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Adaptive learning as a direction of educational process management on the background of Ukrainian wartime migration crisis

Introduction

The ongoing Ukrainian migration crisis has presented unprecedented challenges to educational systems, within Ukraine and in countries hosting Ukrainian refugees. According to UNHCR, nearly 4.6 million people in Ukraine have become Internally Displaced Persons (IDPs). In particular, these people left their homes in the Eastern and Southern regions of Ukraine, where active military operations are currently prevalent. It should be noted that thanks to the successful advance of the Ukrainian army at the front, a large part of the territory has already been returned to the control of the Ukrainian authorities, which enabled some of the IDPs to return to their homes. On the other hand, a significant part of the population was forced to leave their homes and flee abroad. According to the data of the UN International Migration Service, 6.5

million Ukrainian refugees temporarily live abroad today, where the scale of migration processes remains very noticeable. In fact, 35% of the country's population, or approximately one out of three Ukrainians, has been forced to temporarily seek refuge in other regions or countries since the beginning of large-scale military war in Ukraine, to ensure safety to their families.¹ Large percentage of these migrants is a group of young people, which are learning to adapt to the accommodations according to the new requirements and new lifestyle.²

The forced migration and displacement of large numbers of students resulted in the disruption of their educational trajectories, which then led to new innovative approaches to ensure continuity and quality of education. In this context, adaptive learning emerges as a pivotal strategy for managing educational processes and addressing the diverse needs of these migrant students. Adaptive learning, which involves the customization of educational experiences to meet the individual needs of learners, offers a more flexible and responsive approach to education. This methodology is particularly relevant during crisis situations, where students' backgrounds, prior knowledge, and learning conditions can vary widely. By leveraging technology to tailor instructional content and methods, adaptive learning can provide personalized support, which fosters mitigation during the educational disruption caused by forced migration.

This study explores the role of adaptive learning in managing educational processes during the challenging Ukrainian migration crisis. It examines the theoretical foundations of adaptive learning, its practical applications, and its potential to enhance educational outcomes for migrant students. Through a detailed analysis, we aim to highlight how adaptive learning can be integrated into educational management strategies to create more resilient and inclusive educational systems.

In the subsequent sections, we will delve into the theoretical aspects of adaptive learning, discussing key educational theories that underpin this approach. We will then explore practical implementations of adaptive learning technologies and methodologies, emphasizing their benefits in the context of the Ukrainian migration crisis (on the sample of experiences of Polish Andrzej Frycz Modrzewski Krakow University³ and Ukrainian Zhytomyr State Polytechnic University). By addressing both

¹ S. Chugaievska, R. Wisła, *A new wave of migration in Ukraine on the background of Russian invasion: dynamics, challenges and risks*, "Journal of International Studies" 2023, vol. 16, no 4, pp. 220–244. https://www.jois.eu/?860,en_a-new-wave-of-migration-in-ukraine-on-the-background-of-russian-invasion-dynamics-challenges-and-risks [accessed: 19.05.2024].

² *Ukraine Refugee Situation*, The UN Refugee Agency, <https://data.unhcr.org/en/situations/ukraine> [accessed: 20.05.2024].

³ Research "Social-demographic transformations in Ukraine on the background of the war: migration crisis, challenges and prospects" on the base of Andrzej Frycz Modrzewski Krakow University, Poland is funded by The Institute of International Education's Scholar Rescue Fund, USA

theory and practice, this study aims to provide a comprehensive understanding of how adaptive learning can be a transformative direction in educational process management during times of crisis.

The aims of the study are:

- to assess the theoretical foundations and conditions of modern forced Ukrainian migration;
- to analyze a theoretical approaches of Ukrainian migrants adaptive learning at the Universities, schools and new jobs;
- to identify a number of soft and hard skills for Ukrainian students and teachers (on the sample of Polish University);
- to analyze the possibilities for Ukrainian displaces migrant student adaptation (on the sample of Ukrainian University).

Literature review

Successful adaptive learning requires effective managerial and organizational learning skills, which strongly emphasize successful implementation during the adaptation process.⁴ This section describes the theoretical approaches how do we define managerial and organizational learning. Peter Senge defines organizational learning as the process of designing, retaining, and transferring knowledge and gaining and expanding experiences.⁵ In fact, gaining and expanding experiences leads to revisions, development of knowledge and to influential changes.⁶ These include the increase of positive outcomes, efficiency in production and increase in the learning curve. The following diagram presents the organizational learning community cycle during the education of international students (Figure 1).

Individual learning or individualized learning is the initial phase of the learning community cycle. Each person learns new skills, concepts and gains experiences at his/her individual pace and has his/her individualized learning style. The individual can decide whether or not to share their knowledge with the rest of the group. It is also important to share individual knowledge with others. In fact, if an individual decides not to share his/her knowledge, the group loses this knowledge⁷. In their study

⁴ M. Radin, S. Wyciślak, *The Fundamentals of Systems Thinking, Management & Effective Leadership*, World Scientific Publishing, Singapore 2024, p. 180.

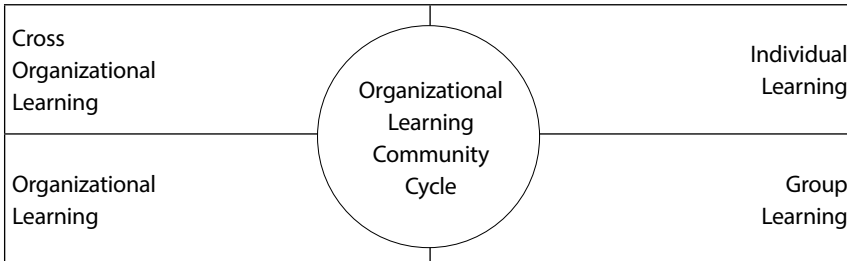
⁵ P.M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday Currency, New York 1990, pp. 12–15.

⁶ L. Argote, *Organizational Learning: Creating, Retaining, and Transferring Knowledge*, Springer New York, New York 2012, pp. 35–40.

⁷ J.M. Wilson, P.S. Goodman, M.A. Cronin, *Group Learning*, “The Academy of Management Review” 2007, no. vol. 32, no. 4, pp. 1041–1059, <https://psycnet.apa.org/record/2007-15086-003> [accessed: 20.05.2024].

of software development, Boh, Slaughter and Espinosa⁸ found that each individual was more productive in his/her specialty or focused studies.⁹

Figure 1. Organizational learning community cycle during the education of international students



Sources: P.M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday Currency, New York 1990; M. Radin, S. Wyciślak, *The Fundamentals of Systems Thinking, Management & Effective Leadership*, World Scientific Publishing, Singapore 2024.

Group learning is the next step of the learning community cycle when individual learning transitions to group learning or individualized learning transitions to collaborative learning. Group learning naturally arises when individuals share their gained knowledge and experience with others. Group learning is a learning process that involves providing feedback and applying feedback to make future revisions and improvements. Group learning also involves error detection, correction, interpretation and integration. Reagans, Argote & Brooks¹⁰ conducted research on group learning by observing joint replacement surgeries in teaching hospitals and concluded that “increased experience working together in a team promoted better coordination and teamwork.”¹¹ Team work presents opportunities to share knowledge and experiences with each other and to learn from each other. This leads to collaborative learning and two-directional exchange of ideas.¹²

Organizational learning is the consequent stage of the learning community cycle and involves assembling and organizing knowledge and experiences relative

⁸ W.F. Boh, S.A. Slaughter, J.A. Espinosa, *Learning from experience in software development: A multilevel analysis*. “Management Science” 2007, vol. 53, no. 8, pp. 1315–1331, <https://doi.org/10.1287/mnsc.1060.0687> [accessed: 15.05.2024].

⁹ L. Argote, E. Miron-Spektor, *Organizational Learning: from experience to knowledge*, “Organizational Science” 2011, vol. 22, no. 5, pp. 1123–1137.

¹⁰ R. Reagans, L. Argote, D. Brooks, *Individual Experience and Experience Working Together: Predicting learning rates from knowing who knows what and knowing how to work together*, “Management Science” 2005, vol. 51, no. 6, pp. 869–881.

¹¹ M. Radin, S. Wyciślak, *op. cit.*

¹² See: M. Radin, *Designing Online Teaching & Learning Environment: An Innovative Approach*, World Scientific Publishing, Singapore 2023.

to specific orientations and cultural values. Analogous to individualized learning, organizational learning occurs and grows at different rates. In addition, organization learning aims to adapt to changing environments, to keep up with other organizations and to increase efficiency.¹³ Argote concluded that managers in manufacturing plants experienced and applied organizational learning while discovering methods to improve the organization's structure, use of technology and technological efficiency and to enhance the organization's strengths and unique characteristics.¹⁴

Inter-organizational learning is the final phase of the cycle. Analogous to the two-directional exchange of ideas among the individuals in group learning, the two directional exchange of ideas occurs among the organizations in inter-organizational learning.¹⁵ First, an organization can adapt successful practices from another organization such as production efficiency, effective communication with the staff, amiable working environment, etc. Second, an organization can revise another organization's idea and transform it to a different idea.¹⁶

Weber especially focused his studied on the contrasts between objectivity and subjectivity. *Verstehen* also aims to systematically understand the behavior and actions of other people. This then led Weber to examine the contrasts between social action versus social behavior, where it is critical to systematically understand how individuals subjectively relate to one another through social action. In fact, in the first chapter of his book *Economy and Society*, Weber concludes that "only individuals can be treated as agents in a course of subjectively understandable action".¹⁷ Weber concluded that social phenomena can be accepted only to the extent that they are captured by models of the behavior of purposeful individuals, which Weber referred to as "ideal types".¹⁸ These principles guide to collaborative learning and to the fundamentals of adaptive learning. In anthropology, *Verstehen* is adaptive interpretive process where an external observer from a different culture attempts to relate and understand the locals within the new culture.

¹³ M. Dodgson, *Organizational Learning: A review of some literatures*, "Organizational Studies" 1993, vol. 14, no. 3, pp. 375–394.

¹⁴ L. Argote, *Organizational Learning: Creating, retaining, and transferring knowledge*, Kluwer Academic, Boston 1999, pp. 189–203.

¹⁵ A.L. Tucker, I.M. Nembhard, A.C. Edmondson, *Implementing new practices: An empirical study of organization learning in hospital intensive care units*, "Management Science" 2007, vol. 53, no. 6, pp. 894–907.

¹⁶ M. Radin, S. Wyciślak, *op. cit.*

¹⁷ As cited in G. Ritzer, *Contemporary Sociological Theory and Its Classical Roots: The Basics*, McGraw-Hill Education, Boston 2009, pp. 32–33.

¹⁸ As cited in K.D. Allan, *Explorations in Classical Sociological Theory: Seeing the Social World*, Pine Forge Press, Thousand Oaks, CA 2005, pp. 164–166.

Data and methodology of the research

To address the research questions, the authors utilized data from both international organizations on migration and sources from Ukrainian ministries and agencies. Considering social challenges, a significant part of the information was obtained from the data of the State Statistics Service of Ukraine and the UNHCR¹⁹, International Organization for Migration (IOM)²⁰. The authors selected data from the World Bank²¹, State Statistics Service of Ukraine²² and IOM. Data from IOM's flagship publications, the World Migration Reports, papers published in the Migration Research Series and IOM Migration Profiles were used for conducting the study. Information from the website of the Ministry of Social Policy of Ukraine²³ was used to estimate the migration flows of Internally Displaced Persons. This comprehensive approach ensured a robust and multifaceted analysis. Additionally, the study incorporated materials from qualitative analysis of interviews with university educators and migrant students. These interviews provided in-depth insights into the adaptive learning processes and challenges faced by the Ukrainian migrants in challenging academic circumstance. Furthermore, the research included surveys of the Ukrainian refugees to gather firsthand information about their experiences, challenges, and adaptive strategies in their new environments. By combining these diverse data sources, the authors were able to develop a well-rounded understanding of the issues at hand, enabling them to formulate evidence-based recommendations for improving the educational process and facilitating better adaptation for the Ukrainian migrants.

Based on the application of the method of theoretical generalization, the authors developed a comprehensive model of adaptive learning tailored specifically for the Ukrainian migrants relocating to new cities. This model addresses the unique educational needs and challenges faced by the young migrants, integrating insights, from both external and internal displacement experiences. The research utilized a multifaceted approach, employing case studies from the American, Polish, and Ukrainian universities to gather diverse perspectives and best practices. By analyzing these case studies, the authors were able to identify common tasks and challenges that young migrants encounter, such as language barriers, cultural adjustments, and disruptions in their educational trajectories.

¹⁹ *The UN Refugee Agency*, <https://data.unhcr.org/en/situations/ukraine> [accessed: 20.05.2024].

²⁰ *The International Organization for Migration*, https://www.iom.int/search?keywords=Ukraine®ion_country=&created=All&sort_bef_combine=created_DESC [accessed: 25.05.2024].

²¹ *The World Bank Open Data*, <https://data.worldbank.org/indicator/SM.POP.NETM?locations=UA> [accessed: 25.05.2024].

²² *The State Statistics Service of Ukraine*, <https://www.ukrstat.gov.ua/> [accessed: 25.05.2024].

²³ *The Ministry of Social Policy of Ukraine*, <https://www.ioc.gov.ua/dashboardVpo/> [accessed: 25.05.2024].

The method of theoretical generalization allowed for the synthesis of various educational theories and practices into a cohesive model that can be applied across various contexts. This approach ensures that the recommendations were grounded in a solid theoretical framework, enhancing their relevance and applicability. Furthermore, the case study method provided practical insights and real-world examples of how universities have successfully supported migrant students, while highlighting effective strategies and programs. In addition to theoretical generalization and case studies, the research involved qualitative interviews with educators and administrators from the selected universities. These interviews provided deeper insights into the specific challenges faced by the Ukrainian migrants and the effectiveness of different adaptive learning strategies. The combination of theoretical and empirical methods ensured a well-rounded understanding of migrants' educational needs.

The findings revealed that the adaptive learning strategies need to be more flexible and responsive relative to the changing circumstances of migrant students. The authors proposed several key recommendations for improving the educational process, including the development of specialized support services, the integration of culturally relevant curricula, and the use of technology to facilitate and enhance remote learning. These recommendations were presented during their participation at the International Economic Forum "From Recovery to Growth", May 21–24, 2024, which was conducted on the base of Taras Shevchenko National University of Kyiv, Ukraine²⁴. These recommendations aim to enhance the adaptability of the educational system to better serve the needs of the Ukrainian migrants amidst the ongoing Russian-Ukrainian war.

Adaptive learning technologies can be scaled to accommodate large numbers of students, making them ideal to apply in refugee camps or temporary educational settings. Furthermore, these systems often include multilingual support, which is essential for non-native speakers adjusting to a new educational system. Adaptive learning systems can assist educators by providing insights into students' progress and areas of need. This data can inform targeted interventions and personalized instruction. Additionally, these systems often include resources for teacher training, helping educators adapt to new technologies and instructional strategies.

Based on the research objectives, the following scientific hypotheses were formulated:

H1) Ukrainian forced migrants, in the context of relocating to new places, encountered additional financial costs, problems in finding housing, employment, and continuing their studies in a new environment. These new challenges necessitated the development of adaptive strategies to adjust to new living conditions. This hypothesis posits that the process of adapting to these challenges fostered resilience and

²⁴ Forum EFBM 3.0. *From Recovery to Growth*, May 21–24, 2024, <https://www.efbm.org/> [accessed: 25.05.2024].

adaptability among Ukrainian migrants, equipping them to better manage the complexities of their new circumstances.

H2) The flows of Ukrainian forced migration across the globe have significantly impacted national labor markets, with particularly pronounced effects observed in the Polish and German labor markets. This hypothesis suggests that the influx of the Ukrainian migrants has led to shifts in labor market dynamics, which noticeably affects employment opportunities, wage levels, and labor supply in these countries. The research aims to explore the extent and nature of these changes, while providing insights into the broader economic implications of the migration crisis.

H3) The experiences of the Polish and Ukrainian universities in the context of adaptive learning with the Ukrainian students demonstrate high levels of adaptability and success. This hypothesis is based on case studies and qualitative data indicating that both Polish and Ukrainian educational institutions have developed effective adaptive learning strategies. These strategies have facilitated the integration of the Ukrainian students into new academic environments, supporting their educational progress and overall well-being.

These hypotheses provide a framework for investigating the multifaceted impacts of the Ukrainian forced migration, encompassing economic, social, and educational dimensions. By examining these hypotheses, the research seeks to contribute to a deeper understanding of how adaptive learning can be leveraged to support migrant populations, as well as the broader societal changes resulting from large-scale migration movements.

The methodological and data analysis approaches of combining theoretical generalization with case studies and qualitative interviews provided a robust foundation for developing an adaptive learning model. This model not only addresses the immediate educational challenges faced by the Ukrainian migrants but also offers long-term solutions for their successful integration into new educational environments. The research underscores the importance of adaptive learning as a critical direction for educational process management in the context of the Ukrainian migration crisis.

Aspects of adaptive learning: theory and practices

Adaptive learning is a pedagogical approach that tailors educational experiences to individual learners' needs, abilities, and interests. It has gained significant attention in recent years, particularly in the context of managing educational processes amid crises, such as the Ukrainian migration crisis. This section delves into the theoretical underpinnings and practical applications of adaptive learning, highlighting its relevance and potential impact on educational management during such challenging times.

The concept of adaptive learning is rooted in several educational theories that emphasize personalized and student-centered learning. The key constructivism includes the Vygotsky's Zone of Proximal Development (ZPD), and Differentiated Instruction. Constructivism posits that learners construct knowledge through experiences and reflections. Adaptive learning systems leverage this by providing diverse learning pathways and resources that cater to different learning styles and paces, thereby facilitating deeper understanding and retention of knowledge. Vygotsky's ZPD underscores the importance of providing learners tasks that are within their capabilities, but also challenging enough to promote growth.²⁵ The adaptive learning technologies can dynamically adjust the difficulty level of tasks based on the real-time assessment of a learner's performance, ensuring that each student is continuously engaged and challenged within their ZPD. Differentiated Instruction involves tailoring teaching environments and practices to create different learning experiences based on students' varying needs. Adaptive learning systems incorporate this principle by using data analytics to customize content delivery, instructional methods, and pacing for each learner.

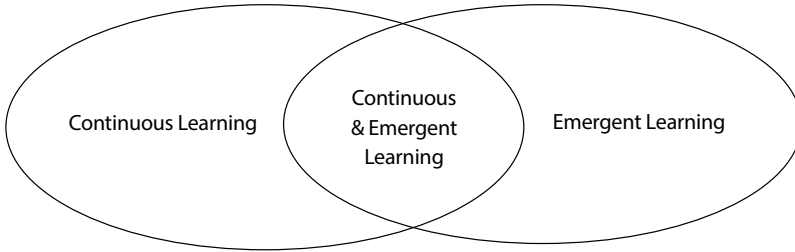
Adaptive learning systems utilize technology to gather data on learners' interactions and performance, which informs the customization of educational content. These systems are particularly beneficial in the context of the Ukrainian migration crisis, where the students face unique educational challenges. Personalized learning pathways can create individualized learning plans that accommodate the diverse backgrounds and educational disruptions that the migrant students encounter. These plans can bridge gaps in knowledge and ensure continuity in education despite interruptions. Real-time feedback and assessment provide immediate feedback, which allow students to detect their mistakes and learn from them promptly. This is crucial for maintaining motivation and engagement, especially for the students who might be dealing with the trauma and instability associated with the migration.

We often come upon change of lifestyle due to emerging phenomena influencing global and local economy, culture and politics. Recent examples include crises such as COVID-19 pandemic and the Russian–Ukrainian War. Adaptation is not a choice when such emergent changes occur. How do we adapt and how do we define adaptive learning? We can define adaptive learning as acclimation to changing circumstances and to the new developing environment. What new virtues arise and what traditional traits do you retain? How fast do the new virtues arise and what is the related adaptation rate? How do you balance the similarities and contrasts

²⁵ K. Shabani, M. Khatib, S. Ebadi, *Vygotsky's Zone of Proximal Development: Instructional implications and teachers' professional development*, "English Language Teaching" 2010, vol. 3, no. 4, pp. 237–248 <https://www.ccsenet.org/journal/index.php/elt/article/view/37034> [accessed: 25.05.2024].

between the traditional and new virtues? The corresponding Venn diagram presents the adaptation rate, while describing adaptive learning as either continuous or emergent learning or as combinations of both (Figure 2).

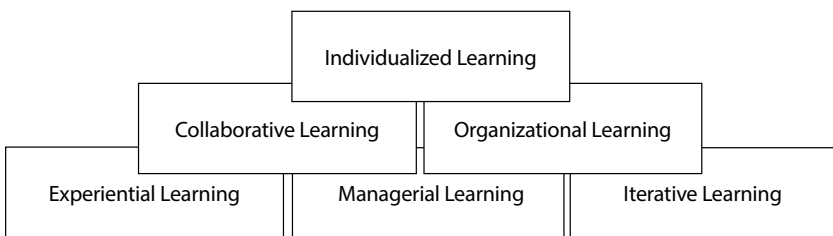
Figure 2. Rate of adaptation – Emergent vs. Continuous Learning



Sources: research results; see: M. Radin, *International & Multidisciplinary Pedagogy. Discoveries, Innovations, Challenges & Successes*, World Scientific Publishing, Singapore 2023.

On one hand, adaptive learning indicates the essence of new information and knowledge and staying current and fresh. On the other hand, adaptive learning compares the similarities and contrasts between the past the present. How do we accurately implement adaptive learning, especially while adapting as refugees in a foreign environment? What categories of learning does adaptive learning unfold? The corresponding three-phased pyramid-shaped diagram unfolds the answers and presents the virtues of the Adaptive Learning Model (Figure 3).

Figure 3. The pyramid-shaped Adaptive Learning Model



Sources: research results; see: M. Radin, *International & Multidisciplinary Pedagogy. Discoveries, Innovations, Challenges & Successes*, World Scientific Publishing, Singapore 2023; idem, *Designing Online Teaching & Learning Environment: An Innovative Approach*, World Scientific Publishing, Singapore 2023.

The first phase presents the first dimension of the pyramid and the initial design or scheme of an innovative idea. The first phase can also be interpreted as the initial exploration learning input, which analyzes the gained knowledge of concepts, while attempting to determine the links to new concepts.

The second phase describes the second dimension of the pyramid, which naturally arises from guidance, such as internal and external feedback. Internal and

external feedback are encountered during various assessments and evaluations, such as peer, reference, formative and summative assessments. Internal and external feedback also come about during cross-disciplinary and cross-cultural collaborations and exchange of ideas.

The third phase describes the third dimension of the pyramid, which highlights the essence of interpreting and implementing the feedback in the second phase. What essential categories of learning are needed to accurately understand the spectrum of feedback in the second phase and effectively implement it with specific revisions during the iterative learning cycle? This working question we will try to characterize in the follow case studies of the research.

The theoretical foundations of managing the educational process for Ukrainian migrants underscore the necessity of researching the experiences of individual universities that have already encountered this issue. The significant influx of migrants undoubtedly presents a range of new challenges for the economies of host countries, particularly impacting their social, healthcare, and educational services.²⁶ Understanding how specific universities have adapted to and managed these challenges provides valuable insights that can inform broader strategies for improving the educational integration and support of migrant students.

Adaptive learning for Ukrainian refugee students: case study on the sample of the experience of Andrzej Frycz Modrzewski Krakow University (Poland)

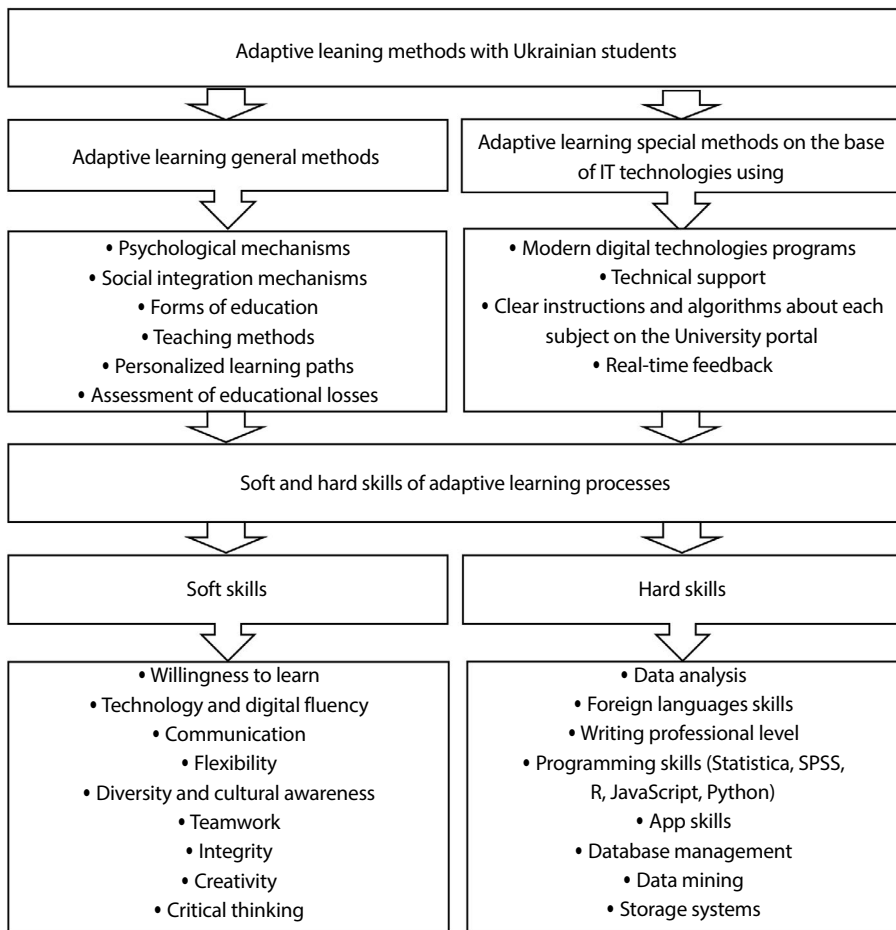
Integrating adaptive learning with psychosocial support systems can address the emotional and psychological needs of the migrant students. Adaptive systems can incorporate activities and content that promote resilience and emotional well-being, which are critical for students affected by crisis. Within the realm of adaptive learning among the Ukrainian migrants, both soft and hard skills play pivotal roles in facilitating their integration and resilience. Soft skills, encompassing interpersonal communication, cultural sensitivity, and emotional intelligence, are essential for navigating unfamiliar environments and building rapport with host communities.²⁷

²⁶ S. Chugaievska, A. Dybała, R. Wisła, *Ukraiński kryzys migracyjny. Konsekwencje ekonomiczne dla krajów Unii Europejskiej i Ukrainy: wyzwania oraz ryzyka*, [in:] *Migracje i uchodźstwo ludności – trendy, problemy, wyzwania*, eds. P. Szymczyk, I. Domina, Wydawnictwo Naukowe TYGIEL, Lublin 2023, pp. 77–122, <https://bc.wydawnictwo-tygiel.pl/publikacja/2090AC5A-D9AA-1C99-DBF0-A0E3A51A6A09> [in Polish] [accessed: 23.05.2024].

²⁷ J. Lamri, T. Lubart, *Reconciling hard skills and soft skills in a common framework: The generic skills component approach*, "Journal of Intelligence" 2023, vol. 11, no. 6: 107, <https://doi.org/10.3390/jintelligence11060107> [accessed: 24.05.2024]; C. Bean, S. Kramers, T. Forneris, M. Camiré, *The implicit/explicit continuum of life skills development and transfer*, "Quest" 2018, vol. 70, no. 4, pp. 456–470, <https://www.tandfonline.com/doi/full/10.1080/00336297.2018.1451348> [accessed: 24.05.2024].

To ensure better adaptation of the Ukrainian students in higher education at the Andrzej Frycz Modrzewski Krakow University, teachers use general scientific methods of adaptive learning, as well as specific educational methods. There is no emphasis on the nationality of the student or his country of origin to ensure a democratic approach to education and prevent bullying in youth groups. Therefore, the application of modern educational methods of learning against the background of ensuring the psychological and social comfort of young people is of great importance during adaptation approaches in working with international students (Figure 4).

Figure 4. Adaptive learning methods in the way of professional skills forming for Ukrainian students at the Andrzej Frycz Modrzewski Krakow University



Source: research results.

The priority of the latest teaching methods is to create the basis for the formation of the necessary professional skills and abilities during lectures, laboratory and

practical classes in future specialists. Migrants adept in soft skills often demonstrate greater flexibility, empathy, and collaboration, enabling them to forge meaningful connections and access support networks. Moreover, these skills contribute to a sense of belonging and social cohesion, fostering mutual understanding and cooperation amidst diversity. Hard skills such as language proficiency, technical expertise, and vocational training are equally instrumental in enhancing migrants' adaptive capacities. Proficiency in the local language, for instance, facilitates access to employment opportunities, educational resources, and essential services, thereby empowering migrants to navigate bureaucratic processes and assert their rights. Technical skills acquired through formal education or vocational training enable migrants to secure livelihoods, contribute to local economies, and mitigate socioeconomic vulnerabilities.²⁸ Furthermore, proficiency in digital literacy and technological competencies (Programming skills on Statistica, SPSS, R, JavaScript, Python software) enhances the migrants' ability to access information, connect with support services, and leverage online platforms for advocacy and networking.

The synergy between soft and hard skills is evident in the migrants' adaptive learning processes, as individuals draw upon a combination of interpersonal acumen and technical proficiencies to navigate the challenges of displacement and resettlement. Cultivating both sets of skills not only enhances migrants' adaptive resilience but also fosters their long-term integration and empowerment within host societies. Therefore, interventions aimed to support the Ukrainian migrants should encompass holistic approaches that prioritize the development of both soft and hard skills, thereby equipping individuals with the tools necessary to thrive in their new environments and contribute positively to their communities. The analysis reveals a spectrum of adaptive behaviors, ranging from grassroots initiatives for community support to policy reforms aimed at enhancing migration management. Moreover, it underscores the role of information dissemination, social networks, and cultural resources in facilitating adaptive learning among the migrants and host populations. By examining the nuanced dynamics of adaptation, this article contributes to a deeper understanding of resilience in the face of migration crises.

The virtues of adaptive learning are essential to understand as we all encounter adaptation throughout our lifespan. These include educational and economic reforms,

²⁸ See: J. Andrews, H. Higson, *Graduate employability, 'soft skills' versus 'hard' business knowledge: A European study*, "Higher Education in Europe" 2008, vol. 33, no. 4, pp. 411–422, <https://www.tandfonline.com/doi/full/10.1080/03797720802522627> [accessed: 24.05.2024]; S. Vasanthakumari, *Soft skills and its application in work place*, "World Journal of Advanced Research and Reviews" 2019, vol. 3, no. 2, pp. 66–72, <https://wjarr.com/content/soft-skills-and-its-application-work-place> [accessed: 24.05.2024]; J.A. Rios *et al.*, *Identifying critical 21st-century skills for workplace success: A content analysis of job advertisements*, "Educational Researcher" 2020, vol. 49, no. 2, pp. 80–89, <https://journals.sagepub.com/doi/10.3102/0013189X19890600> [accessed: 24.05.2024].

as well as extreme circumstances. How we adapt effectively to succeed in the rapidly changing new complex environment, while addressing diversity, equity and inclusion. The study also highlights the importance of context-specific digital adaptive learning approaches to humanitarian assistance and policy development, emphasizing the need for adaptive strategies that are responsive to evolving internal challenges.

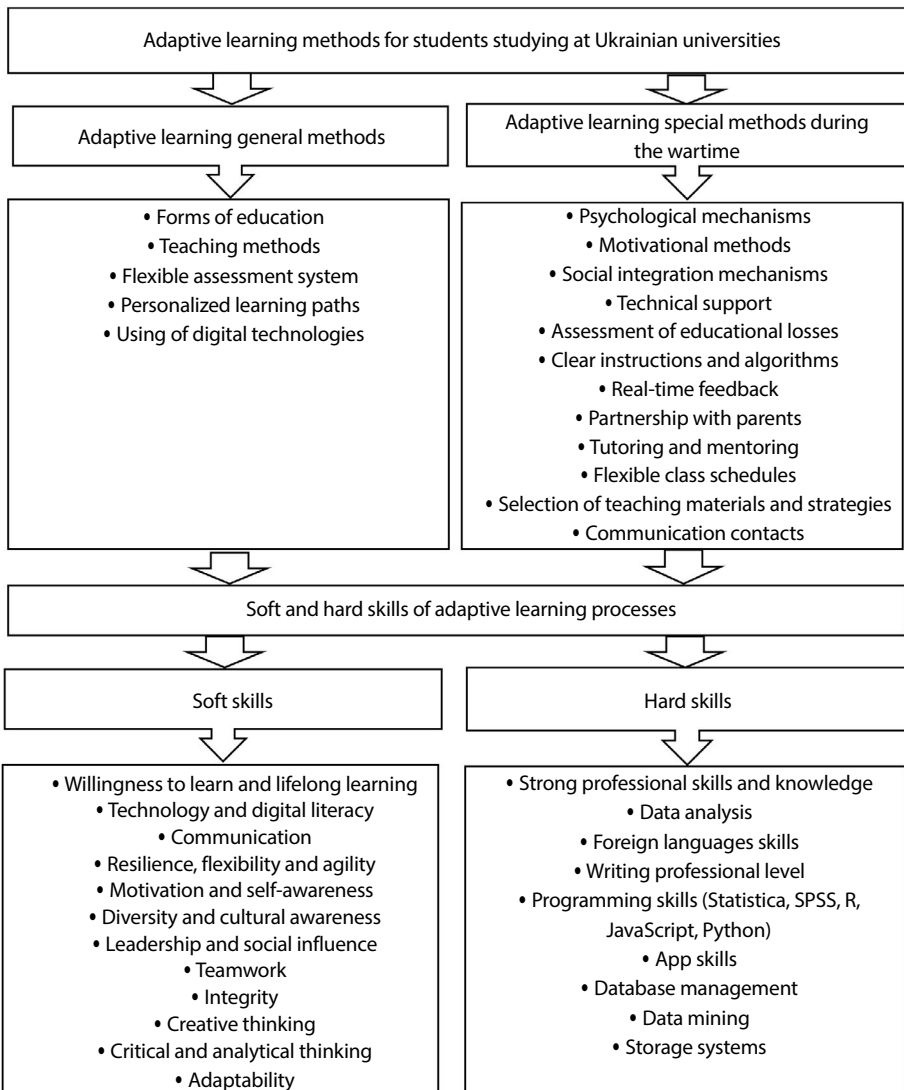
Adaptive learning for the Ukrainian students on the sample of the experience of the Zhytomyr Polytechnic State University (Ukraine)

Despite the war in Ukraine, there are still many students enrolled in the Ukrainian higher education institutions. These students can be divided into several groups for the purpose of applying adaptive learning methods. The first group includes students who have not changed their place of residence since the beginning of the war and study at local universities. The second group includes students who require special support and the use of special adaptive teaching methods. It consists of two subgroups: internally displaced students who have changed their place of residence within Ukraine and migrant students who have temporarily moved abroad but continue to study at Ukrainian universities.

In the context of studying approaches to teaching students in Ukraine during the full-scale Russian invasion, adaptive learning should be considered in a broader sense. It should be understood not only as the methods and tools that we use directly in the educational process, but also as the activities that are carried out by the university outside of it and that help young people adapt to the changing conditions of the external environment in times of war. Adaptive teaching methods should be divided into two groups: general, which are common to all groups of students and can be used at any time, and special, which are relevant for use during the war and are mainly applied to more vulnerable categories, namely internally displaced persons, both within and outside the territory of Ukraine (Figure 5).

Among the adaptive learning methods used for all groups of students, the most important are: choosing a form of learning convenient for students (offline, online, mixed), while considering the security environment. The Ukrainian higher education has demonstrated its flexibility and adaptability in difficult conditions of martial law, including through the experience gained in using distance technologies during the COVID-19 pandemic; the use of modern teaching methods involves the use of active and interactive technologies along with traditional methods, taking into account the wishes of students; the use of an objective and, at the same time, flexible learning outcome assessment system that will help reduce stressful situations; building an individual educational trajectory for students, taking into account their abilities, interests, needs, motivation, capabilities and experience.

Figure 5. Adaptive learning methods in the way of professional skills forming for Ukrainian students at the Zhytomyr Polytechnic State University



Source: research results.

Today, a large number of students at the Ukrainian universities are internally displaced individuals who have moved from settlements under occupation, the war zone, or close to it. Some of them moved with their higher education institutions and continue to study there. It should be noted that as of today, only since the beginning of

the full-scale invasion, 43 universities with a total of 54.2 thousand students have been relocated.²⁹ Internally displaced students face a number of social, economic and psychological problems, which significantly affect their desire and ability to study. That is why they need significant support from higher education institutions, especially at the stage of adaptation after displacement, as well as further integration.

For internally displaced students, it is of paramount importance to use psychological mechanisms to form their positive emotional and psychological state, increase their resilience and endurance, strengthen their faith in the future and increase their motivation to study. For this purpose, special psychological centers are being set up in the Ukrainian universities or psychologists are working there. For example, at the Zhytomyr Polytechnic State University there is a positive and effective practice of the Center for Social and Psychological Support “PsyLab”, which provides social and psychological support to university staff and students, including internally displaced persons and their families, conducts special work for them. It is equally important to introduce motivational mechanisms aimed at restoring motivation to study by involving practitioners in the educational process, who will encourage students to further develop and conduct various personal growth trainings with their own experience and example.

In addition, special adaptive methods for this group of students include: the use of socialization mechanisms to help students achieve psychological comfort in the university's educational space; technical support of the educational process for students who do not have material resources by creating workplaces with access to computers and the Internet, and common workplaces in dormitories; assessment of educational losses that have arisen as a result of the lack of opportunity to study and the organization of additional training or consultations to restore them; cooperation with parents or other family members by organizing joint events involving students, their parents, teachers, psychologists; mentoring, which can be carried out in the form of coaching, tutoring or facilitation. From the perspective of an adaptive approach, a mentor in a higher education institution is an agent of adaptation of each student to the new conditions of the educational environment and the requirements of the educational process, and involvement of students in various forms of educational activities, such as participation in clubs, attending various events, and engaging in volunteer work.

For those students who have moved abroad but continue to study at Ukrainian universities, it is important to create convenient online learning platforms and flexible schedules. Quite often, such students are also studying at foreign universities in parallel, so it is necessary to create comfortable conditions for combining educational processes. Other adaptive teaching methods should be aimed at developing

²⁹ Y. Nikolayev, H. Rij, I. Shemelynets, *In strange walls: how displaced universities overcome problems*, VoxUkraine, 12.07.2022, <https://voxukraine.org/u-chuzhyh-stinah-yak-dolayut-problemy-peremishheni-universytety> [accessed: 24.05.2024].

clear and precise instructions and algorithms for the educational process, careful selection of educational material and learning strategies, development of communication between students and between students and teachers, social interaction, and building a fast-real-time feedback system. Today, Ukrainian universities are fulfilling a challenging mission – they are working to preserve human capital. Adaptive learning technologies should help maintain ties with migrants and act as tools to encourage their return home.

Adaptive teaching methods help students acquire both hard and soft skills. Among the hard skills shown in the figure 5, we should pay attention to deep professional skills and knowledge. University graduates should play an important role in rebuilding Ukraine in the postwar period, and this requires universities to take into account the current dynamics of demand for skills and competencies both in Ukraine and globally. At the same time, amid the risks and challenges caused by the war, the economy is increasingly demanding specialists who are able to learn quickly, master new skills, and change their individual career path. That is why Ukrainian universities are making every effort to develop such important soft skills as analytical and creative thinking; resilience, flexibility and agility; motivation and self-awareness; lifelong learning; digital literacy; leadership and social impact; effective communication and teamwork; and adaptability.

Zhytomyr Polytechnic State University is an example of effective implementation of adaptive teaching methods among Ukrainian higher education institutions. In order to meet the needs of higher education students in wartime, the university carefully selects forms and methods of teaching, educational materials and strategies, applies a flexible and objective evaluation system, creates an individual educational trajectory for each student, uses motivational tools by involving stakeholders in the educational process, offers flexible schedules, and develops clear and understandable instructions and algorithms to ensure the educational process.

The digital environment developed by the university's specialists, which covers organizational, administrative, educational and scientific spheres, plays an important role in building adaptive learning.³⁰ For the convenience of students, each of them has their own personal account with a wide range of functions for using educational resources, communication based on real-time feedback, effective assessment, mentoring, and self-development. This allows higher education students to quickly adapt to the educational process and receive quality educational services.

Ukrainian universities have become a symbol of resilience and steadfastness in countering the challenges and threats of war. They were able to transform the educational process and fully adapt it to wartime and the needs of different groups of

³⁰ A.V. Morozov, T.A. Vakaliuk, *An electronic environment of higher education institution (on the example of Zhytomyr Polytechnic State University)*, "Journal of Physics: Conference Series" 2021, vol. 1840: 012061, <https://iopscience.iop.org/article/10.1088/1742-6596/1840/1/012061> [accessed: 25.05.2024].

students, creating a high-quality educational product.

Conclusions

Russia's full-scale invasion of Ukraine has triggered the largest migration wave in Europe. Forced Ukrainian migrants were compelled to adapt to life in migration using various tools and mechanisms, as a result of which most of them were able to fully or partially adapt to life in the host country and integrate into the new environment. A large number of Ukrainians have shown a high level of adaptability and during the two years of full-scale war have managed to learn the language, find a job, create comfortable living conditions, socialize in society, and start a business. A significant share of the total number of migrants belongs to student youth, who still have to adapt to the new educational environment. In this context, we have established the important role of adaptive learning methods in overcoming the challenges faced by students in the process of studying at both foreign and Ukrainian universities.

As the war has shown, modern universities must go beyond the classical understanding of a university as a place for students to study. They should play a unique role in the country's development and be centers of student unity, drivers of regional development, and centers for creating and implementing innovations. Adaptive learning is a promising approach to managing educational processes in the context of the Ukrainian migration crisis. By using technology to create personalized, flexible, and responsive learning environments, adaptive learning can help ensure that all students receive the support and education they need for a successful future, despite the challenges of displacement and migration. Integrating the principles and practices of adaptive learning into education management strategies is essential to meet the diverse and changing needs of migrant students, thereby contributing to a more inclusive and equitable education system.

A study of the experience of Polish and Ukrainian universities (using the case study method on the example of particular higher education institutions) in applying adaptive learning methods to Ukrainian students demonstrates a high level of success. Both Polish and Ukrainian higher education institutions have developed and are implementing effective adaptive learning strategies, taking into account the characteristics of the categories of students and the impact of the war on them.

As for the Polish practice of adaptive learning, it is aimed primarily at the linguistic and socio-cultural adaptation of Ukrainian students, as well as at overcoming psychological trauma caused by war and displacement to another environment. For this purpose, adaptive methods such as psychological tools and mechanisms of social integration are used. To adapt to the rules of the new educational environment, universities select special forms and methods of teaching with extensive use of digital technologies, and build an individual educational trajectory for each student. Universities

support Ukrainian students in every way possible by keeping in touch with them, developing clear study guidelines, and providing technical assistance. These strategies have facilitated the integration of Ukrainian students into the new academic environment, supporting their academic progress and overall well-being.

The peculiarities of adaptive technologies in Ukrainian universities are primarily related to security factors, the difficult financial situation of many students, and the uncertainty of future life prospects for young people due to the war factor, which has led to the need to use, along with the above-mentioned adaptive methods, motivational mechanisms, a flexible system of learning outcomes assessment, partnership and interaction with parents, mentoring, flexible class schedules, careful selection of educational materials and communication mechanisms. The introduction of special adaptive teaching methods into the educational process helps students adapt to the unstable environment caused by the war, builds their resilience to negative factors, and guarantees that they will have the necessary level of knowledge to find a job and ensure decent living conditions. Ukrainian universities, despite the full-scale war, maintain high standards of higher education, provide quality educational services, withstand the challenges of wartime, and support students by applying effective adaptive learning methods. This allows us to conclude that Ukrainian higher education plays a significant role in the development of Ukraine's human potential in the face of threats caused by the war.

The use of synergistic and complementary adaptive teaching methods allows Ukrainian students to develop a number of important hard and soft skills for their future employment. Regardless of the future place of residence and career path, the common soft skills that students acquire in both Polish and Ukrainian universities are willingness to learn, technology and digital fluency, communication, flexibility, diversity and cultural awareness, teamwork, integrity, creativity, critical thinking. At the same time, Ukrainian universities, realizing the military and post-war challenges that students may face after graduation, prepare students to overcome them, focusing, in addition, on such soft skills as resilience, flexibility and agility, motivation and self-awareness, leadership and social influence, and adaptability.

Speaking of hard skills, Ukrainian universities are focusing their efforts on acquiring strong professional skills and knowledge. This is due to the importance of such skills in the development of Ukraine's wartime and post-war economy, as high expectations are placed on students to participate in the country's reconstruction.

Adaptive learning methods and the soft and hard skills acquired with their help contribute to the formation of a new generation of young people who will be able to find their place in the labor market of both Ukraine and Poland, as well as other countries of the world, and contribute to the economic development of the states. The return of highly experienced Ukrainian youth to Ukraine and their participation in post-war reconstruction will be especially valuable.

In this study, we must consider several limitations associated with the implementation of adaptive learning. Firstly, technological infrastructure may be insufficient in some regions, complicating access to adaptive learning systems. Secondly, data privacy and security issues are critical, particularly for vulnerable groups such as migrants. Lastly, effective use of adaptive learning requires proper teacher training, which can demand significant resources and time. In general, the authors' recommendations for solving the problems of adaptation of international students' education can be implemented in the educational process both in universities that continue education in war conditions and in universities that work in peaceful territories.

References

- Allan K.D., *Explorations in Classical Sociological Theory: Seeing the Social World*, Pine Forge Press, Thousand Oaks, CA 2005.
- Andrews J., Higson H., *Graduate employability, 'soft skills' versus 'hard' business knowledge: A European study*, "Higher Education in Europe" 2008, vol. 33, no. 4, pp. 411–422, <https://www.tandfonline.com/doi/full/10.1080/03797720802522627> [accessed: 24.05.2024].
- Argote L., Miron-Spektor E., *Organizational Learning: from experience to knowledge*, "Organizational Science" 2011, vol. 22, no. 5, pp. 1123–1137.
- Argote L., *Organizational Learning: Creating, Retaining, and Transferring Knowledge*, Kluwer Academic, Boston 1999.
- Argote L., *Organizational Learning: Creating, Retaining, and Transferring Knowledge*, Springer New York, New York 2012.
- Bean C., Kramers S., Forneris T., Camiré M., *The implicit/explicit continuum of life skills development and transfer*, "Quest" 2018, vol. 70, no. 4, pp. 456–470, <https://www.tandfonline.com/doi/full/10.1080/00336297.2018.1451348> [accessed: 24.05.2024].
- Boh W.F., Slaughter S.A., Espinosa J.A., *Learning from experience in software development: A multilevel analysis*, "Management Science" 2007, vol. 53, no. 8, pp. 1315–1331, <https://doi.org/10.1287/mnsc.1060.0687> [accessed: 15.05.2024].
- Chugaievska S., Dybała A., Wiśła R., *Ukraiński kryzys migracyjny. Konsekwencje ekonomiczne dla krajów Unii Europejskiej i Ukrainy: wyzwania oraz ryzyka*, [in:] *Migracje i uchodźstwo ludności – trendy, problemy, wyzwania*, eds. P. Szymczyk, I. Domina, Wydawnictwo Naukowe TYGIEL, Lublin 2023, pp. 77–122, <https://bc.wydawnictwo-tygiel.pl/publikacja/2090A-C5A-D9AA-1C99-DBF0-A0E3A51A6A09> [in Polish] [accessed: 23.05.2024].
- Chugaievska S., Wiśła R., *A new wave of migration in Ukraine on the background of Russian invasion: dynamics, challenges and risks*, "Journal of International Studies" 2023, vol. 16, no. 4, pp. 220–244. https://www.jois.eu/?860,en_a-new-wave-of-migration-in-ukraine-on-the-background-of-russian-invasion-dynamics-challenges-and-risks [accessed: 19.05.2024].
- Dodgson M., *Organizational Learning: A review of some literatures*, "Organizational Studies" 1993, vol. 14, no. 3, pp. 375–394.
- Forum EFBM 3.0. From Recovery to Growth*, May 21–24, 2024, <https://www.efbm.org/> [accessed: 25.05.2024].
- The International Organization for Migration*, https://www.iom.int/search?keywords=Ukraine®ion_country=&created=All&sort_bef_combine=created_DESC [accessed: 25.05.2024].

- Lamri J., Lubart T., *Reconciling hard skills and soft skills in a common framework: The generic skills component approach*, "Journal of Intelligence" 2023, vol. 11, no. 6: 107, <https://doi.org/10.3390/jintelligence11060107> [accessed: 24.05.2024].
- The Ministry of Social Policy of Ukraine*, <https://www.ioc.gov.ua/dashboardVpo/> [accessed: 25.05.2024].
- Morozov A.V., Vakaliuk T.A., *An electronic environment of higher education institution (on the example of Zhytomyr Polytechnic State University)*, "Journal of Physics: Conference Series" 2021, vol. 1840: 012061, <https://iopscience.iop.org/article/10.1088/1742-6596/1840/1/012061> [accessed: 25.05.2024].
- Nikolayev Y., Rij H., Shemelynets I., *In strange walls: How displaced universities overcome problems*, VoxUkraine, 12.07.2022, <https://voxukraine.org/u-chuzhyh-stinah-yak-dolayut-problemy-peremishheni-universytety> [accessed: 24.05.2024].
- Radin M., *Designing Online Teaching & Learning Environment: An Innovative Approach*, World Scientific Publishing, Singapore 2023.
- Radin M., *International & Multidisciplinary Pedagogy. Discoveries, Innovations, Challenges & Successes*, World Scientific Publishing, Singapore 2023.
- Radin M., Wycisłak S., *The Fundamentals of Systems Thinking, Management & Effective Leadership*, World Scientific Publishing, Singapore 2024.
- Reagans R., Argote L., Brooks D., *Individual Experience and Experience Working Together: Predicting learning rates from knowing who knows what and knowing how to work together*, "Management Science" 2005, vol. 51, no. 6, pp. 869–881.
- Rios J.A., Ling G., Pugh R., Becker D., Bacall A., *Identifying critical 21st-century skills for workplace success: A content analysis of job advertisements*, "Educational Researcher" 2020, vol. 49, no. 2, pp. 80–89, <https://journals.sagepub.com/doi/10.3102/0013189X19890600> [accessed: 24.05.2024].
- Ritzer G., *Contemporary Sociological Theory and Its Classical Roots: The Basics*, McGraw-Hill Education, Boston 2009.
- Senge P., *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday Currency, New York 1990.
- Shabani K., Khatib M., Ebadi S., *Vygotsky's Zone of Proximal Development: Instructional implications and teachers' professional development*, "English Language Teaching" 2010, vol. 3, no. 4, pp. 237–248, <https://www.ccsenet.org/journal/index.php/elt/article/view/37034> [accessed: 25.05.2024].
- The State Statistics Service of Ukraine*, <https://www.ukrstat.gov.ua/> [accessed: 25.05.2024].
- Tucker A.L., Nembhard I.M., Edmondson A.C., *Implementing new practices: An empirical study of organization learning in hospital intensive care units*, "Management Science" 2007, vol. 53, no. 6, pp. 894–907.
- Ukraine Refugee Situation*, The UN Refugee Agency, <https://data.unhcr.org/en/situations/ukraine> [accessed: 20.05.2024].
- The UN Refugee Agency*, <https://data.unhcr.org/en/situations/ukraine> [accessed: 20.05.2024].
- Vasanthakumari S., *Soft skills and its application in work place*, "World Journal of Advanced Research and Reviews" 2019, vol. 3, no. 2, pp. 66–72, <https://wjarr.com/content/soft-skills-and-its-application-work-place> [accessed: 24.05.2024].
- Wilson J.M., Goodman P.S., Cronin M.A., *Group Learning*, "The Academy of Management Review" 2007, no. vol. 32, no. 4, pp. 1041–1059, <https://psycnet.apa.org/record/2007-15086-003> [accessed: 20.05.2024].
- The World Bank Open Data*, <https://data.worldbank.org/indicator/SM.POP.NETM?locations=UA> [accessed: 25.05.2024].

*Adaptive learning as a direction of educational process management
on the background of Ukrainian wartime migration crisis*

Abstract

The Ukrainian migration crisis, marked by geopolitical tensions and socioeconomic upheaval, has catalyzed a complex array of adaptive learning mechanisms among individuals, communities, and institutions. This research delves into the multifaceted nature of adaptive learning within the context of this crisis, while exploring how diverse stakeholders have responded to these challenges and navigated through these challenges. Through a comprehensive review of scholarly literature, governmental reports, and first-hand accounts, this study elucidates the adaptive strategies employed by migrants, host communities, humanitarian organizations, and policymakers. It examines the dynamic interplay between external pressures and internal capacities, while shedding light on the adaptive processes that naturally emerged in response to the crisis.

Based on the application of the method of theoretical generalization, the authors developed a model of adaptation training of Ukrainian migrants in their new cities of residence. The authors discovered that young people face similar tasks and challenges during their forced migration, which is typical for both external and internal forced migrants. The method of case studies of the experience of the American, Polish, and Ukrainian universities revealed opportunities to design recommendations for improving the educational process and more amiable adaptation during the harsh conditions of the ongoing Russian-Ukrainian War.

Key words: wartime adaptive learning, migration challenges, Ukrainian migrants, soft and hard skills