PEDAGOGICAL STRATEGIES FOR MITIGATING ACADEMIC DEFICITS IN CONTEMPORARY EDUCATIONAL SETTINGS

ESTRATÉGIAS PEDAGÓGICAS PARA MITIGAR DÉFICITS ACADÉMICOS EM CONTEXTOS EDUCATIVOS CONTEMPORÂNEOS

ESTRATEGIAS PEDAGÓGICAS PARA MITIGAR LOS DÉFICITS ACADÉMICOS EN LOS ENTORNOS EDUCATIVOS CONTEMPORÁNEOS

Natalia KOSHARNA[1]
e-mail: n.kosharna@kubg.edu.ua

Lada PETRYK[2]
e-mail: l.petryk@kubg.edu.ua

Alina DZHURYLO[3]
e-mail: a.dzhurylo@kubg.edu.ua

Yuliia RUDNIK[4]
e-mail: y.rudnik@kubg.edu.ua

Olha SYTNYK[5]
e-mail: o.sytnyk@kubg.edu.ua

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[1] Candidate of Pedagogical Sciences, Associate Professor, Head of Foreign Languages and Methodology Department, Faculty of Pedagogical Education, Borys Grinchenko Kyiv Metropolitan University, Kyiv, Ukraine.
[2] Candidate of Pedagogical Sciences, Associate Professor of Foreign Languages and Methodology Department, Faculty of Pedagogical Education, Borys Grinchenko Kyiv Metropolitan University, Kyiv, Ukraine.
[3] Ph.D., Senior Researcher, Associate Professor, Associate Professor of Foreign Languages and Methodology Department, Faculty of Pedagogical Education, Borys Grinchenko Kyiv Metropolitan University, Kyiv, Ukraine.
[4] Candidate of Pedagogical Science, Associate Professor, Associate Professor of Foreign Languages and Methodology Department, Faculty of Pedagogical Education, Borys Grinchenko Kyiv Metropolitan University, Kyiv, Ukraine.
[5] Candidate of Pedagogical Sciences, Associate Professor, Associate Professor of Foreign Languages and Methodologies Department, Faculty of Pedagogical Education, Borys Grinchenko Kyiv Metropolitan University, Kyiv, Ukraine.

ABSTRACT: The contemporary educational landscape is marked by the urgency to mitigate learning losses intensified by global crises, including pandemics, armed conflicts, and economic instability. This study aims to design and evaluate pedagogical strategies capable of addressing such gaps in learning. The proposed approaches encompass the integration of information and communication technologies, the promotion of resilience, problem-based and interactive learning, the intensification of instructional processes, the adoption of individualized learning pathways, the provision of psychological, pedagogical, and social support, and the strengthening of teachers' professional development. Methodologically, the research is grounded in surveys, experimental procedures, and comparative analyses conducted at different stages of implementation, initiated in 2024, with control measurements carried out in June and December of the same year. Evaluation criteria included academic performance, student engagement, psychological well-being, and the sustainability of the educational process, enabling the identification of effective strategies and their long-term impact on educational equity.

KEYWORDS: Pedagogical strategies. Teacher training. Higher education institutions. Learning losses. Mitigating learning losses.

RESUMO: *O cenário educacional contemporâneo é marcado pela urgência de mitigar as perdas de aprendizagem intensificadas por crises globais, como pandemias, conflitos armados e instabilidade econômica. Este estudo tem como objetivo desenvolver e avaliar estratégias pedagógicas capazes de enfrentar tais lacunas de aprendizagem. As abordagens propostas incluem a integração de tecnologias da informação e comunicação, a promoção da resiliência, a aprendizagem baseada em problemas e interativa, a intensificação dos processos de ensino, a adoção de trajetórias de aprendizagem individualizadas, a oferta de apoio psicológico, pedagógico e social e o fortalecimento do desenvolvimento profissional docente. Metodologicamente, a pesquisa baseia-se em levantamentos, procedimentos experimentais e análises comparativas em diferentes etapas, iniciadas em 2024, com medições de controle realizadas em junho e dezembro do mesmo ano. Os critérios de avaliação incluíram desempenho acadêmico, engajamento discente, bem-estar psicológico e sustentabilidade do processo educacional.*

PALAVRAS-CHAVE: *Estratégias pedagógicas. Formação docente. Instituições de ensino superior. Perdas de aprendizagem. Mitigação das perdas de aprendizagem.*

RESUMEN: *El contexto educativo contemporáneo está marcado por la urgencia de mitigar las pérdidas de aprendizaje intensificadas por crisis globales, como pandemias, conflictos armados e inestabilidad económica. Este estudio tiene como objetivo desarrollar y evaluar estrategias pedagógicas capaces de abordar dichas brechas de aprendizaje. Los enfoques propuestos incluyen la integración de tecnologías de la información y la comunicación, la promoción de la resiliencia, el aprendizaje basado en problemas e interactivo, la intensificación de los procesos educativos, la adopción de trayectorias de aprendizaje individualizadas, la provisión de apoyo psicológico, pedagógico y social y el fortalecimiento del desarrollo profesional docente. Metodológicamente, la investigación se sustenta en encuestas, procedimientos experimentales y análisis comparativos en distintas etapas, iniciadas en 2024, con mediciones de control realizadas en junio y diciembre del mismo año. Los criterios de evaluación incluyeron rendimiento académico, compromiso estudiantil, bienestar psicológico y sostenibilidad del proceso educativo.*

PALABRAS CLAVE: *Estrategias pedagógicas. Formación docente. Instituciones de educación superior. Pérdidas de aprendizaje. Mitigación de las pérdidas de aprendizaje.*

INTRODUCTION

Current challenges for the past 5 years, including the pandemic all over the world, the war in Ukraine, and the world economic crisis, have led to the fact that modern higher education institutions must develop and implement pedagogical strategies related to overcoming the consequences of learning losses. The development of these strategies is of key importance, as the purpose of their implementation is to improve the level of the educational process.

The transition to distance and blended learning, pauses in the educational process, and lack of access to technological resources have led to significant learning losses. These factors also have a negative impact not only on learning outcomes but also on the emotional state, social interaction and development of general and professional competences. These problems require developing and implementing pedagogical strategies to overcome the consequences of learning losses. Prolonged periods of distance learning and the shortage of qualified academic and teaching staff negatively impact the educational process. Therefore, implementing pedagogical strategies to overcome the consequences of learning losses is an effective method for restoring the quality of knowledge, developing competences, and supporting teachers.

The research focuses on selecting, evaluating effectiveness, and implementing pedagogical strategies to overcome the consequences of learning losses caused by current challenges.

LITERATURE REVIEW

Before starting to analyze and point out the pedagogical strategies for overcoming consequences of learning losses in the context of current challenges, it is necessary to review how the problem of learning losses arose on a global scale. According to the research of the World Bank Group, COVID-19 caused significant disruption to the global education system. Early in the pandemic, the World Bank (Azevedo et al. 2021) presented simulations of the potential effect of school closures on learning outcomes. It forecast significant declines in the global level of schooling and learning outcomes School closures could result in a loss of 0.3-1.1 years of schooling.

Negative consequences of the pandemic for students should be addressed through targeted policies aiming at groups of students with the larger losses and addressing their varying needs regarding attitudes and well-being. Changes in student performance might be driven by

other factors than the pandemic and school closures. However, the COVID-19-related school closures are the only factor that is common to most countries (Patrinos et al. 2023).

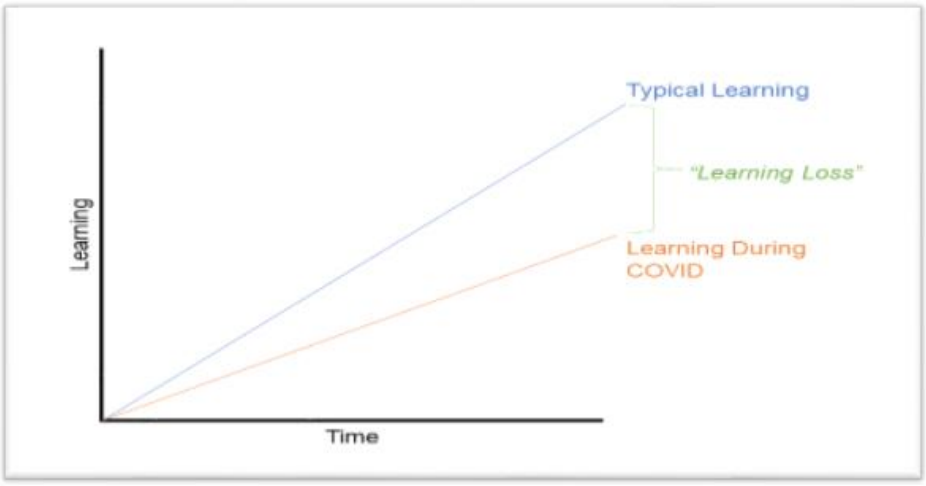
Blaskó et al. (2022), in their research about learning losses and educational inequalities in Europe, are discussing that European countries differ greatly in terms of the share of children lacking important distance-learning resources. In Italy, Bulgaria, France, Croatia, Germany, Cyprus and Czechia relatively many students lack important resources for distance learning, and in Finland, Norway, Denmark, Sweden, Austria, Lithuania and Ireland this pertains to relatively few. This positioning of countries is likely to be explained by both the affluence of and inequalities within countries. Countries that are more affluent and have lower inequality levels are more likely to have lower shares of students lacking important home-learning resources.

The rest of the European countries these researchers examine are situated somewhere in between. Countries with higher shares of children lacking learning resources (and hence more children facing a greater risk of falling behind in learning) tend to also have lower average pupil achievement; thus, inequalities between European countries are likely to increase during the pandemic (Blaskó et al., 2022, pp. 371–372). This also applies to students of higher education institutions.

The association between low achievement and disadvantage was strongest in Lithuania, Ireland, Hungary, Bulgaria, Slovakia, Germany, Finland and Malta indicating that in these countries, pupils most exposed to learning losses during distance learning, were already lagging behind a lot before the pandemic started. In contrast, the association was weakest in Portugal, Denmark, Cyprus, Austria, Croatia, Latvia and Italy (Blaskó et al., 2022, p. 372).

The term *learning loss* is commonly used in the literature to describe declines in student knowledge and skills (Pier et al., 2021).

Figure 1.
Hypothesized effect of learning losses



Note. Pier et al. (2021),

The analysis presented by the group of American researchers states that year to year, students are expected to learn new content and develop new skills; formative assessments are designed to measure student growth throughout the year towards grade-level standards. Concerns about "learning loss" are concerns that students aren't learning content and mastering skills at the same rate that they typically would be. Figure 1 shows this hypothesized effect, with the blue line indicating typical learning and the orange line showing learning during the pandemic (Pier et al., 2021).

Learning loss takes place when educational progress does not occur at the same rate at which it has historically compared to previous years. (Patrinos et al., 2023).

As it is defined in the Glossary of Educational Reform, the term *learning loss* refers to any specific or general loss of knowledge and skills or to reversals in academic progress, most commonly due to extended gaps or discontinuities in a student's education. While learning loss can manifest in a wide variety of ways for a variety of reasons, the following are a few representative examples of widely recognized forms of learning loss: interrupted formal education (students may experience significant interruptions in their formal education for a wide variety of reasons; returning dropouts (if a student returns to school after dropping out for an extended period of time, even multiple years, the student may have experienced significant learning loss or gaps in their education); ineffective teaching (lower-quality teaching can, in some cases, lead to slower academic progress, which produce learning losses in relation to other students or in terms of where students are expected to be at a specific stage in their education) (The Glossary of Education Reform, 2024). So, learning losses are the result of large gaps or pauses in the individual student's education.

In this article, the authors use the term *learning losses*, because it is broader in meaning and encompasses the concept of "learning loss", and it emphasizes the diversity or scale of the problem, for example, as it is currently happening in Ukraine as a result of the war.

Having summarized the problem of learning losses, it should be pointed out the pedagogical strategies for overcoming their consequences in the context of current challenges.

According to Collins English Dictionary *strategy* means a general plan or set of plans intended to achieve something, especially over a long period (Collins Dictionary, 2023). The definition of strategies depends on the specifics of the educational institution and the specialty that students are studying. As authors are lecturers of the English language, we use the following definition of the strategy within teaching a foreign language to future specialists of preschool and primary education:

> The strategy of foreign language training of the teacher is a consistent, sustainable plan for training a specialist to teaching foreign languages to preschool children and pupils of primary school age, that is accompanied by systematic monitoring of the motivation of students of pedagogical specialties to study a foreign language languages; formation of their linguistic, discursive, strategic, socio-cultural, methodical competences; development of technological skills of future teachers to use and create their own innovative didactics products; development of critical and analytical thinking skills, the final result of which is the formation of a foreign language professional competence of the preschool and primary education teacher, who is able to carry out professional activities in the conditions of paradigmatic changes. (A new strategy of professional training of a teacher in the conditions of European integration, 2023, p. 302)

Taking into account that on March 12, 2020, a pandemic began in Ukraine, it was focused on solving the problem of preventing learning losses due to the pandemic consequences (students` anxiety, their interruption of education due to the duration and course of the disease, and others). Thanks to online platforms, the students could receive this form of work systematically during the pandemic period.

The urgency of the outlined problem, the importance of taking into account today's challenges, the need to create a harmonious and balanced educational space encourage the search, selection and application of effective learning technologies that would ensure the flexibility of organizing the educational trajectory of students with the highest possible learning outcomes, for example, using a technology HyFlex (Kosharna & Petryk, 2022, p. 25).

In terms of modern challenges, implementing the HyFlex technology of teaching a foreign language for future teachers of primary and preschool education provides students with equal opportunities in mastering the disciplines of the foreign language block (Kosharna et al., 2023, p. 69).

Nowadays digital and multimedia technologies have become a fixed element of modern teaching, a means of teacher-student collaboration, through the implementation of the principle of learning individualization, as a way of enhancing the level of foreign language communication competence, and improving students` motivation, self-development and self-mastering.

The focus is on the quality of courses for higher education and their availability for the needs of the current generation of students. ICT in the educational process creates the preconditions for updating both content and learning technologies (Kosharna et al., 2023).

Having gained experience in ensuring a high-quality educational process during the pandemic in Ukraine, educators faced a new problem in managing educational losses when the war in Ukraine began. In the opinion of Munir Mammadzade**,** UNICEF Representative in Ukraine, the war affects Ukrainian school children's performance and mental health, and leaves long-term scars.

To address this serious challenge, it is critical to support the joint efforts of the government and education sector partners in developing and implementing a nationwide strategy for education recovery UNICEF for every child: Education survey reveals impact of war on Ukraine's students (UNICEF, 2023)**.**

It was concluded that educational and learning losses are a complex issue in Ukraine which includes typical learning losses (seasonal breaks in formal education (summer vacations), absence from classes, ineffective teaching, unplanned suspension of the educational process for a long time due to the COVID-19 pandemic), losses caused by military actions (destruction, damage, closure, displacement of educational institutions, lack of electricity and Internet, insufficient teaching and learning materials, psychological trauma).

Learning losses are also inherent in students outside of Ukraine, due to insufficient proficiency in the language of the host country and, as a result, ineffective integration into the educational process (Lokshyna et al., 2023).

To understand what pedagogical strategies, perform better in overcoming consequences of learning losses in the context of current challenges, it is necessary to conduct this study by means of theoretical research and practical recommendations.

It is worth taking into account the following points in solving this problem: to analyse individualising educational processes (Altes et al., 2024); to highlight the necessity of addressing individual student needs and adjusting educational programmes (Chuang et al., 2024). A blended learning format has been determined to create flexible conditions for learners with varying levels of knowledge and competences (Chen, 2020; Udovychenk et al., 2021). Special attention should be paid to the impact of the distance learning mode on the educational process in general and the use of modern technologies in particular (Kotenko & Rudnik, 2024).

The use of information and computer technology provides conditions for an effective educational process (Yuzkiv et al., 2024). Digital support, provided in synchronous and asynchronous formats, is widely applied in situations resulting from the imposition of martial law (Yazici & Uzuner, 2024).

Also effective is the use of educational platforms whose learning tools are based on interactivity and simulation (Karhiy et al., 2023). Another important aspect of this problem is the use of psychological and pedagogical support. Scientists outline methods for implementing strategies to develop cognitive abilities, such as analyzing and processing information when learning new material (Nik Rashidi et al., 2023).

The educational metaverse is aimed at implementing intensification and immersion in learning. The authors outline which of the tools of this environment are the most effective (Beck et al., 2024). A scientifically based system of teaching evaluation indices that can quickly identify problems in higher education. The article discusses an education evaluation system based on the current state of higher education and future work plans, with further optimization (Zhou, 2024). The present study sets out the work on developing a database that provides storage for educational scenarios created using the method of recursive entity modelling for pedagogical modelling (Amine et al., 2020).

The application of learning analysis technology in education is considered. It is believed that with the continuous development and improvement of technology, learning analysis technology will be more accurate and reliable, bringing more innovation and development opportunities to education (Guo et al., 2024). The authors agree that the use of technology, individualization of learning, and support for teachers are keyways to overcome learning losses in current challenges.

Applied methods

1. A *survey* of higher education students and teachers allows us to collect data on which pedagogical strategies are most effective in overcoming the consequences of learning losses in the context of current challenges. In the course of the study, a list of pedagogical strategies implemented in educational institutions was selected. The evaluation was based on a questionnaire with the developed criteria. The control measurements were conducted in June, 2024 and December, 2024.

2. An experimental study based on comparing the level of effectiveness of pedagogical strategies to overcome the consequences of learning losses in times of war in Ukraine. A pedagogical experiment was conducted to identify the most effective strategies for overcoming the consequences of learning losses within teaching foreign language to the students of pedagogical and non-pedagogical specialties at Borys Grinchenko Kyiv Metropolitan University. The study began in 2024 to identify the most effective pedagogical strategies to overcome the consequences of learning losses in the context of current challenges, and lasted during a year. The study involved 100 respondents, including teachers and students.

The impact of the pedagogical strategies is presented in terms of the period to eliminate randomness and to trace the consistency of the effect of a particular strategy. The overall average assessment of the effectiveness of each strategy is also presented, as well as an analysis of each strategy according to the criteria to exclude a significant impact on one of the criteria and a small one on the other and to increase the effect of homogeneity of impact and consistency of strategy application. The most effective strategies were selected, and recommendations for their practical application were developed.

RESULTS OF THE STUDY

The decline in knowledge levels and competences caused by various factors, including limited access to education, interruptions in the educational process, and external circumstances of a natural or unforeseen nature, defines the concept of learning losses. These losses manifest as deteriorating academic performance, decreased motivation, gaps in basic preparation, and reduced cognitive skills.

The problem of learning losses in Ukraine during the war is a component and result of a complex of losses of the entire national education system, which includes human losses, losses

of educational infrastructure, educational environment, educational time, etc. (Lokshyna et al., 2023).

The closure of educational institutions worldwide due to the COVID-19 pandemic has caused significant learning losses, characterized by interruptions in the learning process. School closures particularly impacted regions without technical resources for internet access. Moreover, the rapid introduction of online learning negatively affected the quality of education, as it could not ensure adequate standards without proper preparation, which requires significant time and resources.

Higher education students experienced a decline in cognitive skills, particularly critical thinking, and faced mental challenges due to prolonged isolation. The quality of professional training also decreased due to a reduction in practice-oriented classes. The post-pandemic period has been marked by a prolonged transition to online formats, lower engagement levels among higher education students, and reduced practical activities. Insufficient acquisition of general and professional competences resulted from disruptions in the learning process. Additionally, cognitive problems worsened due to extended isolation and the need to readjust to in-person learning environments.

The times of war have further devastated the education system, with higher education institutions closing, students and educators being unable to stay safe, students and educators being forced to relocate, highly qualified teaching staff being lost, and difficulties in social adaptation to new circumstances.

Pandemics, wars, economic instability and political crises have significantly exacerbated learning losses. The literature study has identified the most common pedagogical strategies for overcoming the consequences of learning losses in the context of today's challenges, and their analysis is presented in Table 1.

Table 1.
Analysis of pedagogical strategies to overcome the consequences of learning losses in the context of today's challenges

№	Name of the pedagogical strategy	The essence of the pedagogical strategy	Methods of implementing the pedagogical strategy
1	Individualisation of learning	Taking into account educational gaps and determining the level of knowledge of each student.	Testing for diagnostic purposes, applying individual learning paths, and implementing individual consultations.

2	Use of information and communication technologies	Compensation for loss of access to classroom training	Online learning platforms, adaptive learning based on AI, creation of open educational resources.
3	Building resilience	Overcome stress and increase motivation	Courses on developing emotional intelligence, psychological help and support groups, and designing a safe educational environment.
4	Problem-based and interactive learning	Development of critical thinking skills and analytical abilities	Project-based learning, collaborative learning, role-based educational models, and problem-based learning based on current challenges.
5	Intensification of the educational process	Eliminating knowledge gaps through concentrated repetition of learning material	The organization of additional classes, the introduction of intensive courses, and craft training.
6	Social interaction	Synergy through the collaboration of participants in the educational process.	Carer involvement programmes, partnership programmes with local organizations, and communication with teachers.
7	Training and professional support for teachers	Training teachers to respond quickly to changes.	Training on professional development and digital literacy, application of flexible teaching methods, and support for teachers in stressful situations.

Note. Developed by the authors.

The *criteria (C1-C4)* for evaluating the effectiveness of implementing a pedagogical strategy to overcome the consequences of learning losses are presented. Learning effectiveness (C1) indicates the success in achieving learning outcomes. Engagement level (C2) outlines participants' motivation in the learning process. Emotional and social well-being (C3) characterizes the factors that reduce stressful situations in the educational process. The last criterion is long-term educational prospects and professional achievements (C4), which assesses the impact of strategies on the development of sustainable skills and future educational and professional growth.

According to the questionnaire, a survey was conducted to identify the most effective strategies for overcoming the consequences of learning losses. Each criterion could be scored from 0 to 4 points, and the overall assessment of the effectiveness of the pedagogical strategy is the sum of the scores for the criteria and, therefore, could be scored from 0 to 12 points. That is, each of the strategies could receive low-level indicators from 0 to 4 points with low effectiveness, from 5 to 8 points with medium effectiveness, and from 9 to 12 points, which would characterize its high effectiveness.

The first set of questions, based on the criterion of learning outcomes, outlined the level of improvement or deterioration in test results and students' final grades after the implementation of the strategy, the success in filling gaps in key subjects, and the increase in students' key competencies. The second set, according to the criterion of participants' engagement in the educational process, described whether class attendance and participation in educational activities increased, the extent of teachers' involvement in the educational process and support for students, and whether changes in student activity and initiative were observed. The third criterion—emotional and social well-being—addressed whether levels of student anxiety and stress had decreased, whether students felt more confident and motivated in the learning process, and whether teachers were satisfied with the support provided and the outcomes achieved. The final criterion—educational prospects—examined whether the strategies helped students develop skills essential for their further education and careers, outlined improvements in enrolment rates, programme completion, and employment, and provided an overall assessment of the long-term impact of the strategies.

The effectiveness of each of the strategies was also assessed by each criterion (Table 2), and the uniformity of the assessment for each criterion indicates the impact on each aspect of the educational process.

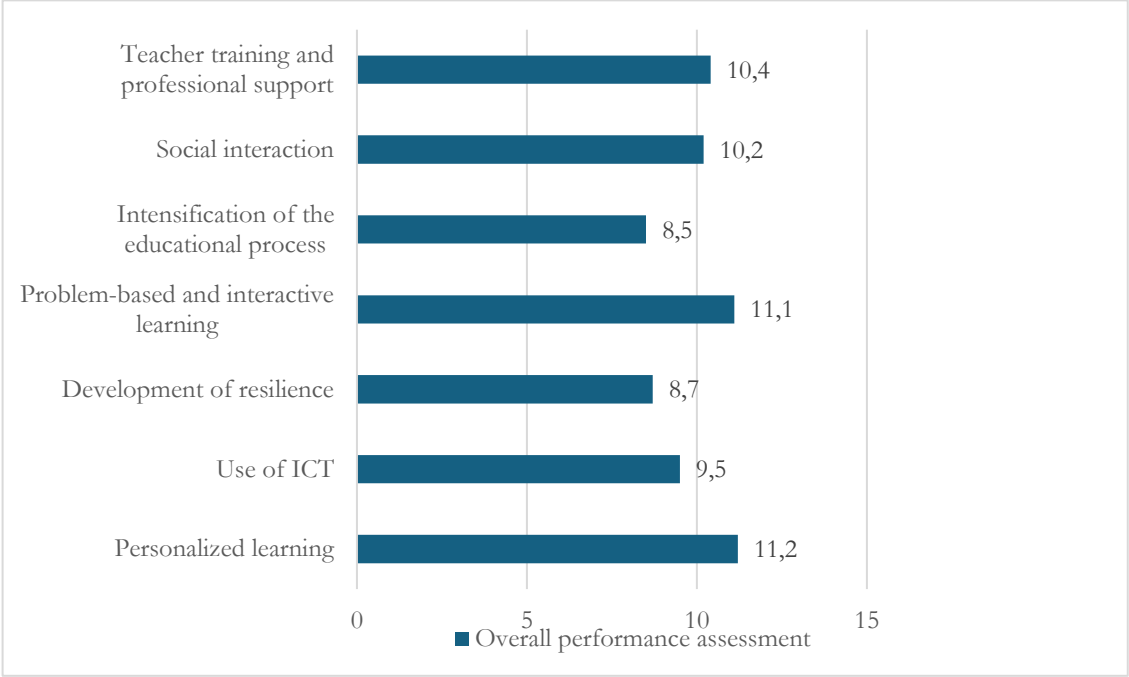
Table 2.
Criterion and general assessment of the effectiveness of pedagogical strategies for overcoming the consequences of learning losses

№ strategies	Criterion/ Pedagogical strategy	C1	C2	C3	C4	Overall performance assessment
1	Individualization of learning	10,9	11,1	11,6	11,5	11,2
2	Use of ICT	7,9	10,6	8,5	10,5	9,5
3	Building resilience	6,9	9,9	7,9	9,9	8,7
4	Problem-based and interactive learning	11,3	11,2	11,1	10,9	11,1
5	Intensification of the educational process	6,7	7,7	9,7	9,6	8,5
6	Social interaction	10,0	10,4	10,2	10,2	10,2
7	Training and professional support for teachers	10,4	10,6	10,5	10,3	10,4

Note. Developed by the authors.

Figure 2 presents an overall assessment of the effectiveness of pedagogical strategies to overcome the consequences of learning losses.

Figure 2.
Overall assessment of the effectiveness of pedagogical strategies to overcome the consequences of educational losses



Note. Developed by the authors.

As Table 2 and Figure 2 show, the highest and most uniform scores for each of the criteria are achieved by strategies of individualized learning, problem-based and interactive learning, social interaction, teacher training, and professional support.

Another indicator of the effectiveness of implementing the outlined pedagogical strategies to overcome the consequences of educational losses in the context of current challenges was the sustainable impact of the strategies on the educational and pedagogical process during the experiment. In Table 2, pedagogical strategies are numbered; their numbers coincide with the numbering in Table 3.

Table 3.
Research on the sustainability of the impact of pedagogical strategies to overcome the consequences of educational losses in the context of today's challenges

Strategy/ Period	**№1**	**№2**	**№3**	**№4**	**№5**	**№6**	**№7**
1 half of 2024	11,6	8,4	9,6	11,6	10,3	10,5	10,7
2 half of 2024	11,6	8,4	9,2	11,4	10,4	10,5	10,8

Average value	11,6	8,4	9,4	11,5	10,35	10,5	10,75

Note. Developed by the authors.

Figure 3 shows a visualization of the sustainability of the impact of pedagogical strategies to overcome the consequences of learning losses in the context of current challenges.

Figure 3.
Visualization of the sustainability of the impact of pedagogical strategies to overcome the consequences of learning losses in the context of current challenges

Note. Developed by the authors.

The experiment was conducted with control measurements of the survey results at the end of studying terms: summer—June 2024 and winter—December 2024. The use of ICT proved a good indicator, however, its impact is not uniform, although it can be a powerful complement to other educational strategies. Resilience building is also not the most effective, although it is an effective tool for overcoming psychological and pedagogical crises. Intensification of learning is a good way to close educational gaps, but it cannot be a permanent pedagogical strategy. Individualization of learning, problem-based and interactive learning, social interaction and professional support for teachers showed uniform growth and high scores in the criterion-based performance assessment. These pedagogical strategies to overcome the consequences of learning losses are proposed for further educational activities. In order to develop them and implement them further, the recommendations presented in Table 4 have been developed.

Table 4.
Recommendations for the design, implementation and development of pedagogical strategies to overcome the consequences of eLearning losses

Recommendation	Content of the implementation
Individualization of learning	
Adaptive learning technologies	Using platforms to analyze student progress data and generate personalized learning materials
Diagnosing educational needs	Testing and questioning students to determine their strengths and challenges
Curriculum flexibility	Providing students with the opportunity to choose their courses, topics or assignments.
Problem-based and interactive learning	
Project tasks and case studies	Development of tasks based on professional problems and challenges of the present, requiring analysis and critical thinking
Interactive learning tools	Use of virtual laboratories and simulators to actively engage students
Discussion techniques	Group discussions and debates, where students can develop argumentation skills
Social interaction	
Involvement of partners and experts	Involvement of stakeholders and professionals in the educational process to provide professional experience.
Social projects	Organizing the participation of students in projects aimed at solving social problem
Online communities	Supporting professional learning communities to share experiences
Professional support for teachers	
Training and masterclasses	Organizing training to improve digital literacy
Mentoring	Programmes where experienced teachers share their professional experience
Feedback	Create mechanisms for adjusting teaching methods

Note. Developed by the authors.

These recommendations will help to apply, design, implement, and develop pedagogical strategies to overcome the consequences of educational losses with maximum efficiency. However, an important aspect is adapting these strategies to the specific circumstances and needs of students and other participants in the educational process.

DISCUSSION

The COVID-19 outbreak fostered the development of online learning, and this form of educational interaction confirmed its positive consequences at the moment of beginning the war

in Ukraine. Therefore, this format allowed the educational process to continue at the proper level.

Consequently, teachers should improve their technological competence so that to increase students' motivation in the learning process. There are a lot of information and communication tools that teachers can use to capture the student's attention and it is important to learn how to use them because now students demand more dynamic classes to learn in. Teachers need to innovate their teaching strategies, they need to open their minds and learn that they need to implement ICT in their classes when they have the possibilities to do it, because students need to learn with the best way possible (Komar et al., 2024, p. 73).

Classroom interaction is an important factor affecting student learning outcomes, and curriculum reform is constantly updating its requirements. Based on the intelligent classroom environment, this study proposes three teaching strategies to promote classroom interaction: classroom resource preparation, technology-assisted cooperative learning, and technology-based assessment and feedback strategies. The results of the analysis show that the implementation of a curriculum based on learning strategies had a positive impact on teacher-student interaction and human-computer interaction (Kang & Yang, 2023). The benefits of individualized learning include increased engagement and motivation, but one must consider the high workload of teachers.

Blended learning in the classroom is becoming a new form of learning in higher education in the post-pandemic era. Improving the blended learning experience of university students in the classroom has important theoretical implications and practical value for cultivating innovative talents that can adapt to the development of the digital society. Effective strategies have been developed that have improved the performance of blended learning in the classroom of university students (Xie et al., 2023). The article also discusses implementing digitalization processes that meet the expected strategic results. It is recommended to choose implementation scenarios using the hierarchy method based on the results of the expert evaluation (Palamarchuk et al., 2022).

Based on the psycholinguistic framework and the classification of vocabulary learning strategies, this study discusses the use of specialized software that helps students better understand pedagogical strategies in various software and helps learners choose more appropriate vocabulary learning software to improve learning performance (Zhou & Zhang, 2023). The benefits of hybrid and interactive learning include increased engagement and access to learning, but digital inequalities and organizational challenges should be taken into account.

Intellectual analysis of large volumes of educational data improves understanding of outlined processes and the effectiveness of their practical implementation (Alam, 2023). However, it is important to consider the need for teacher support, which requires the involvement of additional financial and time resources. Implementing pedagogical strategies to overcome learning losses in the educational process has a long-term positive effect. However, attention should be paid to the need for a comprehensive approach and the adaptation of outlined strategies to specific conditions.

In addition to all the above, it is necessary to take into account the ability of students` hardiness for their full functioning during the war. The established individual and psychological factors of hardiness show their dependence on the properties of the nervous system and psychological characteristics that can be developed and formed during training in institutions of higher education. The level of hardness is most increased by the strength of the nervous system excitation processes, satisfaction with the life process and optimism, and the use of the "escape" coping strategy and personality rigidity are significantly reduced (Vasheka et al., 2023, p. 1283).

FINAL CONSIDERATIONS

The key aspects of implementing pedagogical strategies to overcome the consequences of learning losses include their effective selection and subsequent implementation. Their introduction restores quality indicators in the educational process and its sustainable development. The study identified the most effective pedagogical strategies for overcoming the consequences of learning losses, including professional support for teachers, social interaction, problem-oriented and interactive teaching methods, and individualization of learning. The research was conducted over the period January 2024 to December 2024. Surveys were carried out based on the outlined criteria.

The study's results were evaluated using criterion analysis and determination of the sustainability of the effects of implementing the outlined criteria. Recommendations were provided for the further development of pedagogical strategies to overcome the consequences of learning losses. It was determined that a combination of pedagogical, psychological, and technological strategies effectively overcomes the consequences of learning losses in the context of current challenges. It is also important to take into account the specifics of the challenges and local conditions faced by the pedagogical system when implementing educational strategies.

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