



ORIGINAL

Ukrainian Educational Hubs in the Context of Russia's Military Aggression Against Ukraine: Successful Cases in EU Countries

Centros Educativos Ucranianos en el Contexto de la Agresión Militar de Rusia Contra Ucrania: Casos Exitosos en Países de la Unión Europea

Liliia Martynets¹  , Roman Bobovskyi² , Ján Pochanič³ , Yuliia Shabala⁴ , Oksana Huda⁵ 

¹Volodymyr Dahl East Ukrainian National University. Kyiv, Ukraine.

²Hryhorii Skovoroda University in Pereiaslav, Department of Mathematics, Informatics and Teaching Methods. Pereiaslav, Ukraine.

³Mukachevo State University, Department of Pedagogy of Preschool, Primary Education and Educational Management. Mukachevo, Ukraine.

⁴SIHE "University of Educational Management", NAES of Ukraine, Department of Philosophy and Adult Education. Kyiv, Ukraine.

⁵Lutsk National Technical University, Department of Physics and Higher Mathematics. Lutsk, Ukraine.

Cite as: Martynets L, Bobovskyi R, Pochanič J, Shabala Y, Huda O. Ukrainian Educational Hubs in the Context of Russia's Military Aggression Against Ukraine: Successful Cases in EU Countries. *Salud, Ciencia y Tecnología - Serie de Conferencias*. 2024; 3:.646. <https://doi.org/10.56294/sctconf2024.646>

Submitted: 19-02-2024

Revised: 24-06-2024

Accepted: 27-11-2024

Published: 28-11-2024

Editor: Prof. Dr. William Castillo-González 

Corresponding author: Liliia Martynets 

ABSTRACT

The Russian aggression against Ukraine has significantly impacted all aspects of social life, including education. The formation of Ukrainian educational hubs abroad has become crucial due to the physical challenges of continuing education within Ukraine. This article analyses the organisation of these hubs in the EU amidst Russia's military aggression. The study employs content analysis of scientific literature and triangulation of information from various sources to ensure data validity. Findings indicate that, alongside the destruction in Ukraine, access to quality education has been disrupted, threatening human capital. Educational hubs in EU countries have addressed this challenge, providing safe environments for continued learning. Germany, Poland, and the Czech Republic host the majority of Ukrainian refugees and, consequently, the most hubs. In Germany, hubs in Berlin and Munich offer broad access to educational services. Polish hubs in Warsaw and Krakow emphasise IT, digital competence, business, marketing, and medicine, fostering practical skills. In the Czech Republic, the focus is on lifelong learning. These hubs demonstrate how adaptive approaches can mitigate educational disruptions. The study concludes that the Ukrainian education system could benefit from integrating European practices to enhance its processes.

Keywords: Martial Law; Education; International Support; Resilience.

RESUMEN

La agresión rusa contra Ucrania ha impactado significativamente todos los aspectos de la vida social, incluida la educación. La formación de centros educativos ucranianos en el extranjero se ha vuelto crucial debido a las dificultades físicas para continuar la educación dentro de Ucrania. Este artículo analiza la organización de estos centros en la UE en medio de la agresión militar de Rusia. El estudio emplea el análisis de contenido de la literatura científica y la triangulación de información de diversas fuentes para garantizar la validez de los datos. Los hallazgos indican que, además de la destrucción en Ucrania, el acceso a una educación de calidad se ha visto interrumpido, amenazando el capital humano. Los centros educativos en países de la UE han abordado este desafío, proporcionando entornos seguros para la continuidad del aprendizaje. Alemania, Polonia y la República Checa albergan a la mayoría de los refugiados ucranianos y, en consecuencia, el mayor número de centros. En Alemania, los centros en Berlín y Múnich ofrecen un amplio acceso a servicios

educativos. Los centros polacos en Varsovia y Cracovia destacan en TI, competencias digitales, negocios, marketing y medicina, fomentando habilidades prácticas. En la República Checa, el enfoque está en el aprendizaje a lo largo de la vida. Estos centros demuestran cómo los enfoques adaptativos pueden mitigar las interrupciones educativas. El estudio concluye que el sistema educativo ucraniano podría beneficiarse de la integración de prácticas europeas para mejorar sus procesos.

Palabras clave: Ley Marcial; Educación; Apoyo Internacional; Resiliencia.

INTRODUCTION

Since the full-scale invasion, the Ukrainian education system has undergone a radical transformation at all levels. In particular, Ukraine's educational institutions switched to a distance education system and later to a blended learning system. Thus, modern Ukrainian educational institutions have been forced to adapt to the constraints and threats, but they have also faced the challenge of ensuring the safety, reliability and accessibility of educational services in these challenging conditions. Contemporary works discuss various aspects of the war's impact on education.

In particular, studies analyse the peculiarities of implementing distance learning and its impact on student outcomes.^(1,2,3) Modern authors also demonstrate various adaptation decisions of the Ukrainian government to the war.^(4,5) Another important topic of discussion in modern research is the use of various digital platforms to support sustainable learning in Ukraine.^(6,7,8) However, contemporary researchers also note that the war has also affected the migration of people who are forced to study and acquire knowledge abroad.⁽⁹⁾ Thus, the impact of wars on education in Ukraine is an issue that needs to be analysed and discussed, as it affects the cultural future of the country as a whole and of future generations.

Therefore, the purpose of this paper is to study the organisation of Ukrainian educational hubs abroad in the context of Russia's military aggression against Ukraine based on the analysis of various practices in the EU. The main tasks of this work will be aimed at analysing the organisation of educational hubs for Ukrainians in such countries as Poland, Germany, the Czech Republic and others.

To this end, the following tasks will be solved:

1. Characterisation of the current state of scientific literature.
2. Analysing the peculiarities of the organisation of education in Ukraine during the war.
3. Study of the main successful practices of forming educational hubs for Ukrainians in the EU countries.

Literature review

Since the beginning of the full-scale invasion, modern researchers have repeatedly raised the issue of the effectiveness of organising a learning environment in war. The available empirical studies show that the use of modern innovative tools and technologies results in students gaining quality knowledge. In the study by Nepomnyashchyy et al.⁽⁵⁾ and Krap et al.⁽¹⁰⁾ determined that modern technological solutions have an effective impact on the functioning of the education management system. Other researchers determined that digital education is in no way inferior to traditional forms of organising the educational process.

The findings of the study by Movchan et al.⁽¹¹⁾ show that distance education is important in the organisation of the learning environment in Ukraine. At the same time, Ivanchenko et al.⁽¹²⁾ demonstrated that organising an effective educational environment in times of war is a difficult task, as educational institutions may face various problems, including material and technical issues and problems of adaptation of teaching staff and students to new educational conditions. This aspect is also emphasised by other contemporary researchers, including Armitage and Pavlenko,⁽¹³⁾ who described the peculiarities of medical education in Ukraine.

It is worth noting that the issue of digital transformation of the education system in Ukraine against the background of full-scale invasion is one of the most popular among modern scholars who are trying to characterise the role of digital tools in supporting individual learning. In particular, the study by Londar and Pietsch⁽¹⁴⁾ demonstrates the role of modern digital technologies in supporting distance learning. Also, the study by Kuzheliev et al.⁽¹⁵⁾ describes the main components of distance learning organisation, while the authors also emphasised certain challenges of the functioning of such an education system. Thus, on the one hand, some authors emphasise the effectiveness of using digital technologies in the organisation of learning in wartime,^(4,7,11,12) on the other hand, other scholars demonstrate that in modern conditions, the Ukrainian education system has faced significant challenges in organising the learning space.^(8,10,15) Therefore, this study aims to analyse the provision of educational services to Ukrainians in special educational hubs in Europe.

METHOD

The research was carried out in stages based on a content analysis of selected materials: scientific literature and educational websites, including those of the Ministry of Science and Education of Ukraine.

Data Collection

The data collection process was phased and systematic. The data collection process itself was aimed at finding important individual materials in the scientific literature and educational websites, in particular, taking into account official announcements of the Ministry of Education and Science of Ukraine. The initial stage of the research involved the identification and selection of relevant scientific literature. This process involved a preliminary review of peer-reviewed articles, reports and papers that discussed the specifics of education in wartime. For this purpose, the following terms were entered into the search databases: 'education', 'digitalisation', 'distance education', 'war', 'Ukraine', 'studying in the EU', 'education for Ukrainians in the EU'.

This search was conducted on the basis of modern scientific and metric databases, including Google Scholar and JSTOR. Initially, 345 relevant results were found. However, based on the analysis of topics, 169 items were excluded. Therefore, 176 sources were initially selected. Subsequently, based on the analysis of abstracts and keywords, another 89 items were eliminated. Thus, 87 items were selected. After that, separate inclusion criteria were established: relevance: only literature published in the last ten years was considered; scientific novelty: preference was given to articles that had an empirical component and were characterised by scientific novelty. Therefore, 35 items were selected and entered into an Excel spreadsheet, where the following data were recorded: author, article, short abstract, main results, main aspects covered, and key conclusions.

Data collection also included reviewing relevant information on the website of the Ministry of Education and Science of Ukraine. In particular, a critical analysis of the official website and its main publications was carried out. This included a preliminary analysis of press releases and policy documents and a description of the main educational initiatives and partnerships with EU countries. A special emphasis was also placed on collecting data from the websites of EU educational organisations and institutions that coordinated the creation of special educational hubs for Ukrainian students.

Data Analysis

Using Excel software, data such as country, name of the educational hub, main innovative solutions for Ukrainians, and the process of providing educational services to Ukrainians were entered into special tables. After that, the main trends in the functioning of educational hubs for Ukrainians in the EU were characterised based on the content analysis of the contents of these tables.

The collected data was systematically coded and classified in order to identify key themes. This included both qualitative analysis to ensure a complete analysis of the data. At the same time, a cross-validation method was used to verify and ensure the reliability of the data analysis. In particular, this required the use of triangulation of information from different sources.

RESULTS

The war in Ukraine has destabilised education. Modern educational institutions, forced to adapt to restrictions and threats, have faced an important challenge: to ensure the safety, reliability and accessibility of education in such conditions.^(16,17) The Ministry of Education and Science of Ukraine, which regularly updates information on the main destructions and damages to educational institutions, has published an interactive map of the destruction of educational institutions. According to the information provided and displayed, since the beginning of the full-scale invasion, almost 4 000 educational institutions have been damaged by bombing and shelling, and 365 of them have been completely destroyed (see table 1).^(18,19)

Area	Damaged	Destroyed
Vinnitsia region	4	0
Dnipro region	283	9
Donetsk region	770	160
Zhytomyr region	126	1
Zaporizhzhya region	212	14
Kyiv region	198	12
Kirovograd region	9	0
Luhansk region	182	23
Lviv region	8	0
Mykolaiv region	246	33

Odesa region	81	0
Poltava region	17	0
Sumy region	130	8
Kharkiv region	579	51
Kherson region	296	51
Khmelnyskyi region	5	0
Cherkasy region	11	0
Chernihiv region	144	2
Source: Mygal. ⁽¹⁸⁾		

As can be seen from table 1, most of the damaged and destroyed institutions are in Donetsk region.⁽¹⁸⁾ Significant losses are also recorded in Kharkiv, Kherson, and Zaporizhzhia regions. Thus, the war has led to issues of accessibility and security of educational services. Many students have lost the opportunity to join the educational process, and teachers are under the threat of shelling.⁽²⁰⁾ Consequently, the migration of Ukrainian students to European countries has become a noticeable trend.

The need for educational hubs for Ukrainians in Europe can be explained for several reasons. In particular, it is important to maintain continuous education, psychological support, and support for national and cultural identity.⁽²¹⁾ As the war caused the closure of many educational institutions, many young people were left without access to education. The functioning of such educational hubs allows them to continue their studies, gain professional knowledge and skills important for their future career development.⁽²²⁾ The largest number of Ukrainian refugees currently reside in EU countries such as Germany (1270150 people), Poland (951560) and the Czech Republic (381190).⁽²³⁾ Therefore, the analysis will focus on these countries.

The Ukrainian Education Hub in Germany is an important project for providing education for Ukrainian IDPs. The main goal of the hub is to provide high-quality education using modern digital tools and technologies.⁽²⁴⁾ The Ukrainian educational hubs in Berlin and Munich offer various educational programmes for students, including STEAM disciplines with the use of modern learning curricula. In addition, there are special language courses for those students who want to develop their communication skills in English or German. At the same time, there are also special courses on the Ukrainian language and culture, which in turn helps to maintain communication with Ukraine.⁽²⁴⁾ The Hub also facilitates psychological counselling services, and there are special programmes for social adaptation.^(25,26) It is also important that this hub actively cooperates with German universities, which helps students to fully adapt to the German learning environment. Table 2 provides a basic description of the hub based on the previously formed indicators.

Table 2. Analysis of Ukrainian Education Hub in Germany

Ukrainian Education Hub. Germany (Berlin/Munich)	
Goal	Ensuring the opportunity to effectively receive educational services and continue education.
Study programmes	
General education	Study of basic general disciplines with an emphasis on STEAM education Study of core subjects in accordance with Ukrainian curricula
Language courses	Learning foreign languages Study of the Ukrainian language
Professional trainings	Development of practical skills through the introduction of special professional trainings for students
Psychological assistance	
Psychological support	Assistance in social adaptation, free psychological counselling for students of all levels and adults
Cooperation	
Collaboration with German educational institutions	+Active cooperation with German educational institutions and universities
Support	The Hub receives support from government initiatives and NGOs
Innovative methods of training organisation	
Online platforms	+ Using a variety of online learning platforms and e-resources, allowing students to study from any location in Germany
Hybrid model	+ Use of a hybrid model to synthesise face-to-face and online classes.

Therefore, as can be seen from this Table, the educational hub, whose main centres are located in Berlin and Munich, plays an important role in digital technologies and the use of a hybrid learning model.⁽²⁴⁾

The Ukrainian educational hub in Poland operates on a special resource called Poland EduHub.⁽²⁷⁾ This hub performs several important functions and offers various educational services to ensure lifelong learning for students of all ages. The hub also cooperates with Polish governmental organisations and NGOs.⁽²⁷⁾ In addition, educational services are also provided on special educational learning platforms, which builds digital competence in students (See table 3).

Table 3. Analysis of Ukrainian Education Hub in Poland

Ukrainian Education Hub. Poland (Warsaw/Krakow)	
Goal	Ensuring the opportunity to effectively receive educational services and continue education.
Study programmes	
General education	Study of general disciplines
Language courses	Availability of Polish language courses
Professional trainings	Existence of courses that include IT, digital competence, business, marketing, medicine to develop practical skills
Psychological assistance	
Psychological support	Assistance in social adaptation, psychological counselling
Cooperation	
Collaboration with German educational institutions	+Active cooperation with Polish educational institutions
Support	The Hub receives support from government initiatives and NGOs
Online platforms	Online resources Remote platforms Electronic learning tools Electronic journals Virtual reality
Hybrid model	+

Another important educational hub is an organisation in the Czech Republic that provides access to education for Ukrainian migrants. It also promotes adaptation to the new environment and preservation of the cultural identity of Ukrainians abroad. The educational hub has its main centre in Prague, where it provides Ukrainian youth with opportunities to gain knowledge (See table 4).^(19,28)

Table 4. Analysis of Ukrainian Education Hub in Czech Republic

Ukrainian Educational Hub. Czech Republic (Prague)	
Goal	Gaining knowledge, implementing continuing education, psychological adaptation
Study programmes	
General education	Study of general disciplines
Language courses	Availability of courses in Czech and English
Professional trainings	Trainings that promote the development of practical skills
Psychological assistance	
Psychological support	Assistance in social adaptation, psychological counselling
Cooperation	
Collaboration with German educational institutions	+ Active cooperation with Czech educational institutions
Support	Government support
Online platforms	Use of digital resources Distance learning platforms Various communication platforms
Hybrid model	+

Thus, Ukrainian educational hubs established in the EU provide knowledge for young people away from

home.⁽²⁹⁾ Ukrainian educational hubs also operate in Italy, Hungary, Austria, Greece, Bulgaria, and Slovakia. They help support Ukrainian students in the European educational space.⁽³⁰⁾ During the martial law in Ukraine, the key areas of organisation of educational hubs were to provide students with catch-up education (i.e., organisation of so-called catch-up classes) to compensate for knowledge and skills. Another important area was the teaching of important skills, in particular through the lens of UPSHIFT, which will allow to educate a new generation of students as progressive creators of reforms and changes. All the analysed educational hubs use digital technologies to improve their research and learning processes. An important element is the provision of grants and scholarships for studying in EU countries.⁽³¹⁾ Given the further unification of educational requirements and Ukraine's European integration, the trend towards the organisation of joint research and education hubs will only deepen.

DISCUSSION

The results demonstrated the importance of establishing certain Ukrainian educational hubs in the European Union against the backdrop of Russia's military aggression. The destructive actions taken by the Kremlin regime against Ukraine and Ukrainians have caused enormous damage to the educational infrastructure. At the same time, the results confirm the conclusions of scholars that even greater damage was caused to Ukraine's human capital, as a result of which the state began to lose not only physical objects, but also suffered moral damage - losses in the educational process potentially destroy the future of Ukrainians as an independent nation, making Ukrainian specialists less competitive in the professional labour market.^(32,33) To overcome this situation, it is rightly noted that it is important to maintain continuous education, psychological support, and support for national and cultural identity.^(34,35) Given that active hostilities have led to the closure of many higher education institutions, many students have found themselves without access to education. Thanks to the functioning of the existing educational hubs, they can continue their studies, obtain the necessary knowledge and skills, which will facilitate their further integration into professional activities.

From this point of view, the results confirmed the researchers' opinion that it is important to create additional educational hubs for Ukrainians located outside Ukraine, primarily in the EU countries.⁽³⁶⁾ Thanks to these developments, effective cooperation in many humanities and technical sciences has been established in certain areas, allowing Ukrainian and European scientists, teachers and students to cooperate openly. The use of educational hubs, as outlined in the results, will lead to more effective cooperation between Ukraine and the EU in terms of educational and scientific integration in the future.

The findings also support the conclusions of other researchers that German, Czech, and Polish assistance in the implementation of educational hubs has provided effective assistance to Ukrainian teachers and researchers who have found themselves outside their homeland as a result of Russian aggression and its deployment.^(37,38) Scholars have also identified the Scandinavian countries as a promising place for the further development of Ukrainian educational hubs, as many Ukrainian refugees ended up there.^(39,40,41,42) Without denying this conclusion, based on the analysed educational hubs, it is still impossible to single out this direction as a priority, since the emergence of Ukrainian educational hubs is developing equally in many other EU countries, which does not allow us to identify the conditional 'Scandinavian' direction as the most promising.

At the same time, the results of scholars who believe that an equally effective way to help Ukrainian education is to create educational hubs within Ukraine will require further development.^(20,23,43) The emphasis is particularly on support programmes for teachers and researchers who continue to be residents in Ukraine. Given the complexity of building such hubs within a war-torn country, grant, technological, digital support, joint projects, etc. can be a very effective tool.^(30,44,45,46) The proposed results make it possible to support this position: active search for cooperation and implementation of joint projects without a tangible physical presence within Ukraine, where, unfortunately, there is a high risk of physical harm to the hubs and its teaching and research team and students.

At the same time, the methodology used to obtain the results has certain limitations, which can be addressed to improve the research in the future. First of all, we are talking about the use of English-language scientific literature, which had the highest citation ratings. This approach is productive, but it also has an important element: some significant theoretical achievements could have been left out of the research and, accordingly, the analysis, which, if taken into account, would improve the current state of research on the issue in the future. Another limitation that should be taken into account when evaluating the results of the article is a certain predominance of general concepts over specific cases. Despite the analysis, a study of the specific circumstances and conditions of the functioning of individual educational hubs, identification of local problems and advantages would further diversify the results obtained.

CONCLUSIONS

The emergence and functioning of Ukrainian educational hubs in the EU as a result of Russian aggression against Ukraine was a reaction to the destruction of educational institutions in many regions. In addition to

physical damage, education in Ukraine has also suffered a significant outflow of students, researchers and teachers. The interruption of the educational process, given the growing demands for theoretical knowledge and practical skills in the modern world, has also raised questions about the ability of Ukrainians to receive proper professional training. The functioning of educational hubs in the EU has become a necessary response to this challenge. Most Ukrainian refugees have settled in Germany, Poland and the Czech Republic, so the effectiveness of educational hubs has been most evident in these countries.

The Ukrainian educational hubs in Germany primarily covered Berlin and Munich, which made it possible to provide effective access to educational services and continue education. It is important that in the German context, assistance is also aimed at social adaptation of refugees, establishing active cooperation with German educational institutions, and digitalisation of education. The Ukrainian educational hub in Poland primarily covers Warsaw and Krakow. It is important that the functioning of educational hubs in Poland has received state support in addition to private support. The emphasis on IT, digital competence, business, marketing, and medicine has directed the educational process towards acquiring practical skills. As a rule, education is organised in a blended format, which also allows students to integrate into Polish society. The Ukrainian educational hub in the Czech Republic primarily operates in Prague. Thanks to government support, digital resources are actively used and blended learning is implemented.

In addition to modern disciplines, the Czech context focuses on continuing education, which allows students to improve their skills and knowledge while integrating into Czech society. Ukrainian educational hubs also operate in Italy, Hungary, Austria, Greece, Bulgaria and Slovakia. Thanks to this close cooperation, the Ukrainian education system can also use European experience to improve the learning process.

REFERENCES

1. Kolbina T, Oleksenko O. Implementation of Distance Learning in Ukraine. EdCh [Internet]. 2020 Sep 20 [cited 2024 Dec 14];25(1). Available from: http://educationalchallenges.org.ua/index.php/education_challenges/article/view/38
2. Shevchenko Y, Dubiaha S, Huz V, Melash V, Varenychenko A, Saenko Y. Training of Primary School Specialists Taking Into Account Up-to-Date Opportunities for Self-Improvement. JHETP [Internet]. 2021 Dec 19 [cited 2024 Dec 14];21(14). Available from: <https://articlegateway.com/index.php/JHETP/article/view/4815>
3. Telenyk S, Rolick O, Bukasov M, Dorogiy Y, Halushko D, Pysarenko A. Qualitative evaluation method of IT-infrastructure elements functioning. In: 2014 IEEE International Black Sea Conference on Communications and Networking (BlackSeaCom) [Internet]. Odessa, Ukraine: IEEE; 2014 [cited 2024 Dec 14]. p. 165-9. Available from: <http://ieeexplore.ieee.org/document/6849031/>
4. Muliarevych O, Saienko V, Hurbanska A, Nowak B, Marushchak O. Digital Learning Hubs as a Component of the Information and Digital Learning Environment. JCT. 2023 Oct 14;12(5):24.
5. Nepomnyashchyy O, Marusheva O, Prav Y, Vovk S, Lopushynskyi I. Formation of a Mechanism for Public Management of Higher Education Development in Ukraine. JHETP [Internet]. 2021 Dec 19 [cited 2024 Dec 14];21(14). Available from: <https://articlegateway.com/index.php/JHETP/article/view/4811>
6. Borodiyenko O, Nychkalo N, Malykhina Y, Kuz O, Korotkov D. Public-private partnership in education as a prerequisite for the growth of regional labor markets: Analysis of foreign experience. Financial and Credit Activity Problems of Theory and Practice. 2021 Feb 17;1(36):408-20. doi: 10.18371/fcaptp.v1i36.228031
7. Dovgyi S, Topuzov O, Halchenko M, Matusevych T, Revin F. Science-driven education as a precondition for the formation of the competitive Ukrainian economy. Financial and Credit Activity Problems of Theory and Practice. 2022 Mar 31;1(42):474-83. doi: 10.55643/fcaptp.1.42.2022.3683
8. Hladoshchuk O, Saienko V, Shyshkina O, Shlieina L, Khrapatyi S. Activities and Development of Open Universities in the States of European. JCT. 2023 Mar 18;12(2):144. doi: 10.5430/jct.v12n2p144
9. Kozlovskyi S, Kulinich T, Vechirko I, Lavrov R, Zayukov I, Mazur H. Relationship between net migration and economic development of European countries: Empirical conclusions. Problems and Perspectives in Management. 2024 Mar 18;22(1):605-18. doi: 10.21511/ppm.22(1).2024.48
10. Krap A, Bataiev S, Bobro N, Kozub V, Hlevatska N. Examination of digital advancements: Their influence on contemporary corporate management methods and approaches. Multidiscip Rev [Internet]. 2024 Jun 12

[cited 2024 Dec 27];7:2024spe026. Available from: <https://doi.org/10.31893/multirev.2024spe026>

11. Movchan L, Komisarenko N, Fernos Y, Kolisnyk V. Distance education in Ukraine during the war. In Palma, Spain; 2023 [cited 2024 Dec 14]. p. 6300-5. Available from: <https://library.iated.org/view/MOVCHAN2023DIS>

12. Ivanchenko O, Lurie K, Melnikova O. Higher education in Ukraine during war. GoS. 2023 Feb 27;(24):519-22. doi: 10.36074/grail-of-science.17.02.2023.099

13. Armitage R, Pavlenko M. Medical education and war in Ukraine. Br J Gen Pract. 2022 Aug;72(721):386. doi: 10.3399/bjgp22X720329

14. Londar L, Pietsch M. Providing distance education during the war: the experience of Ukraine. ITLT. 2023 Dec 28;98(6):31-51. doi: 10.33407/itlt.v98i6.5454

15. Kuzheliev M, Zherlitsyn D, Nechyporenko A, Lutkovska S, Mazur H. Distance learning as a tool for enhancing university academic management processes during the war. Problems and Perspectives in Management. 2023 Apr 10;21(2):23-30. doi: 10.21511/ppm.21(2-si).2023.04

16. Borysiuk I, Haioshko OB, Korniiichuk O, Tsekhmister Y, Demianchuk M. Alternative Approaches to Clinical Practice in Medical Education During the Covid-19 Pandemic. JCT. 2022 Feb 10;11(2):75. doi: 10.5430/jct.v11n2p75

17. Marusiak TS. Education in Ukraine during the war: state and prospects. Perspectives Socio-political journal. 2022;(3):134-40.

18. Mygal M. Institute for Analytics and Advocacy [Internet]. Education in conditions of war: challenges and prospects for Ukraine; 2023 Oct 23 [cited 2024 Dec 14]. Available from: <https://iaa.org.ua/articles/education-in-times-of-war-challenges-and-prospects-for-ukraine/>

19. Tsekhmister Y, Konovalova T, Tsekhmister B. Using behavioral analytics to personalize learning experiences in digital medical education: a case study. Academia. 2023 Oct 23;83-103 Σελίδες. doi: 10.26220/aca.4543

20. Bulavko GV, Davidenko NA, Ishchenko AA, Studzinsky SL, Shkavro AG. Peculiarities of the photovoltaic properties of films based on photoconducting polymer and organic dye in samples with free surfaces and between electric contacts. Tech Phys Lett [Internet]. 2015 Feb [cited 2024 Dec 28];41(2):191-4. Available from: <https://doi.org/10.1134/s1063785015020182>

21. Romanova A. Education right: features of realization during the war in Ukraine. Visn Nac Univ «Lviv politeh» Ser: Urid nauki. 2023 Mar 30;10(37):113-7. doi: 10.23939/law2023.37.113

22. Aladekomo A. Russian Aggression against Ukraine, Sovereignty and International Law. SSRN Journal [Internet]. 2022 [cited 2024 Dec 14]; Available from: <https://www.ssrn.com/abstract=4064020>

23. Cafruny A, Fouskas VK, Mallinson WDE, Voynitsky A. Ukraine, Multipolarity and the Crisis of Grand Strategies. Journal of Balkan and Near Eastern Studies. 2023 Jan 2;25(1):1-21. doi: 10.1080/19448953.2022.2084881

24. UA eduhub of Germany [Internet]. Ukrainian educational hub in Germany; [cited 2024 Dec 14]. Available from: <https://germany.eduhub.org.ua/#rec491295082>

25. Rudenko O, Kharkov S. Philosophical studies of the future in the context of postmodern knowledge: theory, methodology. Futurity Philosophy. 2023 Sep 30;4-16. doi: 10.57125/FP.2023.09.30.01

26. Bulavko GV, Davidenko NA, Davidenko II, Ishchenko AA, Mokrinskaya EV, Pavlov VA, Studzinsky SL, Tonkopiieva LS, Chuprina NG. Photovoltaic Characteristics of Film Composites Based on Glycidylcarbazole Cooligomer with Symmetrical Cationic Polymethine Dyes. Theor Exp Chem [Internet]. 2013 Sep [cited 2024 Dec 28];49(4):219-23. Available from: <https://doi.org/10.1007/s11237-013-9318-6>

27. Education Hub Warsaw [Internet]. Warsaw (Poland): Education Hub Warsaw; [cited 2024 Dec 14]. Available from: <https://poland.eduhub.org.ua/>

28. Perun V. LB.ua [Internet]. Eurostat: 4.3 million citizens who left Ukraine have the status of temporary protection in the EU; 2024 Mar 10 [cited 2024 Dec 14]. Available from: https://lb.ua/society/2024/03/10/602675_ievrostat_43_milyona_gromadyan_shcho.html#:~:text=Про%20це%20йдеться%20на%20сайті,381190;%208,9%
29. Leleka T, Moskalenko O. The Psycholinguistic Aspects of Global Bilingualism Against the Background of the Society Digitalization Process in Ukraine and Slovak Republic. *Psycholing*. 2023 Apr 7;33(2):90-113. doi: 10.31470/2309-1797-2023-33-2-90-113
30. Zamkowska I. The System of Education as an Instrument of War in the Russia-Instigated Ukrainian Crisis. *International Journal of Educational Reform*. 2024 Feb 2;10567879241226696. doi: 10.1177/10567879241226696
31. Safarli C, Kolach S, Zhyvko M, Volskyi O, Bobro N. Considering Globalisation Risks in the Formation and Implementation of International Investment Strategies. *Pak J Life Soc Sci (PJLSS)* [Internet]. 2024 [cited 2024 Dec 27];22(2). Available from: <https://doi.org/10.57239/pjlss-2024-22.2.00776>
32. Bakhmat N, Krasnoshchok I, Voron O. International Experience of Using E-Learning during Pandemics and Military Conflicts. *E-Learning Innovations Journal*. 2023 Sep 25;1(2):68-85. doi: 10.57125/ELIJ.2023.06.25.04
33. Kalmykova O. Ukraine, Russia, and international law: occupation, armed conflict and human rights. *Law, Business and Sustainability Herald*. 2022;2(2):4-10.
34. Danilyan O, Dzeban O, Hetman Y, Kalynovskyi Y. Features of information war in the media space in the conditions of Russian aggression against Ukraine. *Cogito - Multidisciplinary Research Journal*. 2023;15(3):55-71.
35. Mereniuk K, Parshyn I. Military units and symbolism: Utilization of imagery from medieval Rus in the Russian-Ukrainian war. *Trames J Humanit Soc Sci* [Internet]. 2024 [cited 2024 Dec 27];28(3):293. Available from: <https://doi.org/10.3176/tr.2024.3.05>
36. Kurapov A, Pavlenko V, Drozdov A, Bezliudna V, Reznik A, Isralowitz R. Toward an Understanding of the Russian-Ukrainian War Impact on University Students and Personnel. *Journal of Loss and Trauma*. 2023 Feb 17;28(2):167-74. doi: 10.1080/15325024.2022.2084838
37. Martynenko M, Lysytsia N, Martynenko A, Us M. Design as a key factor in brand building: value congruence and brand identity through design. *Futurity Economics&Law*. 2023 Sep 25;31-47. doi: 10.57125/FEL.2023.09.25.02
38. Ridei N, Tytova N, Viktorova L, Tsymbal S. The problem of state management of socio-cultural forms of organization in the field of education, science, innovation: current problems and development vectors. *Financial and Credit Activity Problems of Theory and Practice*. 2022 Jan 10;6(41):418-26. doi: 10.18371/fcaptop.v6i41.251470
39. Kozinchuk V, Kuzmenko A, Malona S, Matviienko L, Sonechko O. Competitiveness of Ukrainian higher education in the world aspect against the background of Russian armed aggression. *Eduweb*. 2022 Aug 2;16(2):166-79. doi: 10.46502/issn.1856-7576/2022.16.02.12
40. Romero-Carazas R. Collection Management Model for Late Payment Control in the Basic Education Institutions. *Edu - Tech Enterprise* 2024;2:12-12. <https://doi.org/10.71459/edutech202412>.
41. Kushnir I, Milani Z, Mbah MF. UK higher education sector's response to the war in Ukraine. *JARHE* [Internet]. 2023 Dec 15 [cited 2024 Dec 14]; Available from: <https://www.emerald.com/insight/content/doi/10.1108/JARHE-08-2023-0384/full/html>
42. León-Zevallos L, Casco RJE, Macha-Huamán R. Digital marketing positioning in a retail sector company. *Edu - Tech Enterprise* 2024;2:11-11. <https://doi.org/10.71459/edutech202411>.
43. Tsekhmister Y, Yakovenko O, Miziuk V, Sliusar A, Pochynkova M. The Effect of Online Education on the Teachers' Working Time Efficiency. *J Curric Teach* [Internet]. 2022 Sep 15 [cited 2024 Dec 14];11(6):44. Available from: <https://doi.org/10.5430/jct.v11n6p44>

44. Fidel WWS, Cuicapusa EEM, Espilco POV. Managerial Accounting and its Impact on Decision Making in a small company in the food sector in West Lima. *Edu - Tech Enterprise* 2024;2:8-8. <https://doi.org/10.71459/edutech20248>.

45. Tsekhmister Y, Konovalova T, Tsekhmister B. Distance learning technologies in online and mixed learning in pre-professional education of medical lyceum students. *J Adv Pharm Educ Res* [Internet]. 2021 [cited 2024 Dec 14];11(4):127-35. Available from: <https://doi.org/10.51847/zly2idwa4f>

46. Tsekhmister Y. Effectiveness of Blended Learning in Biomedical Engineering: A Meta-Analysis. *J High Educ Theory Pract* [Internet]. 2023 Mar 25 [cited 2024 Dec 14];23(5). Available from: <https://doi.org/10.33423/jhetp.v23i5.5976>

FINANCING

The authors did not receive financing for the development of this research.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Formal analysis: Liliia Martynets, Roman Bobovskyi, Ján Pochanič, Yuliia Shabala, Oksana Huda.

Research: Liliia Martynets, Roman Bobovskyi, Ján Pochanič, Yuliia Shabala, Oksana Huda.

Methodology: Liliia Martynets, Roman Bobovskyi, Ján Pochanič, Yuliia Shabala, Oksana Huda.

Validation: Liliia Martynets, Roman Bobovskyi, Ján Pochanič, Yuliia Shabala, Oksana Huda.

Writing - proofreading and editing: Liliia Martynets, Roman Bobovskyi, Ján Pochanič, Yuliia Shabala, Oksana Huda.