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## Blended Learning in Higher Educational Establishments in Ukraine in the Context of War

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**Abstract.** The article deals with the implementation of blended learning in higher educational institutions in terms of war in Ukraine. The effectiveness of blended learning integration with a focus on its fundamental features in Wartime Ukraine on the current stage is emphasized. The motivation of teachers of educational institutions aimed to implement new methods and approaches of blended learning that can contribute to the education quality with the use of information and communication technologies to promote cooperation among all members of the educational process is pointed out. The consideration of theoretical principles and practical aspects of applying blended learning in modern circumstances is identified. The analysis of the challenges posed by war conditions, such as disrupted infrastructure, power outages, student and faculty displacement, and psychological stressors is presented. The exploration of the adaptability of Ukrainian higher education institutions in implementing blended learning is described. The best practices and innovative approaches used by universities to maintain academic quality amid warfare are highlighted. Flexible scheduling (FS), hybrid attendance (HA), psychological support (PS), and military preparedness (MP) that have become essential components of blended learning, guaranteeing that instruction continues even in the face of power outages, relocation, and security issues, are considered. Flexible deadlines and modular courses, being features of FS that can ensure striking a balance between education and survival demands, are outlined. In the face of power outages, dislocation, and security threats, hybrid attendance (HA), providing students and teachers continuity, accessibility, and safety, is presented. Blended learning frameworks that incorporate psychological support (PS) and guarantee resilience, lessen trauma, and create a supportive learning environment are discussed. The most popular ways to overcome war-related stressors, that should be incorporated in HEIs, such as, online counseling, stress-management workshops, trauma-informed teaching practices, are proposed. The aim of the Ukrainian authorities to maintain core academic subjects, while integrating defense training and balancing civilian and military education, is mentioned. The results of the survey that suggest that flexible scheduling, hybrid attendance, psychological support and military education in blended learning, being not just a convenience but a necessity in wartime Ukraine, are given. The policy recommendations for sustaining and improving blended learning models in crisis situations are discussed.  
**Key words:** blended learning, higher education, wartime, education quality, innovative approaches.

## Змішане навчання у вищих навчальних закладах України в умовах війни

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**Анотація.** У статті йдеться про впровадження змішаного навчання у вищих навчальних закладах в умовах війни в Україні. Підкреслено ефективність інтеграції змішаного навчання з акцентом на її фундаментальних особливостях в умовах воєнної України на сучасному етапі. Відзначено мотивацію педагогів закладів освіти, спрямовану на впровадження нових методів і підходів змішаного навчання, які можуть сприяти підвищенню якості освіти з використанням інформаційно-комунікаційних технологій для сприяння співпраці між усіма учасниками освітнього процесу. Визначено розгляд теоретичних засад та практичних аспектів застосування змішаного навчання в сучасних умовах. Представлено аналіз викликів, пов'язаних з умовами війни, таких як зруйнована інфраструктура, відключення електроенергії, переміщення студентів і викладачів, а також психологічні стресові фактори. Описано дослідження адаптивності українських вищих навчальних закладів щодо впровадження змішаного навчання. Висвітлюються найкращі практики та інноваційні підходи, які використовуються університетами для підтримки академічної якості під час війни. Розглянуто гнучке планування

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(ГП), гібридне відвідування (ГВ), психологічна підтримка (ПП) і військова готовність (ВГ), які стали важливими компонентами змішаного навчання, гарантуючи продовження навчання навіть у разі перебоїв з електроенергією, переміщення та проблем безпеки. Окреслено гнучкі терміни та модульні курси, які є особливостями ГП, що можуть забезпечити досягнення балансу між освітою та потребами виживання. З огляду на перебої в електропостачанні, дислокації та загрози безпеці, представлено гібридне відвідування (ГВ), що забезпечує студентам і викладачам безперервність, доступність і безпеку. Обговорюються схеми змішаного навчання, які включають психологічну підтримку (ПП) і гарантують стійкість, зменшують травми та створюють сприятливе навчальне середовище. Запропоновано найпопулярніші способи подолання стресових факторів, пов'язаних із війною, які варто запровадити у ВНЗ, як-от онлайн-консультування, семінари зі стрес-менеджменту, травма-інформовані практики викладання. Згадується прагнення української влади зберегти основні навчальні предмети, одночасно інтегруючи оборонну підготовку та збалансовуючи цивільну та військову освіту. Наведено результати опитування, які свідчать про те, що гнучкий графік, гібридне відвідування, психологічна підтримка та військова освіта у змішаному режимі навчання є не просто зручністю, а необхідністю у воєнній Україні. Обговорюються рекомендації щодо підтримки та вдосконалення моделей змішаного навчання в кризових ситуаціях.

**Ключові слова:** змішане навчання, вища освіта, воєнний час, якість освіти, інноваційні підходи.

## *I Introduction*

The use of blended learning strategies in higher education has become more and more popular worldwide in recent years. In Ukrainian universities, this trend has been intensifying. The effectiveness of blended learning is yet unknown, despite the fact that it appears to be growing in Ukraine these days. The majority of colleges now use distance learning and switch to a blended learning method for their programs. Since each approach has advantages and limitations, the academics debate the benefits and drawbacks of traditional and blended learning. The research has demonstrated that blended learning can be successfully included into the educational process. The purpose of this study is to examine how blended learning affected Ukraine's educational system within the wartime.

Analysis of recent research and publications reveals significant contributions to the study of blended learning. The following scholars have made a great contribution to the investigation of blended learning, namely: Garrison, D., Vaughan, N., Kanuka, H., Holmberg, B., Dearnley, C., Bozkurt, A., Jung, I., Xiao, J., Horn, M., Staker, H., Keegan, D., Simonson, M., Smaldino, S., Albright, M., Zvacek, S., Ma'arop, A., Embi, M., Hubackova, S., Semradova, I., Sherman M., Puhovskiy E., Kambalova Y., Kdyrova I., Snow, M., Alden-Rivers, B., Polovko, O., Glotov, S., Solodchuk, A.

Blended learning, also known as hybrid learning, combines traditional face-to-face classroom instruction with online educational experiences. This pedagogical approach has gained significant prominence in recent decades, driven by technological advancements and evolving educational needs. To understand its current form, it is essential to explore the historical development of blended learning and the key milestones that have shaped its evolution.

According to Holmberg, in 1728 a shorthand teacher Culebb Philippe invited students to study by mail once a week, which is when blended learning first began. Dearnley stresses that Isaac Pitman was the main source of distance learning; he not only sent students stenography information but also corrected their completed assignments, completing the communication scheme in the "teacher-student-teacher" education model [10], [5].

Garrison & Kanuka describe this learning system as the one which began to gain its popularity in the late 20th century, as educational institutions began integrating technology into traditional teaching methods. In the 1960s and 1970s, correspondence courses and televised instruction represented early attempts to expand access to education beyond physical classrooms. These initiatives laid the groundwork for more interactive and flexible learning modalities [7].

The 1980s and 1990s saw the advent of computer-based training (CBT) and computer-assisted instruction (CAI), which introduced digital resources into learning environments. Simonson et al. [26] delve into these innovations, enabling self-paced learning and individualized instruction, emphasizing the potential for combining in-person teaching with technological tools.

The late 1990s and early 2000s marked a significant turning point with the proliferation of the internet and learning management systems (LMS). Universities and colleges began offering online courses, allowing students to access educational content remotely. This period is considered to be essential for the emergence of fully online programs, prompting educators to consider how best to blend traditional and digital methods.

The term “blended learning” gained prominence in the early 2000s. Garrison and Vaughan describe it as a purposeful combination of face-to-face and online learning experiences designed to enhance educational outcomes. The approach emphasizes deliberate integration rather than mere supplementation of traditional instruction with online activities [8].

Keegan identifies a student as a person who wants to avoid having to travel to a “permanent site, at a specific time, to meet with a fixed person for training because of a technical separation between an instructor and a student” can do so through distance learning. When it comes to distance learning, students may be geographically separated but not always bound by temporal constraints. According to another definition, distance learning is a type of training that empowers teachers to organize:

- the modern educational process as a full-fledged one,
- complete with teacher-organized explanations and clarifications of the teaching materials,
- communication between students and the teacher during the entire study period,
- implementing group projects, research, and the development of creative character [13].

Horn & Staker show that in the 2010s, blended learning continued to evolve with the development of more sophisticated educational technologies, such as mobile learning, social media, and adaptive learning platforms. The model became increasingly popular across various educational levels, from K-12 to higher education, due to its flexibility and potential to improve engagement and learning outcomes [11].

The purpose of the article is to examine the role of blended learning in Ukrainian universities during wartime; analyze the challenges posed by war conditions; explore the adaptability of Ukrainian higher education institutions in implementing blended learning to ensure continuity of education; provide a comprehensive understanding of how blended learning serves as a vital tool for promoting higher education in Ukraine despite the ongoing war.

The task of the research is to explore the role of blended learning in Ukrainian higher education during wartime, highlighting its benefits, challenges, and future prospects.

## ***II Materials and Methods***

The theoretical background of the study included pedagogical, psychological and sociological papers. The literature review examines the history and current state of blended learning and concludes that it has the potential to become a major component of the educational process. The authors described the stages of blended education's growth and said that interest in researching and using this type of learning is growing across a variety of fields on different stages of the history of the society.

Bozkurt et al. underline that the COVID-19 pandemic in 2020 accelerated the adoption of blended learning worldwide. Educational institutions rapidly transitioned to hybrid models to ensure continuity of education while adhering to health guidelines. This period underscored the importance of flexibility, digital literacy, and innovative pedagogies in modern education [4].

Before the war, many Ukrainian universities were gradually integrating digital tools into education. The full-scale Russian invasion of Ukraine in February 2022 has had a devastating impact on all aspects of life, including education. Higher educational institutions (HEIs) in Ukraine faced unprecedented challenges: destroyed infrastructure, displaced students and faculty, and constant threats to safety. Despite these difficulties, Ukrainian universities have demonstrated remarkable resilience by adapting to blended learning—a combination of online and traditional face-to-face education. With air raids, power outages, and internet disruptions becoming daily realities, traditional classroom-based education became unreliable. However, the invasion forced a rapid and widespread adoption of remote learning technologies. As a result, HEIs turned to blended learning models, combining synchronous online classes (via Zoom, Google Meet, or Microsoft Teams) with asynchronous materials (recorded lectures, digital textbooks, and learning management systems like Moodle).

The ongoing war in Ukraine has severely disrupted traditional education, making blended learning—a mix of online and in-person instruction – a key solution. Solodchuk sets out that due to the slow pace of implementation of blended learning in Ukraine during martial law and the forced necessity of such an approach, conducting practical classes in this mode is not yet common practice. In addition, the legislative framework to support this form of education has not been comprehensively developed [29].

It should be noted that the aggressive actions of the Russian army and the threat of shelling of educational institutions have become a serious challenge for education in Ukraine. Sherman et al. stress that this situation complicates the normal work of teachers, as the security of educational institutions has become a very important issue [25].

Within the framework of blended learning (Fig. 1), flexible scheduling (FS), hybrid attendance (HA), psychological support (PS), military preparedness (MP) have emerged as critical features, ensuring continuity of education despite power outages, displacement, and safety concerns.

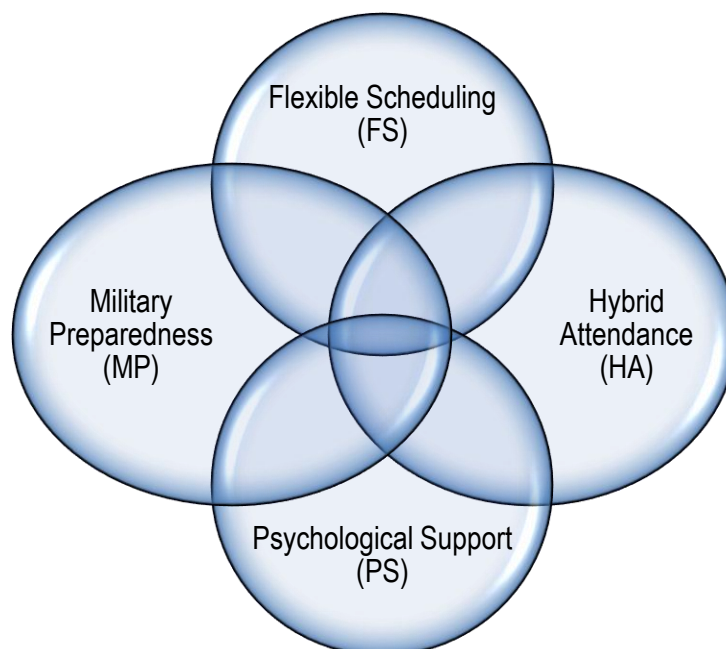


Fig. 1. Framework of Blended Learning

Due to frequent power outages and internet disruptions, universities implemented flexible scheduling, allowing students to access materials offline and complete assignments at their own pace. FS matters in wartime since it can provide with adaptation to unpredictable conditions. Snow & Alden-Rivers outline FS as the characteristics that can ensure balancing education with survival needs: many students help families, work, or volunteer in defense efforts, hence, flexible deadlines and modular coursework accommodate their responsibilities [28].

Hybrid attendance (HA) ensures continuity, accessibility, and safety for students and educators amid power outages, displacement, and security risks. Students who remained in Ukraine attended in-person classes when possible, while internally displaced persons (IDPs) and those abroad joined remotely. Being subjected to mood and physical fluctuations and stress, educators need support to manage hybrid classrooms effectively. Polovko & Glotov consider psychological support to be obligatory, because war trauma affects concentration; hybrid learning must include mental health resources [22].

Beyond academic continuity, addressing the mental health and emotional well-being of learners is critical. Integrating psychological support (PS) into blended learning frameworks ensures resilience, reduces trauma, and fosters a conducive environment for education. Hubackova & Semradova underline that educators face dual pressures of teaching while managing their own trauma, requiring mental health support. Mental health stigma may prevent students from seeking help. It can be supported by Ma'arop & Embi who emphasized that instructors should normalize discussions through awareness campaigns. To overcome resource limits, leverage free online tools (telehealth apps) and international partnerships should be suggested. The supporting system should be easily accessible and effective for all participants in the learning process [12], [17].

In wartime Ukraine, military preparedness (MP) has become an integral part of blended learning, combining traditional education with digital tools to ensure continuity and resilience amid conflict. MP is being incorporated into Ukraine's blended learning framework by mandatory basic training and territorial defense courses where universities incorporate basic military training in their curricula, including first aid, survival skills,

and cybersecurity awareness, and offer voluntary courses on territorial defense tactics, drone operation, and logistics support to prepare students for wartime challenges.

To achieve the objective, validate the hypothesis, and finish the study duties, a range of modern theoretical research approaches and processes were used. Qualitative methods offer an effective research approach that allowed us to generate scientific sources, identify the essential elements and features of distance learning, and support the advantages and disadvantages of the practice through data interpretation, literature review, analysis, synthesis, induction, deduction, systematization, comparison, and generalization.

### III Results

A case study of challenges and prospects of blended learning in contemporary military conflicts in higher education institutions was conducted by interviewing 120 people, both students and teachers, from Sumy National Agrarian University. The participants agreed to take part in the study on the voluntary base. The survey was organized by means of a questionnaire. The respondents provided oral responses.

In the survey, the participants were asked a series of questions about the major aspects of the use of blended learning peculiarities in wartime. The respondents were asked to express their position on each proposed question. The percentage evaluation between 0 and 100% was used for question 3.

The first question concerned flexible scheduling (FS) as one of the basic components of blended learning.

Positive and negative characteristics of FS, named by the respondents, are presented in Table 1.

The results suggest that flexible scheduling in blended learning is not just a convenience but a necessity in wartime Ukraine. Frequent blackouts, air raids, and internet disruptions make fixed schedules impractical. Institutes and universities allow asynchronous learning, where students access pre-recorded lessons or materials at convenient times.

Table 1. Characteristics of Blended Learning: Survey Results

Positive characteristics		Negative characteristics	
Students	Teachers	Students	Teachers
Allows education to continue amid chaos	Remains vital for resilience and recovery	Frequent blackouts, air raids	
Upholds students' right to learn while adapting to the harsh realities of conflict	Provides with hybrid class options: combining live (synchronous) sessions with asynchronous materials	Internet disruptions	
Can be implemented to support displaced students.	Is useful for adjustable deadlines: teachers provide extensions due to connectivity or emergencies	Necessity to interrupt learning for shelter or relocation	

FS can also be implemented to support displaced students. Millions of Ukrainians, including students, are internally displaced or refugees abroad. FS allows them to learn across different time zones without being tied to rigid class times.

Safety should also be in priority: during active hostilities, students may need to pause learning for shelter or relocation; self-paced modules and recorded lectures enable them to resume studies when safe.

As for hybrid attendance (HA) is an integral part of the framework of blended learning, the next stage of investigation was devoted to its features. The respondents were asked to answer the question: "What can HA provide the members of the educational process with?"

Table 2 demonstrates the most popular responses and the comments given by both students and teachers.

Table 2. Hybrid Attendance: Survey Results

Name of the feature provided	Frequent comments commonly presented
Safety and flexibility	Students in high-risk areas can attend classes remotely, while those in safer regions can learn in person. Air raids and infrastructure damage make consistent physical attendance impossible; hybrid models allow seamless transitions
Access for displaced learners	Millions of Ukrainians are internally displaced or refugees abroad. Hybrid attendance enables them to continue education without interruption
Resilience against disruptions	Power outages and internet instability require adaptable solutions (offline materials + live sessions when possible)

From the results it is obvious that the members of the educational process, both teachers and students, come across almost the same obstacles and mostly support the common point of view concerning hybrid attendance, especially, technology gaps, because not all the students have reliable devices or internet. HA gives the teaching staff the possibility to provide students with offline materials (downloadable lectures, USB drives) and mobile-friendly platforms (e.g., Telegram, Google Classroom).

Beyond maintaining academic continuity, it is essential to consider mental and emotional wellbeing of students and teachers. Blended learning framework that incorporates psychological support (PS) guarantees resilience, lessens trauma, and creates a supportive learning environment. Hence, the participants of the questionnaire were proposed to outline the key challenges they face while implementing blended learning into process of education in terms of the war.

Table 3 shows the obstacles the respondents have to deal with experiencing hard times and the percentage they are mentioned in the responses.

Thus, many universities, including Sumy National Agrarian University, try to incorporate online counseling, stress-management workshops, trauma-informed teaching practices to help students and teachers cope with trauma and anxiety. Among the most popular ones are as follows:

- training teachers to recognize signs of trauma and respond with empathy;
- flexible deadlines, reduced workloads, and safe spaces for expression;
- incorporation of calming techniques (mindfulness breaks) into online and offline lessons;
- online platforms offering access to school psychologists, counselors, or chat-bots for immediate support;
- virtual support groups where students share experiences and coping strategies;
- partnerships with NGOs (UNICEF, WHO) to provide crisis counseling.

Hence, blended learning in wartime Ukraine must prioritize PS to address the invisible wounds of war. By combining trauma-sensitive pedagogy, accessible mental health resources, and community resilience-building,

education can become a stabilizing force for recovery. International cooperation and flexible, empathetic approaches are key to sustaining both minds and futures.

Table 3. Psychological Support Framework: Survey Results

Constituents that can negatively influence the educational environment	The brief characteristics of the negative impact of these constituents	Percentage in the responses
Trauma and stress	Constant exposure to war-related stressors (bombings, loss of loved ones, displacement) leads to anxiety, depression, and PTSD among students and educators	48 %
Learning barriers	Emotional distress impairs concentration, memory, and motivation, hindering academic performance	30 %
Social fragmentation	Displacement and irregular schooling disrupt peer networks, increasing feelings of isolation	12 %
Burnout	Both students and educators face dual pressures of teaching or studying while managing their own trauma, requiring mental health support	10 %

Ukraine's blended learning model during wartime demonstrates how education systems can adapt to national security needs. By embedding military preparedness into curricula through digital and traditional methods, Ukraine ensures that students remain both educated and resilient in the face of conflict.

Therefore, despite all the difficulties and challenges associated with the forced transition to distance and blended learning, blended education has not only become a serious test for all participants in the educational process, but also opened up new prospects for improving existing foreign experience and successfully implementing modern international programs, projects, and technologies in the Ukrainian education system.

#### IV Discussion

Kilag, Obaner, Vidal, Castañares, Dumdum, and Hermosa point out that blended learning is a combination of traditional and digital learning based on an adaptive approach that successfully utilizes digitalized classes, involving a variety of methods that can improve the outcomes for education seekers [14].

According to Kumar, Batista-Toledo, and Gavilan, blended learning is an intentional educational process that aims to develop knowledge and skills, implement cognitive activities, and foster creative capabilities. It is guided by the mutual complementarity principle and involves the integrated and systematic use of both traditional and innovative pedagogical technologies in tandem with information and communication tools. However, other academicians, for instance, Ghazali, assert that the blended learning approach modifies the teacher's role, shifting from that of an observer to that of a mentor [15], [3], [9].

In their works, Martín-García, Mae, C., Mae, G., Piolo, and Muico contend that the efficiency of handling different types of interaction determines how well the integration process in the educational domain works. At the same time, scientists stress that the way the work is structured, promotes two-way communication, and the use of creative and emotional intelligence can all contribute to the lack of motivation among the participants of the process of education. Additionally, communication during in-person classroom consultations or videoconferences efficiently optimizes the psychological state of participants in the educational process. In the era of widespread digital transformation, it is difficult to argue against scientists as education needs to reevaluate

its beneficial role in public communication and develop into a modern center for communication and learning [19], [18].

Besides, Sher, Hatala, and Gašević draw attention to the fact that the traditional educational system is unable to satisfy the demands of both society and education seekers today. On the other hand, experts think that electronic and remote technologies can enhance the adaption process, opening doors for productive collaboration between educational process participants both inside and outside the classroom [24].

According to Linnik, Sliusarevskiy, and Hryhorovska, many contemporary academicians take into account scientific and methodological techniques and tactics for integrating blended learning into the educational process. Shelever stresses that mobile communication, digital and multimedia tools, and the global network have become essential components of education and that the modern educational process cannot take place without being linked to the general digitalization of society [16], [27], [23].

A range of synchronous, asynchronous, and face-to-face learning modalities can effectively compensate for the lack of technical capabilities, according to the results of investigations by Balolong, who examines the dangers of implementing blended learning. Scientists are certain that the results can be fully implemented through blended learning. They also point out that in order to prevent further stress and boost the desire of those seeking for education, it is crucial to avoid setting time limits for assignments. Baral, G., and Baral, R. believe that the technological application of blended learning is relevant and promising because of cloud technologies [1], [2].

According to such representatives of advanced scientific schools as Melnyk and Dzhedzhera, the main sustainable objective of the education sector is to guarantee the quality and durability of the educational process at all levels, which actualizes the necessity of conducting scientific research in the field and putting the findings into practice through practical developments [20], [6].

Innovative educational initiatives during times of war should be centered on maintaining the educational process' continuity despite changes in the effects of both internal and external factors. This opinion on substantially is supported by several contemporary researchers, namely: Míguez-Álvarez, Crespo, Arce, Cuevas, and Regueiro. In addition to expanding the opportunities for communicative interaction amongst participants in the educational process, scholars emphasize the importance of utilizing both new and existing interactive instruments [21].

Considering all mentioned above, it is possible to predict that blended learning is going to become the preferable tool of instruction during military activities in Ukraine. Furthermore, the current study proves that since the methodology under investigation has shown itself to be a radically innovative instrument for optimizing the learning process and transforming communication processes towards effective interaction between the teacher and the student, it appears expedient to implement the blended learning method in a partial mode and in the post-war era.

## ***V Conclusion***

Blended learning has become a lifeline for Ukrainian higher education during the war, ensuring that students can continue their studies despite immense challenges.

Considering the obstacles caused by the ongoing conflict in Ukraine, the implementation of traditional face-to-face learning methods may be challenging in some regions. Higher education institutions should be flexible and adapt traditional education models to ensure students have access to quality learning and the necessary support. The use of a blended learning model that combines online and offline formats will provide an adaptive approach, considering the needs of students and the capabilities of institutions.

Blended learning technology has significant potential for creating a student-centered information and educational environment. However, its successful implementation requires a careful approach to the development of the main stages: preparatory, target, project (model, content, methods and forms), implementation, monitoring and evaluation, technology correction, as well as analysis and forecasting of results.

It is necessary to stimulate constructive cooperation between all parties to the educational process and promote the improvement of blended learning, which can effectively respond to the challenges of modernity and provide quality education, despite the conditions of war and post-war reconstruction.

Thanks to the innovative approach of the teaching team, blended learning during martial law enables the creation of an educational process that considers each student's unique needs, fosters critical thinking, and

helps to guarantee a high level of learning results. Implementing blended learning successfully depends on the teacher's pedagogical expertise and inventiveness.

It is clear that today the teacher is not the only source of knowledge, and the student is not considered a "passive" object of learning. The need to search for new technologies and their effective application in new learning conditions has led to blended learning technologies, since they combine the advantages of traditional and e-learning, which together ensures the development of the future specialist as a subject of self-educational activity, forms his readiness for self-development and professional growth in the future.

By enabling individualized learning and giving access to learning materials from any location at any time, blended learning creates new opportunities for both teachers and students. As such, it is an educational technology that makes it possible to enhance the learning environment by skillfully fusing traditional classroom instruction with online resources.

While obstacles remain, the experience has demonstrated the resilience of Ukraine's academic community and the potential of digital education in crisis situations. As the country rebuilds, the lessons learned from wartime blended learning will shape a more flexible, inclusive, and technologically advanced education system for the future.

Looking ahead, blended learning is expected to incorporate emerging technologies such as artificial intelligence, virtual reality, and data analytics to personalize learning experiences further. It remains a dynamic field, continuously shaped by technological progress and pedagogical research.

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