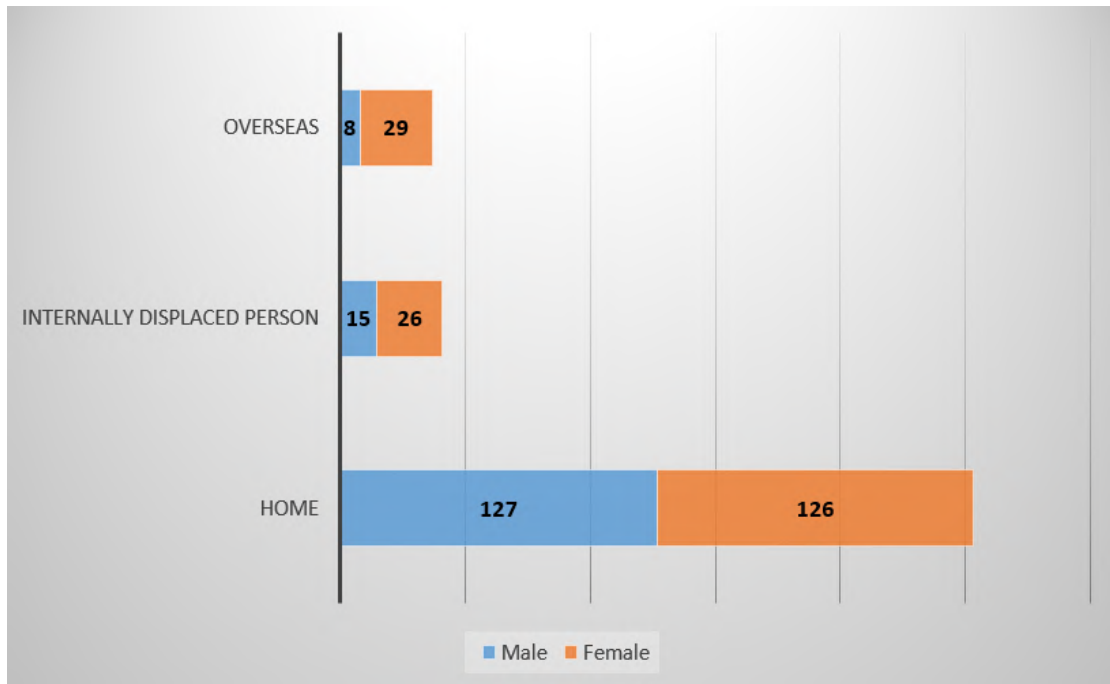
**Figure 3:** Distribution of respondents by levels of education.

A key point of interest was the location of the respondents: at home, internally displaced, or abroad. The survey revealed that the majority of both male and female respondents were still at home at the time of the survey (127 and 128, respectively), with 15 males and 26 females internally displaced and 8 males and 29 females abroad (figure 5).

When considered territorially, students from all regions of Ukraine were present in the survey: North – 84, South – 24, West – 49, East – 58, and Central regions – 38. There were significantly



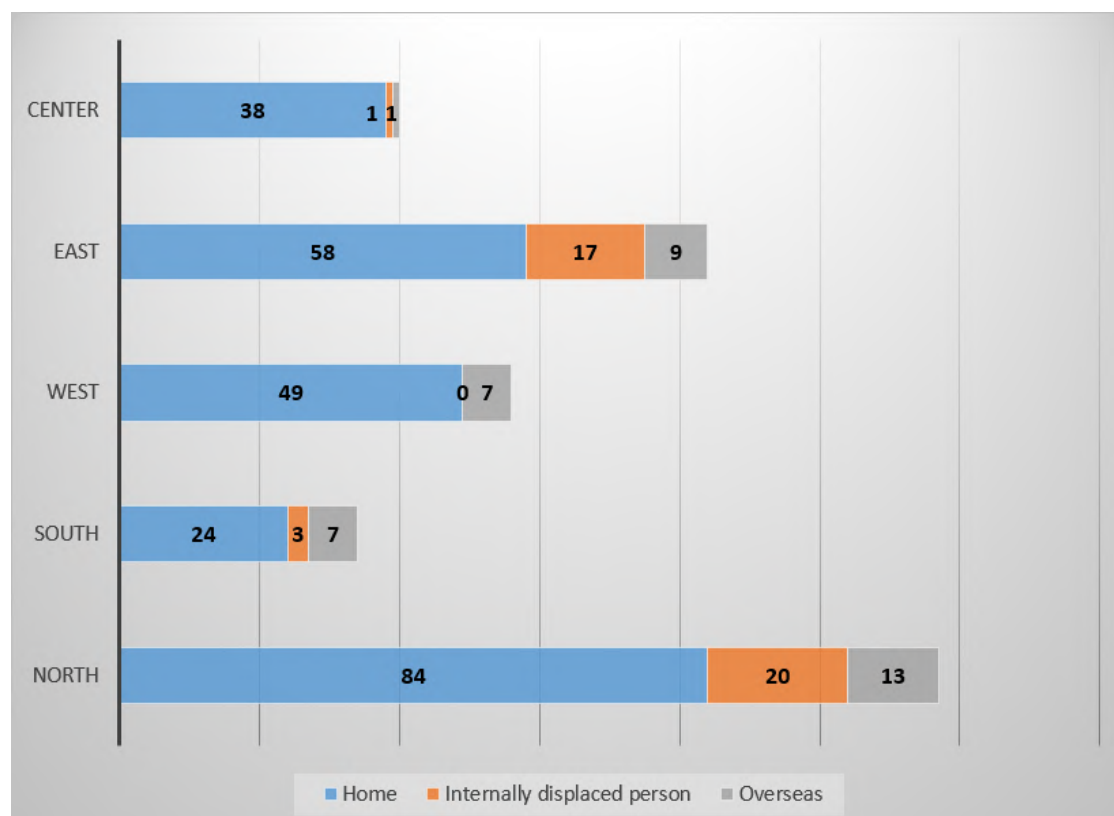
**Figure 4:** Distribution of respondents by years of study.



**Figure 5:** Location of respondents.

fewer internally displaced persons: North – 20, South – 3, West – none, East – 17, Central regions – 1. The distribution was somewhat similar for students who were abroad: North – 13, South – 7, West – 7, East – 9, Central regions – 1 (figure 6).

The authors were interested in whether students who were away from home planned to



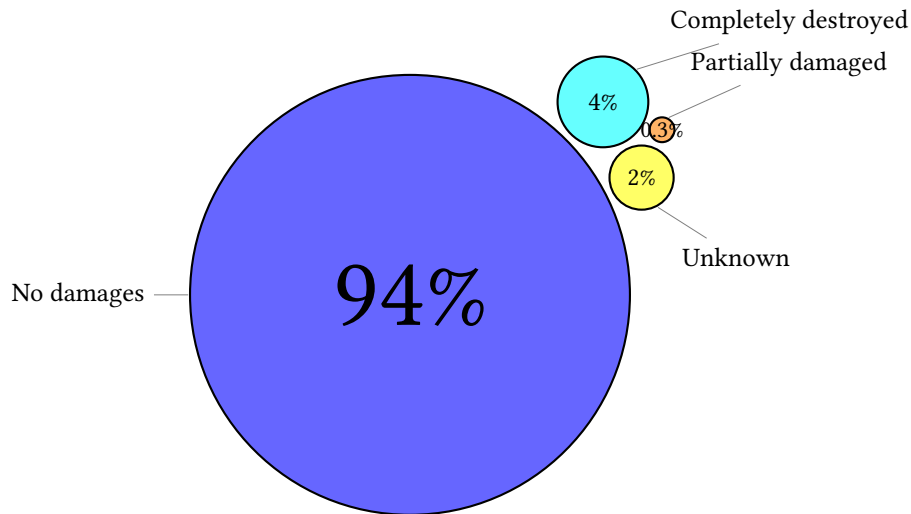
**Figure 6:** Location of respondents (considered in terms of territorial).

return to Ukraine and when. Almost all respondents planned to return to Ukraine depending on the situation, with only five indicating they had no plans to return.

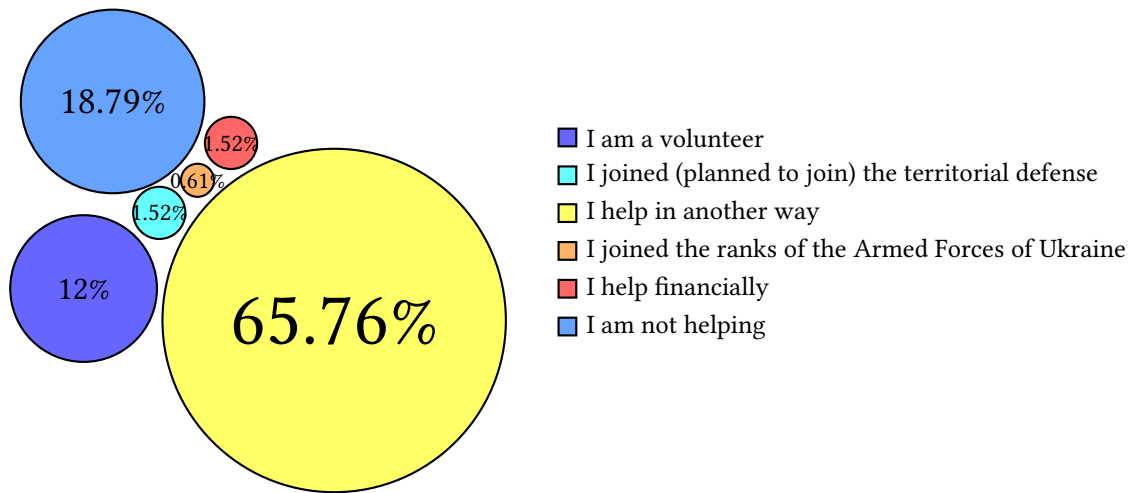
The survey also asked students abroad if they had considered studying or working in their current location. Eleven respondents answered negatively to this question, while twenty-six responded positively; eighteen were already employed at the time of the survey, four were studying at a higher education institution abroad, and others were considering these possibilities for the future.

The survey included a question about housing damage to gain a comprehensive understanding of the situation. The results showed that their housing remained undamaged for most respondents (94% or 312 people). Two percent (7 people) did not know about their housing’s condition, four percent (11 people) had their housing destroyed, and one respondent had partially damaged housing (figure 7).

The survey first sought to understand if students were aiding the military front in any capacity. Of the respondents, 12% (38 individuals) are volunteers, 1.52% (5 individuals) are part of or plan to join the territorial defense, 0.61% (2 individuals) have enlisted in the Ukrainian Armed Forces, and 1.52% (5 individuals) provide financial assistance in some form. A significant 65.76% (217 individuals) help in other ways, while 18.79% (62 individuals) do not assist at all. One respondent did not answer this question (figure 8).



**Figure 7:** Answers to the question “Is your housing damaged?”.



**Figure 8:** Answer to the question, are the students helping the military at the front in any way?

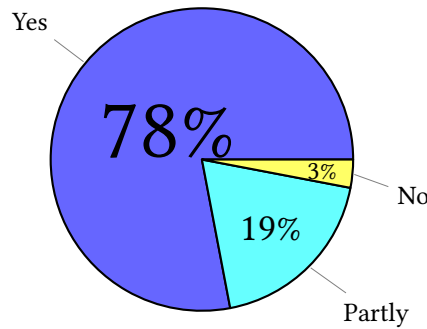
The subsequent questions pertained to the readiness for continued remote learning.

The first requirement for distance learning is access to technical tools such as laptops or tablets. In this regard, 78% (258 individuals) had these tools, 19% (62 individuals) had them partially, and 3% (11 individuals) did not possess them at all (figure 9).

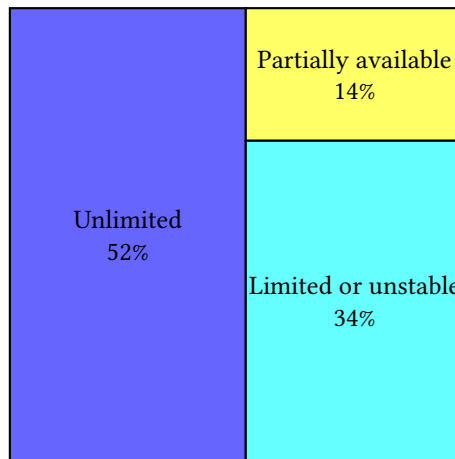
Another crucial requirement for distance learning is internet access. For 52% (171 individuals) of the respondents, internet access is unrestricted throughout the day. However, for 34% (113 individuals), it is either limited or unstable, and for 14% (47 individuals), it is only partially available (figure 10).

The following questions were related to education under martial law, focusing on psycholog-





**Figure 9:** Answer to the question is that students have technical tools for distance learning.



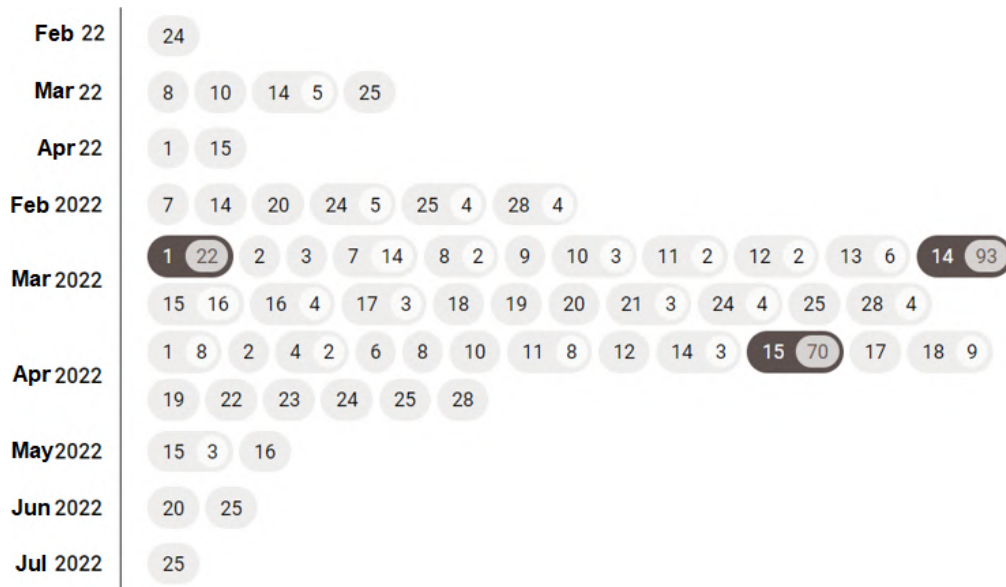
**Figure 10:** Internet accessibility of the survey's participants.

ical and didactic components. The responses to the question “When did your university resume education after February 24, 2022?” were quite interesting (figure 11). Only three dates were identified by a specific group of students: March 1 (22 individuals), March 14 (93 individuals), and April 15 (70 individuals). All other students selected dates ranging from February 24, 2022, to July 25, 2022.

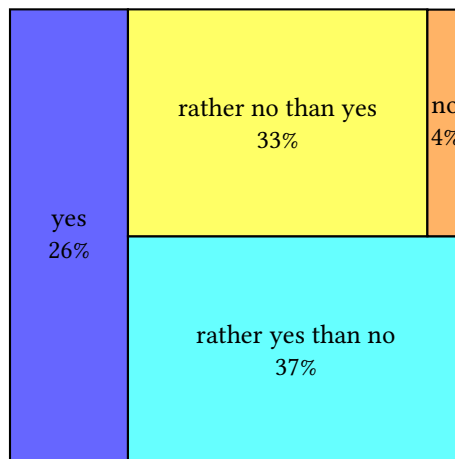
In terms of whether students manage to study remotely under conditions of war and air alerts, it was found that out of all respondents, 26% (86 individuals) answered: “yes”, 37% (124 individuals) responded, “rather yes than no”, 33% (108 individuals) said, “rather no than yes”, and 4% (13 individuals) answered “no” (figure 12).

When the data was analyzed by region, it was observed that most students could still engage in learning activities despite the constant state of anxiety (figure 13). Some students even noted that the intensity of their coursework sometimes required them to ignore air raid alarms, as it was otherwise impossible to keep up with their educational responsibilities.

The survey then asked about the mode of instruction at the students’ universities. The options were: synchronous (online, real-time instruction), asynchronous (self-paced learning with mate-



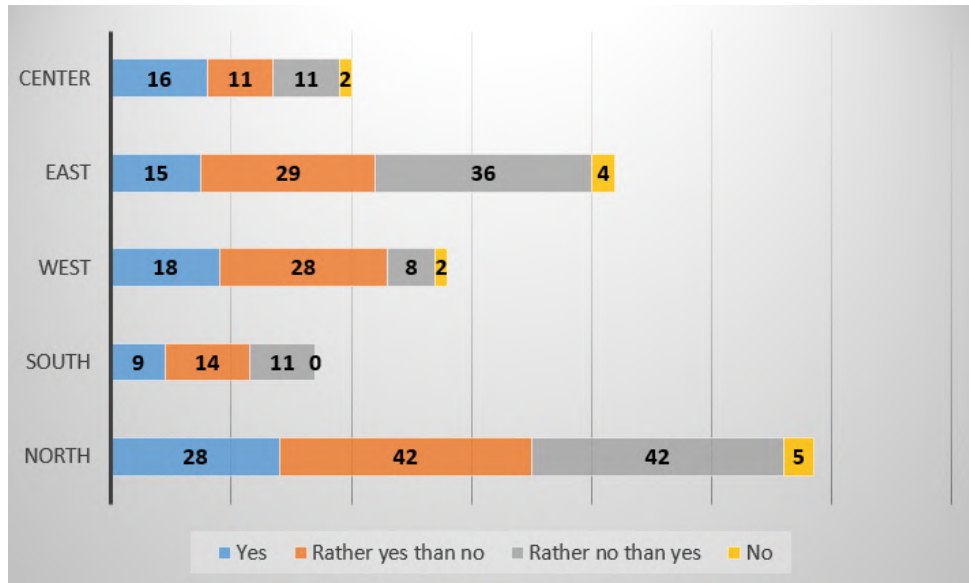
**Figure 11:** Answers to the question “When did your university resume education after February 24, 2022?”.



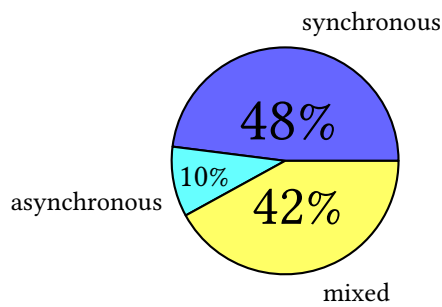
**Figure 12:** Answers to the question “Is it possible to study remotely in conditions of war and air alerts?”.

rials provided by the teacher), or mixed. The results showed that 48% (161 respondents) opted for synchronous learning, 10% (32 respondents) for asynchronous, and 42% (138 respondents) for a mixed approach (figure 14). When these responses were broken down by region, it was found that the synchronous mode was most popular in the northern regions, followed by the mixed mode.

The survey also sought to understand student participation in online classes. It was found that 107 students regularly attended online classes and completed their work on time, 135 attended but often submitted their work late, and 89 worked entirely asynchronously (figure 16).



**Figure 13:** Distribution by region of Ukraine for the previous question (“Is it possible to study remotely in conditions of war and air alerts?”).

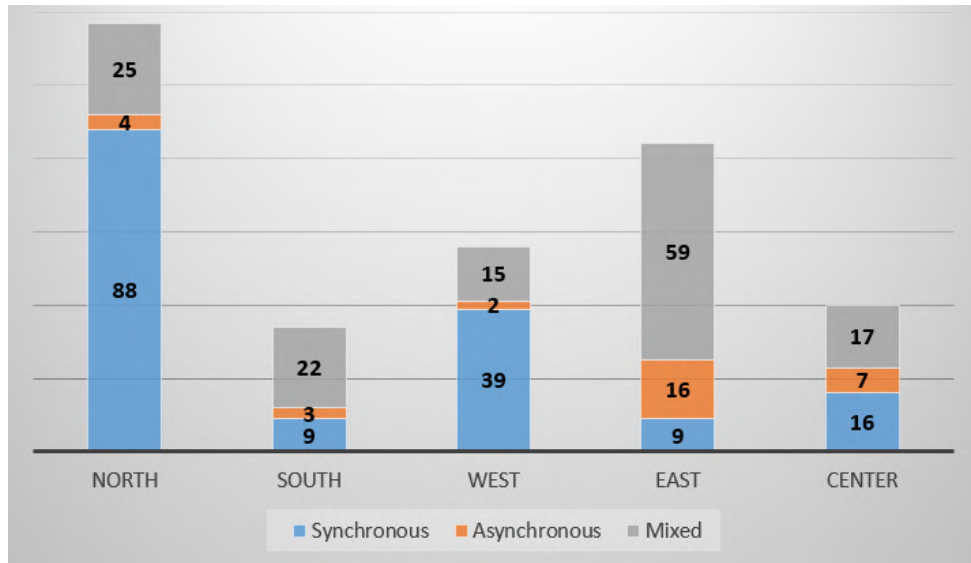


**Figure 14:** Modes of classes at the university.

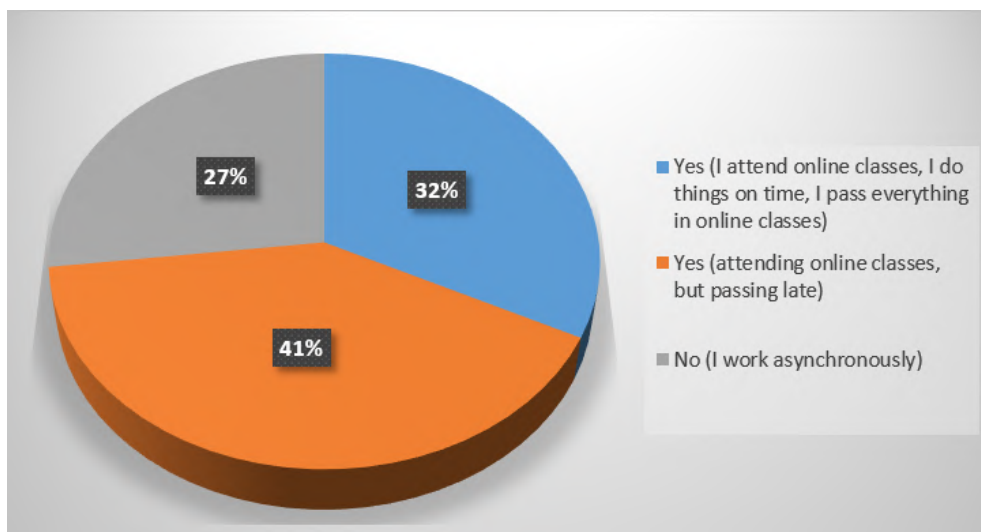
For those who did not participate in online classes, reasons included employment commitments, unstable or no internet access, disruptions due to shelling and air raids, volunteering, and assisting the Ukrainian Armed Forces.

Interestingly, when asked about their preferred mode of instruction, students’ responses varied from the current mode implemented at their respective institutions. A total of 16% (51 students) found the synchronous mode more convenient, while a majority of 52% (170 respondents) preferred the asynchronous mode, and 32% (104 respondents) favored a mixed approach (figure 17).

When analyzed by region, the synchronous mode was most popular in the northern regions, while the asynchronous mode was favored in the eastern regions. The mixed mode saw a relatively even distribution across all regions. Notably, six individuals indicated a preference for traditional (full-time) or resumption of education after the war (figure 18).



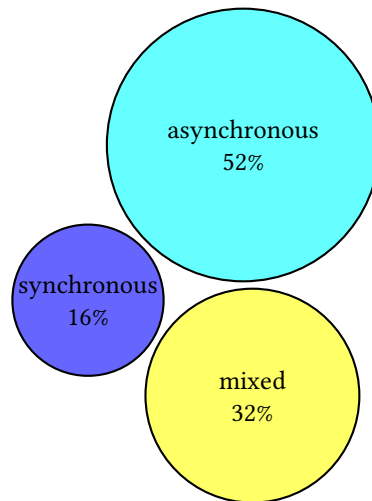
**Figure 15:** Distribution by region of Ukraine for the previous question (“In what mode are classes conducted at your university?”).



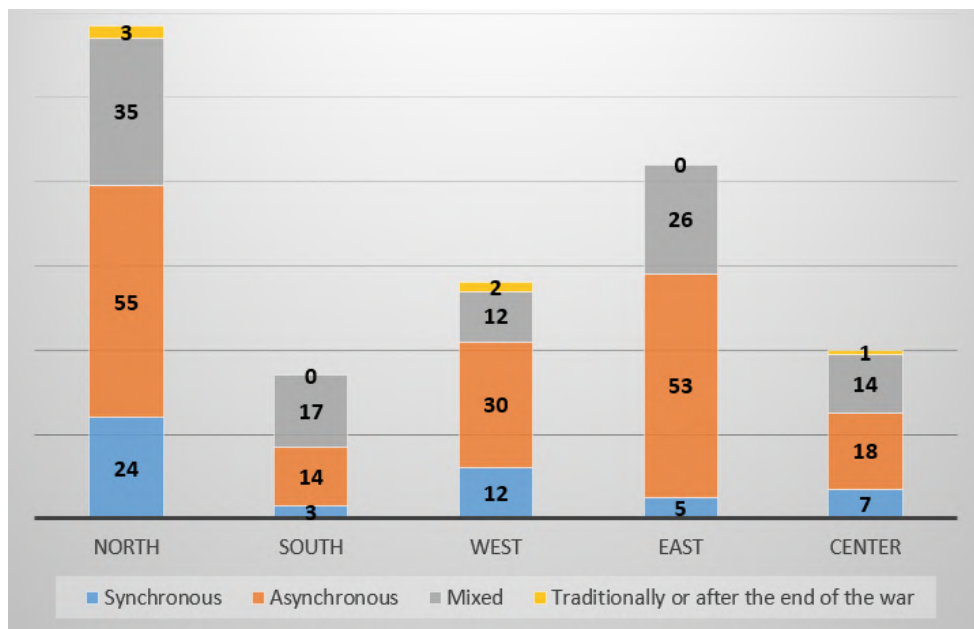
**Figure 16:** Students’ participation in online classes.

Respondents were given the opportunity to justify their preferences. The asynchronous mode was favored due to unstable internet access, flexibility in task completion, and not being tied to a specific schedule. However, some students found this mode challenging due to poor teacher-student communication and disruption of daily routines.

The synchronous mode was appreciated for its structure, direct teacher-student interaction, and peer communication. However, it was criticized for its inflexibility and incompatibility with wartime realities.



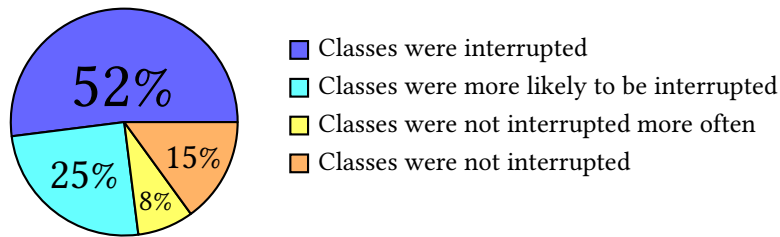
**Figure 17:** Answers to the question “Which mode is more convenient?”.



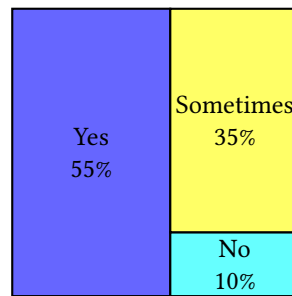
**Figure 18:** Distribution by region of Ukraine for the previous question “Which mode is more convenient?”.

The mixed mode was seen as a balance between the two, offering both structured online classes and the flexibility to complete assignments independently.

Regarding interruptions during classes due to air raid alerts, 52% (173 students) reported frequent interruptions, 25% (82 students) experienced occasional interruptions, while 8% (27 students) rarely had interruptions, and 15% (49 students) reported no interruptions at all (figure 19). It is worth noting that some teachers across all regions continued their classes uninterrupted,



**Figure 19:** Interruption of classes during air raid alert.



**Figure 20:** Answers to the question “Do you like the methodology used by teachers in distance learning during the war?”.

regardless of whether active hostilities occurred.

Regarding the teaching methodologies employed during wartime distance learning, 55% (181 students) responded positively, 10% (35 students) negatively, and 35% (115 students) were sometimes satisfied with the methods used (figure 20).

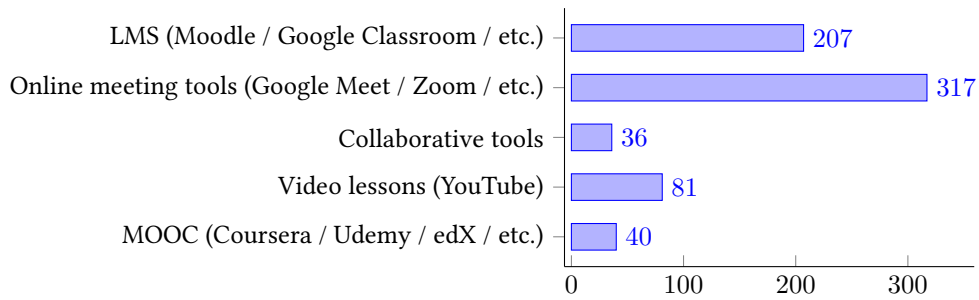
Students were allowed to elaborate on their choices. Those who favored the methods appreciated the professional approach, tactfulness, understanding, and teacher assistance. They also valued the flexibility to complete tasks both online and offline. However, some students were dissatisfied due to a lack of teacher-student interaction, an overload of tasks, and the inability to master material outside class time.

The survey also explored the tools used for distance learning during the war. The most commonly used were online meeting tools (317 responses), learning management systems (207 responses), video lessons (81 responses), massive open online courses (40 responses), and collaboration tools (36 responses) (figure 21).

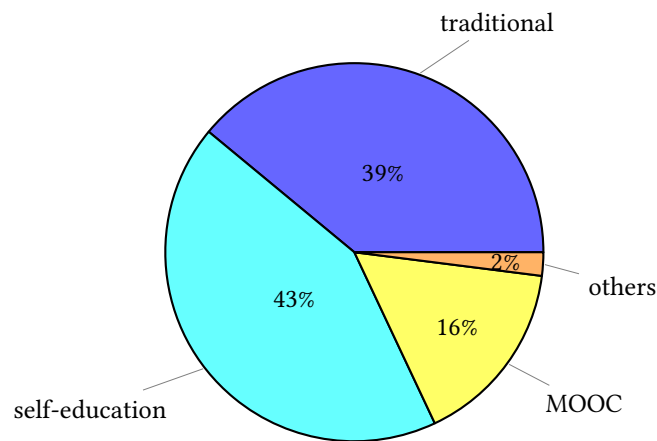
When asked if teachers’ work methods changed during the war, only 25% (84 students) responded affirmatively, while 75% (247 students) saw no change. Students expressed a preference for traditional forms of education (193 responses), self-education (212 responses), MOOCs (79 responses), and other forms (11 responses) during the war (figure 22).

Among the most popular MOOCs used for self-study were Coursera, EdX, Udacity, Cisco, Sololearn, [30], and Prometheus (figure 23). These platforms were primarily used for learning foreign languages, IT skills, specialty subjects, and psychological support (figure 24).

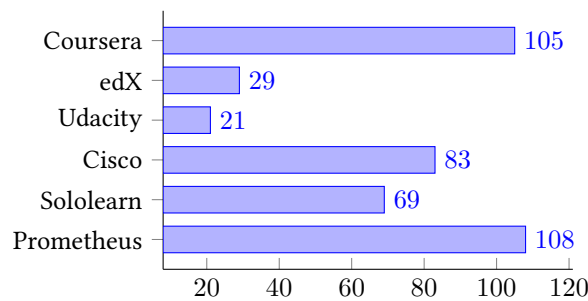
In terms of whether teachers consider martial law when evaluating work (for example, not deducting points for omissions), 41% (135 students) reported that they do, 24% (79 students) said



**Figure 21:** Distance learning tools used by teachers during the war.



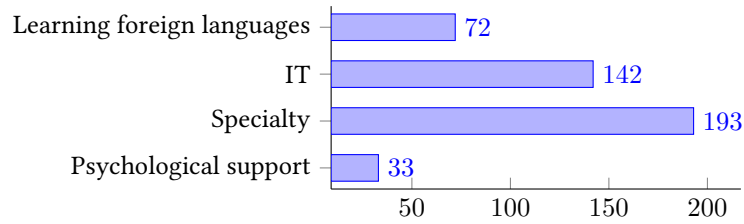
**Figure 22:** Answers to the question “Whether the forms of work of teachers changed during the war”.



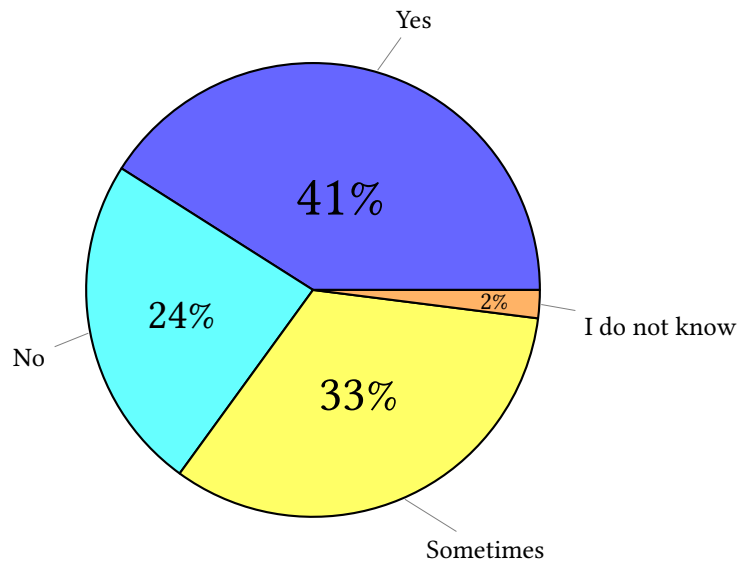
**Figure 23:** MOOCs platforms for self-study.

they do not, and 33% (109 students) said it happens sometimes. Additionally, 2% (8 students) were unsure (figure 25).

The survey also asked if the actual time spent on online work has changed due to the war. It was found that the time changed significantly for 25% (83 respondents), not significantly for 37% (124 respondents), and did not change at all for 37% (121 respondents). A small number of



**Figure 24:** Areas of MOOCs courses for self-study.



**Figure 25:** Consideration of martial law by teachers when evaluating work.

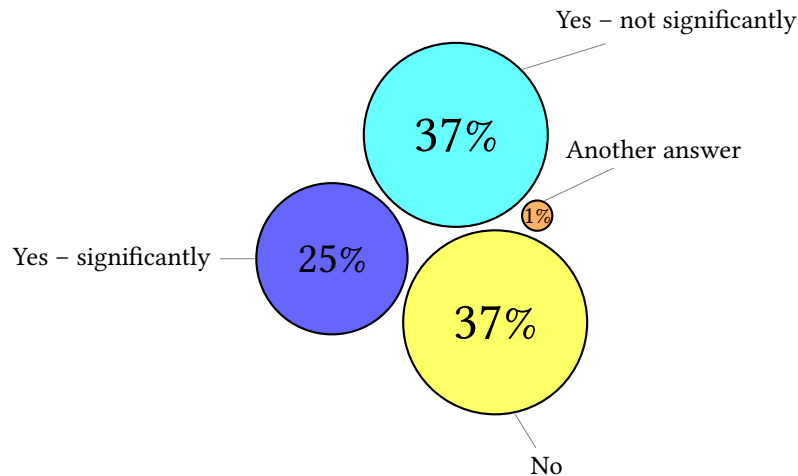
respondents (3 individuals) provided different answers (figure 26).

Students were also asked how martial law affected the quality of their education. Some reported a decline in quality due to emotional stress, anxiety, air raid alerts, volunteering, lack of opportunity to study, difficulty concentrating on studies, decreased productivity, demotivation, and reduced study time. Others felt that the quality of education remained the same as they had already overcome the challenges of distance learning during the COVID-19 pandemic.

The survey sought to identify what motivates students to continue studying during hostilities. Common responses included obtaining a diploma or profession, desire to learn and gain knowledge, faith in victory, responsibility towards the country, distraction from the current situation, maintaining academic progress to avoid expulsion, teacher attitudes, scholarships, future work prospects in their field of study, and more.

Finally, students were asked about the necessity of education during wartime. A majority responded affirmatively (165 individuals), with some suggesting a need to reduce student workload and change the approach to learning given the difficult circumstances. A few students (30) felt that education was unnecessary during wartime, while others preferred self-education.





**Figure 26:** Change of online work due to the war.

## 5. Discussion

Despite the ongoing war, the educational process has been maintained at a high level. Students deem it necessary to continue their education, and teachers, regardless of location, conduct classes synchronously and asynchronously. However, the necessity of interrupting classes during air raid alarms for safety reasons should be emphasized. The issue of technical support for students is also crucial. In many countries hosting Ukrainian refugees, initiatives were initially organized to address these needs.

The war has directly impacted three groups within the higher education system: students, faculty, and staff. The extent of this impact varies depending on their location and circumstances – whether they remained in Ukraine, left the country, or stayed in the temporarily occupied territories. According to a study by Kurapov et al. [11], 97.8% of respondents from an online survey of Ukrainian higher education institution students, faculty, and staff who remained in Ukraine reported a deterioration in their psycho-emotional health. Symptoms included depression (84.3%), exhaustion (86.7%), loneliness (51.8%), nervousness (84.4%), and anger (76.9%). Women were more likely than men to experience despair, weariness, loneliness, and uneasiness, and students were more likely than employees to report these emotions than staff members.

Kurapov et al. [11] also noted that individuals expressing concern about their deteriorating psycho-emotional condition exhibited higher levels of fear, exhaustion, and loneliness as well as lower levels of resilience. Substance use (i.e., tobacco, alcohol, pain relievers, and sedatives) increased alongside loneliness associated with fear, burnout, and lower resilience. However, despite these conditions, 12.7% of respondents reported that the war had not affected them.

## 6. Conclusions

Despite the challenges posed by the ongoing war, the Ukrainian education system has demonstrated resilience, continuing to meet educational needs. All participants in the educational process have shown readiness to utilize distance learning technologies. However, issues related to technical support, internet access, and the organization of learning remain. As such, a mixed form of learning appears to be the most suitable under current circumstances. It is also suggested that teachers record their classes to accommodate students who may miss them for various reasons, including safety concerns.

While non-formal education opportunities such as MOOC courses are available, they are not yet fully integrated into the educational process. Furthermore, disciplines with a national focus (mainly historical, geographical, and language courses) are not adequately represented on MOOC platforms, indicating a potential area for Ukrainian teachers to explore.

The organization of the educational process in Ukrainian higher education institutions has faced several challenges. A pause marked the end of the 2021/2022 academic year due to difficult conditions, with displaced and destroyed universities experiencing prolonged delays. Despite these circumstances, the educational process was intensified, which placed additional burdens on students, teachers, and administrative staff.

Motivation to teach and learn amidst constant uncertainty and unstable psycho-emotional states is another challenge. Despite these conditions, most Ukrainian higher education students reported remaining interested in their education. The primary motivational factors for teachers and staff were a sense of duty, responsibility, and faith in Ukraine's victory.

Potential losses in the quality of the educational process are another concern. As previously noted, high-quality distance learning was not feasible in all regions during quarantine restrictions. Full access to education is another aspect that has been affected.

Ukrainian higher education institutions continue to function and provide educational services despite these challenges. The current crisis allows Ukraine's higher education system to emerge stronger, adapt to new conditions, and ultimately be reformed.

## Acknowledgments

This work was carried out thanks to the named scholarship of the Verkhovna Rada of Ukraine for young scientists – doctors of sciences for 2022.

## References

- [1] Ali, A.M., 2021. E-learning for Students With Disabilities During COVID-19: Faculty Attitude and Perception. *SAGE Open*, 11(4), p.21582440211054494. Available from: <https://doi.org/10.1177/21582440211054494>.
- [2] Alswedani, S., Mehmood, R. and Katib, I., 2022. Sustainable Participatory Governance: Data-Driven Discovery of Parameters for Planning Online and In-Class Education in Saudi Arabia During COVID-19. *Frontiers in Sustainable Cities*, 4, p.871171. Available from: <https://doi.org/10.3389/frsc.2022.871171>.

- [3] Alzahrani, M., 2022. Traditional Learning Compared to Online Learning During the COVID-19 Pandemic: Lessons Learned From Faculty's Perspectives. *SAGE Open*, 12(2), p.21582440221091720. Available from: <https://doi.org/10.1177/21582440221091720>.
- [4] Beckmann, J., Wenzel, T., Hautzinger, M. and Kizilhan, J.I., 2022. Training of psychotherapists in post-conflict regions: A Community case study in the Kurdistan Region of Iraq. *Frontiers in Psychiatry*, 13, p.947903. Available from: <https://doi.org/10.3389/fpsy.2022.947903>.
- [5] Challoner, K.R. and Forget, N., 2011. Effect of civil war on medical education in Liberia. *International Journal of Emergency Medicine*, 4(1), p.6. Available from: <https://doi.org/10.1186/1865-1380-4-6>.
- [6] Chen, B., Wang, X., Zhang, W., Chen, T., Sun, C., Wang, Z. and Wang, F.Y., 2022. Public Opinion Dynamics in Cyberspace on Russia-Ukraine War: A Case Analysis With Chinese Weibo. *IEEE Transactions on Computational Social Systems*, 9(3), pp.948-958. Available from: <https://doi.org/10.1109/TCSS.2022.3169332>.
- [7] Iyer, S.S., Gernal, L., Subramanian, R. and Mehrotra, A., 2023. Impact of digital disruption influencing business continuity in UAE higher education. *Educational Technology Quarterly*, 2023(1), p.18-57. Available from: <https://doi.org/10.55056/etq.29>.
- [8] Keim, R., Pfitscher, G., Leitner, S., Burger, K., Giacomoni, F. and Wiedermann, C.J., 2022. Teachers' emotional well-being during the SARS-CoV-2 pandemic with long school closures: a large-scale cross-sectional survey in Northern Italy. *Public Health*, 208, pp.1-8. Available from: <https://doi.org/10.1016/j.puhe.2022.04.006>.
- [9] Kizilhan, J.I., 2020. Stress on local and international psychotherapists in the crisis region of Iraq. *BMC Psychiatry*, 20(1), p.110. Available from: <https://doi.org/10.1186/s12888-020-02508-0>.
- [10] Kotini-Shah, P., Man, B., Pobee, R., Hirshfield, L.E., Risman, B.J., Buhimschi, I.A. and Weinreich, H.M., 2022. Work-Life Balance and Productivity Among Academic Faculty During the COVID-19 Pandemic: A Latent Class Analysis. *Journal of Women's Health*, 31(3), pp.321-330. Available from: <https://doi.org/10.1089/jwh.2021.0277>.
- [11] Kurapov, A., Pavlenko, V., Drozdov, A., Bezliudna, V., Reznik, A. and Isralowitz, R., 2023. Toward an Understanding of the Russian-Ukrainian War Impact on University Students and Personnel. *Journal of Loss and Trauma*, 28(2), pp.167-174. Available from: <https://doi.org/10.1080/15325024.2022.2084838>.
- [12] Li, J. and Che, W., 2022. Challenges and coping strategies of online learning for college students in the context of COVID-19: A survey of Chinese universities. *Sustainable Cities and Society*, 83, p.103958. Available from: <https://doi.org/10.1016/j.scs.2022.103958>.
- [13] Miller, A.L., 2022. Adapting to teaching restrictions during the COVID-19 pandemic in Japanese universities. *Educational Technology Quarterly*, 2022(3), p.251-262. Available from: <https://doi.org/10.55056/etq.21>.
- [14] Mouna, K., Fatima, L. and Ouidad, L., 2022. Analytic survey on the challenges of Moroccan students in higher education institutions face to distance learning. *Indonesian Journal of Electrical Engineering and Computer Science*, 28(1), pp.284-296. Available from: <https://doi.org/10.11591/ijeecs.v28.i1.pp284-296>.
- [15] Mukhtar, K., Javed, K., Arooj, M. and Sethi, A., 2020. Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era: Online learning during COVID-19 pandemic era. *Pakistan Journal of Medical Sciences*, 36(COVID19-S4). Available

- from: <https://doi.org/10.12669/pjms.36.COVID19-S4.2785>.
- [16] Oprisan, A., Baettig-Arriagada, E., Baeza-Delgado, C. and Martí-Bonmatí, L., 2022. Prevalence of burnout syndrome during the COVID-19 pandemic and associated factors. *Radiología (English Edition)*, 64(2), pp.119–127. Available from: <https://doi.org/10.1016/j.rxeng.2021.09.009>.
- [17] Ovcharuk, O. and Ivaniuk, I., 2021. A self-assessment tool of the level of digital competence of Ukrainian teachers in the context of lifelong learning: the results of an online survey 2021. *Educational Dimension*, 5, p.75–88. Available from: <https://doi.org/10.31812/educdim.4719>.
- [18] Perun, V., 2022. More than 2.3 million Ukrainian refugee children are abroad. Available from: [https://lb.ua/society/2022/07/04/522113\\_kordonom\\_perebuvaie\\_ponad\\_23 mln.html](https://lb.ua/society/2022/07/04/522113_kordonom_perebuvaie_ponad_23 mln.html).
- [19] Przymuszała, P., Zielińska-Tomczak, Ł., Kłos, M., Kowalska, A., Birula, P., Piszczek, M., Cerbin-Koczorowska, M. and Marciniak, R., 2022. Distance Learning and Assessment During the COVID-19 Pandemic—Perspectives of Polish Medical and Healthcare Students. *SAGE Open*, 12(1), p.21582440221085016. Available from: <https://doi.org/10.1177/21582440221085016>.
- [20] Rothkrantz, L., 2022. The Impact of COVID-19 Epidemic on Teaching and Learning. *Proceedings of the 23rd International Conference on Computer Systems and Technologies*. New York, NY, USA: Association for Computing Machinery, CompSysTech '22, p.162–167. Available from: <https://doi.org/10.1145/3546118.3546134>.
- [21] Singh, H.K., Joshi, A., Malepati, R.N., Najeeb, S., Balakrishna, P., Pannerselvam, N.K., Singh, Y.K. and Ganne, P., 2021. A survey of E-learning methods in nursing and medical education during COVID-19 pandemic in India. *Nurse Education Today*, 99, p.104796. Available from: <https://doi.org/10.1016/j.nedt.2021.104796>.
- [22] Soubra, L., Al-Ghouti, M.A., Abu-Dieyeh, M., Crovella, S. and Abou-Saleh, H., 2022. Impacts on Student Learning and Skills and Implementation Challenges of Two Student-Centered Learning Methods Applied in Online Education. *Sustainability*, 14(15), p.9625. Available from: <https://doi.org/10.3390/su14159625>.
- [23] The number of refugee children in the world has reached 36.5 million, 2022. Available from: <https://en.interfax.com.ua/news/general/839997.html>.
- [24] The United Nations High Commissioner for Refugees, 2022. *Global Trends: Forced Displacement in 2021*. Copenhagen. Available from: <https://www.unhcr.org/62a9d1494/global-trends-report-2021>.
- [25] The United Nations High Commissioner for Refugees, 2022. Ukraine Refugee Situation. Available from: <https://data.unhcr.org/en/situations/ukraine>.
- [26] The United Nations High Commissioner for Refugees, 2023. Ukraine emergency. Available from: <https://www.unhcr.org/ukraine-emergency.html>.
- [27] The United Nations High Commissioner for Refugees, 2023. Ukraine Refugee Situation. Available from: <https://data.unhcr.org/en/situations/ukraine>.
- [28] Tkachuk, V., Yechkalo, Y.V., Semerikov, S., Kislova, M. and Hladyr, Y., 2020. Using Mobile ICT for Online Learning During COVID-19 Lockdown. In: A. Bollin, V. Ermolayev, H.C. Mayr, M. Nikitchenko, A. Spivakovsky, M.V. Tkachuk, V. Yakovyna and G. Zholtkevych, eds. *Information and Communication Technologies in Education, Research, and Industrial Applications - 16th International Conference, ICTERI 2020, Kharkiv, Ukraine, October 6-10, 2020, Revised Selected Papers*. Springer, *Communications in Computer and Information*

- Science, vol. 1308, pp.46–67. Available from: [https://doi.org/10.1007/978-3-030-77592-6\\_3](https://doi.org/10.1007/978-3-030-77592-6_3).
- [29] Vakaliuk, T., Spirin, O., Korotun, O., Antoniuk, D., Medvedieva, M. and Novitska, I., 2022. The current level of competence of schoolteachers on how to use cloud technologies in the educational process during COVID-19. *Educational Technology Quarterly*, 2022(3), p.232–250. Available from: <https://doi.org/10.55056/etq.32>.
- [30] Vakaliuk, T.A., Chyzhmotria, O.V., Chyzhmotria, O.H., Didkivska, S.O. and Kontsedailo, V.V., 2023. The use of massive open online courses in teaching the fundamentals of programming to software engineers. *Educational Technology Quarterly*, 2023(1), p.106–120. Available from: <https://doi.org/10.55056/etq.37>.
- [31] Warfvinge, P., Löfgreen, J., Andersson, K., Roxå, T. and Åkerman, C., 2022. The rapid transition from campus to online teaching – how are students’ perception of learning experiences affected? *European Journal of Engineering Education*, 47(2), pp.211–229. Available from: <https://doi.org/10.1080/03043797.2021.1942794>.
- [32] Yuan, T., Ji, S. and Zhong, G., 2022. The Exploration of the Future Teaching Mode in Post-Pandemic Higher Education. *Proceedings of the 7th International Conference on Distance Education and Learning*. New York, NY, USA: Association for Computing Machinery, ICDEL ’22, p.222–227. Available from: <https://doi.org/10.1145/3543321.3543358>.