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The Role of Higher Education for Ensuring National Security in Ukraine

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Abstract. Education is a strategic tool; therefore, the study of the potentials of higher education for ensuring national security is very important, particularly when threats are increasing. The research objective is to reveal the role of higher education for national security and to present the effective educational practices related to its securitization. The qualitative methodology was applied (contextual understanding method, systematic generation of theories, content analysis, interviews, focus groups, and observations) to gather in-depth information, to examine the contextual factors of securitization, and to verify the efficiency of educational practices. Over 70 recent scientific works were selected to evaluate the problem objectively from the point of view of emerging threats. The study was conducted among 134 participants involved in the field of higher education. It resulted in the analysis of various approaches to defining higher education in the context of national security; outlining functions of higher education in peace and war time; and verification of educational practices used to implement securitization of higher education during the war. The findings showed that securitization of higher education may be implemented due to the following educational practices: Science, Technology, Engineering, and Mathematics education, strategic talent development, Research and Development, international collaboration, crisis response training, national security scholarships, simulation-based learning, Virtual Reality and Augmented Reality, cybersecurity training, online learning, remote training, Big Data, e-learning, secure communication, drone technology training, machine learning and artificial intelligence. The outcomes can be applied within the educational institutions to improve the educational process and enhance national security.

Keywords: human capital development, functions, innovative technologies, securitization, skills and expertise, globalization of education.

Introduction

Today, every state is facing the important task – to ensure national security. Its activity, therefore, is aimed at realization of national idea, protection of national interests, human rights and freedoms. Understandably, the humanity pays the special attention towards formation and ensuring national security considering the existing challenges and globalization tendencies. The strategy of national security of Ukraine (Verkhovna Rada of Ukraine, 2020) recognizes education as a significant component of national security system and emphasizes the need for integral human development, formation of universal values and essential competencies, enrichment of cultural potential of Ukrainian people, providing the sustainable development of Ukraine.

Currently, in the modern world, it is increasingly clear that education is one of the most important strategic resources or an effective tool for solving a number of global problems. Also, education is considered to be the main condition for realizing economic, political, and social transformations since well-educated individuals form human capital that is a driving power for innovative development of society, its digitalization (Kholiavko et al., 2022), and knowledge-based economy showing the significance of knowledge and technology in the economy (Aramaki et al., 2023; Aparicio et al., 2023). Also, some recent findings describe harnessing education for a common future vision of the world and as a major factor that is able to deal with the sustainability crisis (Cai & Wolff, 2023; Kioupi & Voulvoulis, 2022).

The special attention is drawn towards education during the war. The hostilities destroy not only people's lives, buildings, or infrastructure, but bring political and economic instability, food insecurity, energy crisis. The full-scale Russian invasion against Ukraine caused significant material and physical costs to the system of education (Bondarenko, 2022; Ilichuk, 2023; Nychkalo et al., 2022), in particular damaged facilities of educational institutions, loss of human resources, decrease in the number of students. Introducing the martial law affected education significantly and led to a number of managerial, methodological and institutional changes (Marchenko, 2023). At the same time, during wartime the scholars stress upon the existence of a number of tendencies related to higher education such as the resilience of education system, facilitation of international cooperation in the sphere of education and science (Nychkalo et al., 2022) and implementation of socially oriented learning (Vovchenko, 2023). Budnyk, Kushniruk, Tsybulko, Shevchenko, Fomin, & Konovalchuk (2022) insist that emergencies affect higher education and facilitate the modernization of methodological framework through implementation of innovative teaching technologies. Other tendencies include extensive use of e-learning (Galynska & Bilous, 2022; Sherman et al., 2022), artificial intelligence (AI) and machine learning (Chmyr & Bhinder, 2023).

It was found out that higher education serves both immediate and long-term purposes during times of war. The established system ensures the continuity of education (Hurt et al., 2023), provides psychological and social support for individuals affected by the trauma of war (Kot & Lytvychenko, 2022), creates a sense of normality, routine, and social interaction for both pedagogical staff and students (Taka, 2023). Galynska & Bilous (2022) state that education serve as emergency response efforts during war providing immediate and essential knowledge and skills for affected populations, including displaced individuals. According to Hsieh (2020), education contributes to preserving cultural identity and heritage during times of war incorporating cultural elements into the curriculum. Importantly, education is a powerful tool for promoting peace and tolerance, and the curricula oriented towards conflict resolution, human rights, and cross-cultural communication contribute to building a more peaceful post-war society (Betsas & Charalambous, 2023; Hajdari et al., 2024; Lugovyi et al., 2023).

These findings support the suggestion that higher education plays an important role and contributes to ensuring national security significantly. And as for Ukraine, higher education helps maintain national stability and strengthen country's defense capabilities. This requires in-depth analysis of the place of higher education in the system of national security and its role for increasing economic growth, building sustainability, development of the defense industry, and crisis response.

Research Problem

Fakai, Namagare, Abdullahi, & Dabai (2023) stress that education is the most important internal determinant of national security since educational policy is to provide all citizens with the knowledge access, an opportunity to participate in the community growth. Obviously, education is responsible for formation of moral personality (Kokhan, 2019). Other findings show that it is responsible for building of patriotism (Naida et al., 2023). In addition, national identity is highly affected by education and can be formed within the educational process

(Hsieh, 2020; Matafora et al., 2021). Carden, J., Jones, R. J., & Passmore, J. (2022) directly connect education and self-awareness among the members of the society. And this is especially important at a time when there are wars, economic crises, political instability, and intercultural conflicts. When the concepts like risk, armed conflict, and crisis have rapidly grown, they have also cemented their place in higher education affecting interdisciplinary studies and training of future professionals (Pursiainen et al., 2022). At the same time, the main features of higher education accessibility, openness, interculturalism, and technological innovation which contribute to enhancement of national security in a country significantly (Semenog, 2020).

In the context of national security, a well-developed education system cultivates skilled and knowledgeable professionals who are able to face the challenges of the modern world (Chankseliani et al., 2021; Cheng, 2021). Education is responsible for the development of skills, knowledge, abilities, and universal values that individuals bring to the economic and productive activities within the society (Kornelakis & Petrakaki, 2020), including technological proficiency, critical thinking, and readiness for innovation. Also, education contributes to the formation of healthy national self-awareness and civic culture, and involves the commitment to democratic values (Siedschlag, 2022). Obviously, that empowering human capital addresses security challenges, strengthens nation's economic stability and innovation capacities (Kholiavko et al., 2022), maintains military strength and cybersecurity (Fouad, 2021; Ulven & Wangen, 2021). Education also plays a role in promoting social cohesion and a shared national identity, fostering a sense of responsibility and civic engagement (Matafora et al., 2021).

Research Focus

Taking the literature review into consideration, it has become obvious that the research focused upon the study of the role of higher education for ensuring national security in Ukraine is important since it reflects complex and interconnected nature between education and security in the country. Moreover, it must reveal the possibilities of education system to enhance economic growth, political and social stability in the country, and contributes significantly to the development of a skilled and knowledgeable workforce necessary for post-war restoration. To outline the strengths of higher education accurately means to decide on a comprehensive perspective on the positive impact that the institutions of higher education can have on individuals, communities, and the whole nation, in particular in emergency context. Moreover, the study is oriented towards modernization of education system, implementation of best educational practices within the Ukrainian institutions of higher education, and improvement of the quality of education and research that will be important during the difficult postwar period.

Research Aim and Research Questions

The aim of the research is to reveal the potentials of higher education in enhancement of national security in Ukraine and to present the effective educational practices related to strengthening of national security.

To achieve the aim of the research, the following research questions are addressed:

- 1) How is higher education is defined in the context of national security in Ukraine?
- 2) What functions does higher education perform to ensure national security in the Ukrainian society? Are they different in peace and war time?
- 3) What educational practices are applied to ensure national security, in particular to implement securitization of higher education during the war?

Literature Review

The category of security has been one of the most widely used describing the organization and functioning of social life and state administration. According to Wyrębek (2022), security refers to the primary, existential and supreme value of individuals guaranteeing their survival and development. Security being a philosophical category concerns the protection of nation, humanity, individual, and family (Kryvyzyuk et al., 2021). Actually, it is related to safeguarding individuals from any damage or harm. In addition, security means the stability and well-being of a nation in economic, political, social, environmental, and information dimensions (Branowicki, 2023). A broader concept deals with the protection of a nation's sovereignty and citizens' interests from external and internal threats (Nyman, 2023). In this view, national security involves a combination of military, political, economic, and social measures to respond to potential risks (Hirsch Ballin et al., 2020). National security often involves the protection of a country's sovereignty and territorial integrity through military means (Nyman, 2023; Wyrębek, 2022).

According to the existing legislation of Ukraine, since the development of human capital is recognized as a priority of state interests, education is unquestionably an important notion that provides socio-economic, technological, cultural enhancement of community (Verkhovna Rada of Ukraine, 2020). Therefore, to build sustainable and dynamic economic growth it is necessary, among other things, to modernize education system, create favourable conditions for development of education and science, reconstruct research infrastructure, stimulate innovations and implement innovative technologies, in particular in the sphere of defense and security (Branowicki, 2023; Novytskyi et al., 2022).

The literature review shows that higher education is determined as a multidimensional concept that covers human capital growth, generating new knowledge, technologies, and solutions facilitating economic growth and competitiveness (Chankseliani et al., 2021; Cai & Wolff, 2023; Vodolaskova, 2021). Recent findings show that education is a major instrument for the transmission of cultural values, norms (Nakata & Takezawa, 2023; Pedroso et al., 2023), knowledge and essential skills (Cheng, 2021). At the same time, education facilitates social integration and contributes to socialization (Reindl et al., 2022), and fosters a sense of national identity among country's citizens (Hsieh, 2020; Matafora et al., 2021). Education also increases social order, reinforces established system of rules, and promotes the building of law-based society (Dong & Zeb, 2022; Vodolaskova, 2021). Some findings show that education enhances the economic development and social stability (Bing, 2023; Cai & Wolff, 2023).

By addressing issues such as terrorism and radicalization, education helps form inter-religious literacy as well as increase tolerance, diversity, and a balanced understanding of different cultures and ideologies (Ali et al., 2021; Winter et al., 2022), and so prevent internal conflicts that could undermine national security. Additionally, a strong educational system furnishes global competitiveness that involves a nation's capacity to participate effectively in the global economy, compete with other

countries, and sustain economic growth (Krstić et al., 2020). Also, it smooths diplomatic influence and effective international relations promoting national interests and building partnership to enhance the economic, security, and geopolitical positions (Hajdari et al., 2024).

It is worth mentioning that a strong educational system is linked to economic stability and prosperity, and resulted in enhancement of a nation's ability to invest in defense and infrastructure (Branowicki, 2023). According to Ashwin (2022), Weda, Rahman, Samad, Gunawan, & Fitriani (2022), education contributes to social harmony and reduces the internal conflicts. Liwång, Andersson, Bang, Malmio, & Tärnholm (2023) state that education is essential for adapting to new technological advancements that, in turn, facilitate development of military capabilities, cyber defenses, and intelligence capabilities. Also, education is beneficial for public health system since it raises awareness about healthcare practices, disease prevention, and emergency response (Alam et al., 2022; Brown et al., 2022), and thus forms healthy population that is more resilient to changes and stress. Now it is increasingly clear that higher education enhances national security through training of future professionals, formation of values and norms, spreading democratic ideas, and fostering a sense of national identity among the country's citizens.

Materials and Methods

To answer the research questions, the qualitative methods, in particular contextual understanding method, systematic generation of theories, content analysis, interviews, focus groups, and observations, were applied to explore, understand, and interpret the complex social category of higher education in the context of national security and implementation of its securitization in Ukraine during wartime since institutions of higher education and their activities become closely connected with national security concerns and considerations. In such circumstances, higher education has become not only a means of personal and social development but also as a strategic asset that can impact country's defending possibilities and resilience during the conflict significantly. Such methodology provided the information with effective tools to reveal all the visions and to understand the educational phenomena deeply.

Besides, thematic analysis, both inductive and deductive, was involved to identify, analyze, and report the patterns related to higher education and its role in ensuring national security. It was also used to interpret the narrative-based data collected through interviews, focus groups, or observations. Content analysis was applied to interpret the findings collected during interviews or from documentations. Contextual understanding referred to the assessment of the data in the broader context where the phenomenon exists. In the context of the research, contextual understanding contributed to the analysis of existing and potential educational practices aimed at implementation of securitization of higher education. And systematic generation of theories helped to develop new educational practices based on the systematic analysis of the role of higher education in ensuring national security. Finally, visual and discourse analyses were introduced to interpret the data collected during online interviews, non-participant and focused observations.

The study was conducted among 134 participants on the principles of anonymity and voluntary participation the provisions of the Code of Ethics clarifying the expectations for ethical behaviour, the consequences for violations, and the algorithm for reporting unethical behaviour. All the participants were involved in the field of higher education of Ukraine. They represent different groups of stakeholders shaping the policies, practices, and outcomes of educational institutions. Particularly, they included students, students' parents, pedagogical and scientific staff, institutions' administrators, and research fellows. Also, the research engaged employees of departments of education and science of the regional state administrations, representatives of education-related non-profit organizations, education

technology providers that are responsible for support of technology solutions within the educational environment, representative of international organizations providing support, expertise, and resources to address various challenges and enhance the quality of higher education, and potential employers of graduates in the industry and business. The participants were informed about the survey; they were explained the research objectives and the procedure of data collection and analysis. All of them participated in the survey voluntarily. Table 1 describes the categories of research participants.

Table 1. The categories of research participants

Category	Number of participants
Students	36
Students' parents	7
Pedagogical and scientific staff	42
Research fellows	14
Institution administrators	10
Employees of the departments of education and science	5
Representatives of education-related non-profit organizations	6
Education technology providers	4
Representative of international organizations	2
Potential employers of graduates in the industry and business	8
TOTALLY	134

Source: based on the survey results.

It is necessary to mention that the research participants represented western, southern, central, and eastern oblasts of Ukraine. Table 2 shows the number of participants by oblasts.

Table 2. The number of participants by oblasts

Oblast	Number of participants
Western Ukraine	
Lviv	17
Rivne	19
Khmelnytskyi	20
Southern Ukraine	
Odesa	13
Central Ukraine	
Kyiv	23
Vinnitsia	15
Zhytomyr	9
Eastern Ukraine	
Kharkiv	11
Dnipropetrovsk (city of Kryvyi Rih)	7
TOTALLY	134

Source: based on the survey results.

The evaluation of the role of higher education in ensuring national security involves several stages oriented towards data collection, analysis of outcomes, and drawing the conclusions regarding the peculiarities of securitization of higher education in Ukraine during wartime and description of the

existing and potential educational practices that can be applied for its implementation. The research was conducted between March-November, 2023.

Interviews, focus groups, and observations contributed to exploration of the research problem gathering in-depth information about this particular issue or phenomenon and to gain a deeper understanding of their attitudes, beliefs, and behaviours towards higher education as a condition of enhancement of national security. To examine the contextual factors of securitization of higher education in Ukraine contextual understanding method, systematic generation of theories, and content analysis were used. Figure 1 shows the usage of qualitative methods to answer the research questions.

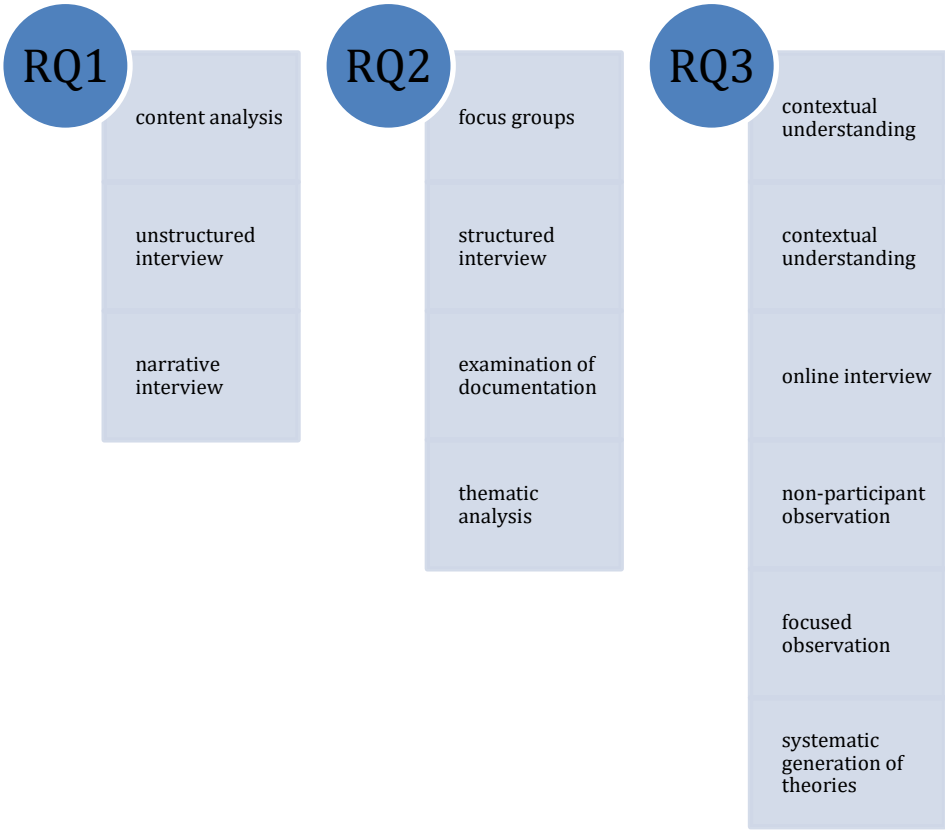


Figure 1. The usage of qualitative methods to answer the research questions
Source: authors' own development.

To analyse the qualitative data, the thematic analysis techniques, content analysis, contextual understanding, and systematic generation of theories were applied. Also, some elements of visual analysis and discourse analysis were used. The survey outcomes were used to provide different approaches to defining the phenomenon of higher education in the context of national security in Ukraine, to outline the functions which higher education perform to ensure national security in the Ukrainian society in peace and war time. And to present effective educational practices for implementation of securitization of higher education in Ukraine. The findings may contribute to protection of national interests, maintenance of social and political stability, and promotion of long-term prosperity in the country.

Results

Definitions of higher education in the context of national security in Ukraine

The participants of the survey provided different approaches to defining higher education in the context of national security. Mostly, their understanding of higher education as a tool for ensuring national security in a country was connected with their expectations and personal involvement in the education system. Accordingly, students were concentrated upon professional and personal development, pedagogical and scientific staff considered education as the process of formation of professional competencies and its impact upon social progress. And potential employers regarded higher education as catalyst for entrepreneurship and innovation. Table 3 summarizes the definitions related to higher education in the context of national security in Ukraine.

Table 3. The summary of definitions of higher education in the context of national security

Participants	Definitions of higher education
Students	1) professional and personal development; 2) preparation to future work in a global world.
Students' parents	1) preparing individuals for specific careers and occupations, formation of practical knowledge and skills relevant to future professional activity; 2) improvement of students' socioeconomic status and access to opportunities through realization of knowledge and skills;
Pedagogical and scientific staff	1) transmission of cultural values, traditions, and ethical principles; 2) generation of new knowledge; 3) formation of professional competencies among future specialists; 4) fostering intellectual curiosity, critical thinking, and personal development; 5) introduction of scientific, technological, and cultural advancements contributing to social progress.
Research fellows	1) formation of professional competencies, building essential knowledge and skills.
Institution administrators	1) investment in human capital; 2) process of training of future professionals; 3) creation of innovative educational environment oriented towards students' professional and personal development; 4) emphasis on accountability, assessment, and continuous improvement of all the participants of educational process.
Employees of the departments of education and science	1) training of future professionals; 2) engagement of the participants of educational process with their local communities and address social challenges.

Representatives of education-related non-profit organizations	1) condition for a lifelong learning process.
Education technology providers	1) integration and use of various technological tools, platforms, and strategies to enhance teaching, learning, research, and administration.
Representative of international organizations	1) preparing future professionals according to international standards; 2) a tool for building critical citizenship and social justice in a country.
Potential employers of graduates in the industry and business	1) human capital development; 2) catalyst for entrepreneurship and innovation.

Source: based on the survey results.

Functions of higher education to ensure national security in the Ukrainian society in peace and war time

The survey shows that most participants (78,2%) believe that in peace time higher education contributes to human capital development through academic programs, vocational training, and professional education, oriented towards preparation of individuals for various industry sectors, including defense, technology, healthcare, and critical infrastructure. The well-developed education system is responsible for training professionals for diplomacy, defense, cybersecurity, public governance. It facilitates research and innovations (65,4%), assists in formation of global competence (44,8%), improvement of language and cultural competencies (45,1%). 23,7% of respondents admitted that higher education is responsible for the building ethical values and a sense of responsibility among students.

Some respondents admit that higher education is aimed at training of future professionals in emergency management (21,1%), and fosters interdisciplinary collaboration to address complex issues (28,3%). Importantly, one of the functions of higher education includes preparing of engaged citizens through building public awareness and civic education (19,6%) that helps to maintaining a stable and secure society. In addition, higher education is involved in health security since it enhances public health, epidemiology, and biodefense (20,9%), and improvement of critical infrastructure, including transportation, energy, and communication systems (21,3%). The findings show that while national security is often associated with military defense, it means a number of broader aspects, including economic stability, social stability, and training of a skilled and informed future professionals who will be ready to work efficiently. Figure 2 shows the functions of higher education in the context of national security in peace time.

It is obvious that the role of higher education has become more vivid during wartime since all the fields of society are oriented towards strengthening of military defense and maintenance of nation's stability and supporting its strategic and socio-economic objectives. The respondents were asked about the functions of higher education to ensure national security in the Ukrainian society in war time and the findings showed that a great number of individuals consider the institutions of higher education to be the centers of training of skilled professionals for defense, including cybersecurity and information warfare (78,5%). This represents the strong orientation of higher education towards its social purpose - improving human resource processes.

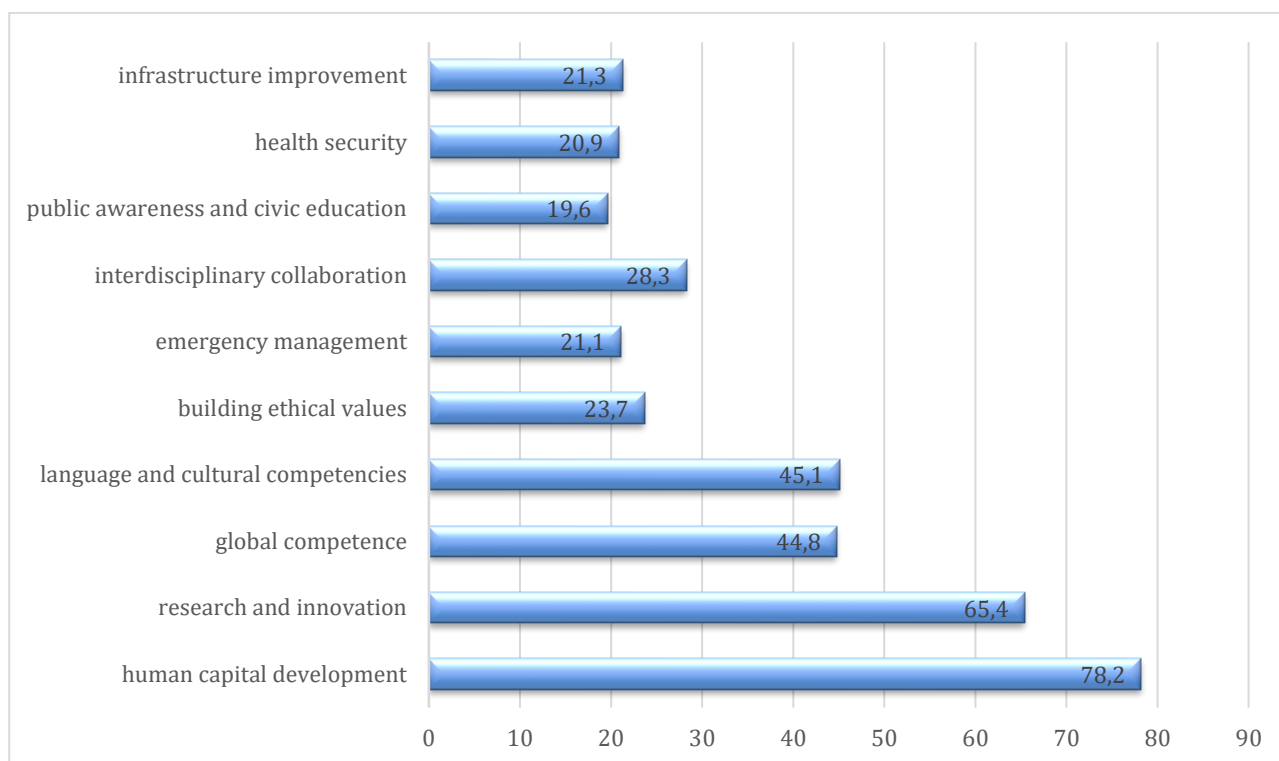


Figure 2. The functions of higher education in the context of national security in peace time

Source: based on the survey results.

Other functions include research and innovation to produce the advancements in defense technologies (84,6%), formulation of effective security policies through curricula (32,1%), preparing professionals to respond to conflicts, natural disasters, and other emergencies (37,2%), understanding of geopolitical dynamics for effective diplomacy (12,9%), human rights education (23,1%). These data prove that higher education facilitates the community development and serves the advancement of knowledge encompassing academic, personal, and societal dimensions. At the same time, the institutions of higher education provide programs in history and cultural studies and, therefore, contribute to historical and cultural understanding and shaping national identity among country's citizens. 29,5% of the survey participants supported this idea. Comparatively fewer respondents (33,9%) stated that the institutions of higher education are involved in social and psychological support services. It means that to carry out these specific functions demands involvement of specialized expertise or additional load for the departments' employees. Besides, 31,7% and 24,2% respondents said that the functions of higher education include establishment of global collaboration and solidarity and building of community engagement and fostering a sense of unity respectively. Figure 3 presents the functions of higher education in the context of national security during war.

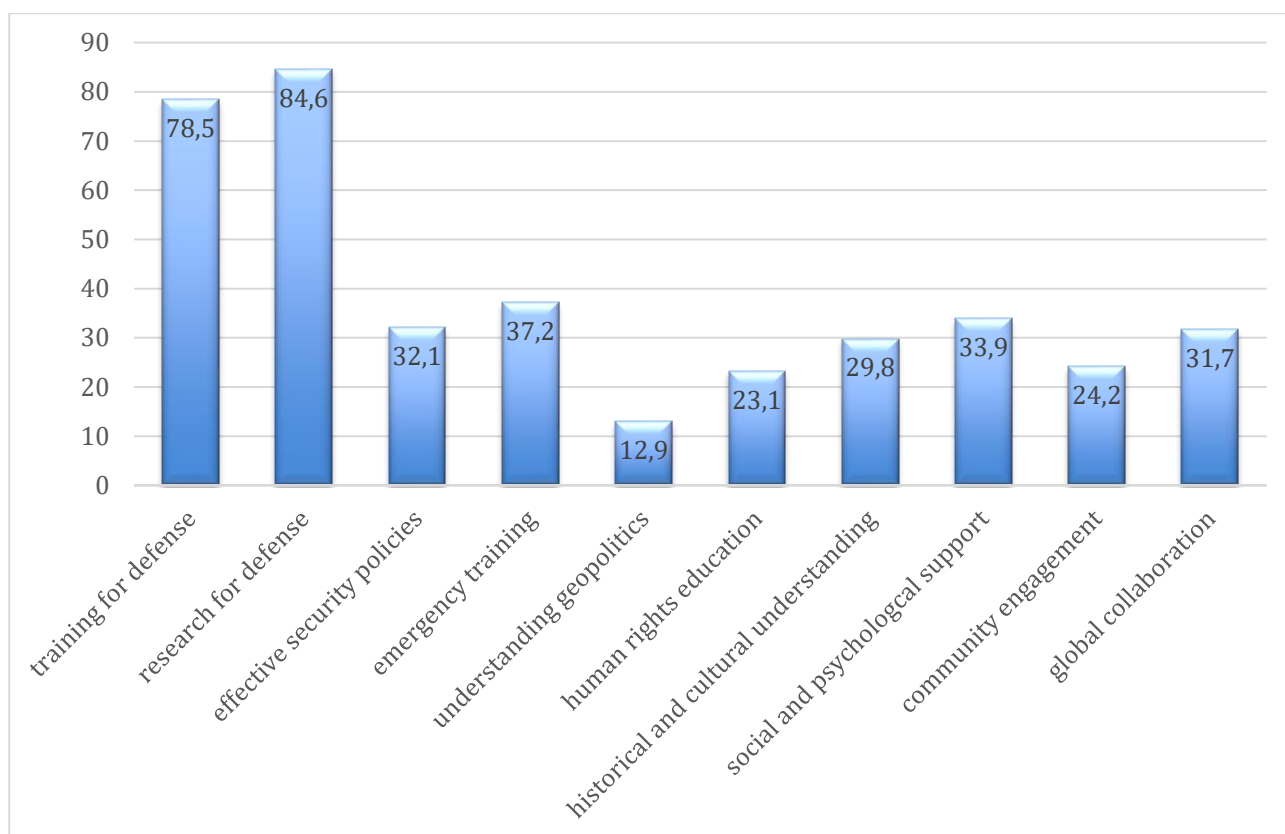


Figure 3. The functions of higher education in the context of national security in war time

Source: based on the survey results.

Educational practices applied to implement securitization of higher education

Securitization of higher education refers integration between curriculum and national security strategies during times of conflict or war (Markiewicz, 2023). Securitization views higher education as a critical element in achieving military, political, economic, or strategic objectives during wartime (Demirkol, 2022; Trubavina et al., 2023). According to findings the key aspects of the securitization of higher education concern its strategic importance, modernization of military training (Crombe & Nagl, 2023), conducting research to enhance military capabilities and introduce innovations, development of technological advancements relevant to defense and security (Chmyr & Bhinder, 2023). During war, higher education curricula strictly correspond with military goals of a country and address national defense initiatives (Nychkalo et al., 2022). Also, securitization of higher education refers to military-university partnerships (Lutsenko et al., 2021), prioritizing research that have dual-use applications (Meunier, 2019).

Securitization of higher education may be implemented through a number of educational practices. According to the survey, it includes Science, Technology, Engineering, and Mathematics (STEM) education, strategic talent development, research and development (R&D) priorities, international collaboration, crisis response training, national security scholarships and funding, simulation-based learning, Virtual Reality (VR) and Augmented Reality (AR), cybersecurity training platforms, online learning platforms for military courses, remote training, such as webinars, video conferencing, and virtual classrooms, Big Data analytics, e-learning, secure communication technologies, drone technology training, machine learning and AI for defense applications. Table 4 shows the analysis of educational practices and their advantages while implementing securitization in

the educational institutions. According to the analysis of qualitative data, it is possible to come to the conclusions that certain educational practices are more effective when implementing securitization of higher education during wartime. They are the following: STEM education, strategic talent development, R&D priorities, international collaboration, crisis response training, simulation-based learning, e-learning, secure communication technologies, machine learning and AI for defense applications.

Table 4. The analysis of educational practices and their advantages while implementing securitization

Educational practice	Advantages	Participants (%)
STEM education	contribution to the development of advanced weaponry, communication systems, cybersecurity measures	24,1
	development of innovation in military science, engineering, and technology	14,5
	formation of analytical and problem-solving skills	33,6
	training of military engineers	27,8
	Totally	100
Strategic talent development	selection of talented students with expertise in critical areas who may be involved in national defense, intelligence, diplomacy, and counterterrorism	32,4
	organization of specialized training	28,6
	contribution to post-war reconstruction	15,7
	new leadership development	23,2
	Totally	100
R&D priorities	development of military innovations	42,1
	improvement of the existing equipment	33,4
	development of countermeasures against emerging threats	9,8
	improvement of energy efficiency and sustainability	14,7
	Totally	100
Crisis response training	formation an ability to make rapid and effective decisions under pressure	23,8
	improvement of communication skills	21,4
	enhancement of coordination and collaboration	40,0
	increase of psychological resilience, preparing to cope with the stress and challenges associated with crisis situations	14,8
	Totally	100
National security scholarships and funding	support of education and research in the strategic fields	38,2
	facilitation of innovations in defense technologies	31,5
	retention of talented individuals in the strategic fields	12,3
	encouragement of cross-disciplinary collaboration	18,0
	Totally	100
Simulation-based learning	formation of realistic training environment	23,4
	risk-free training	22,8
	team collaboration	15,5
	cost-effective training	27,6
	formation of readiness to hybrid threats	10,7
	Totally	100

VR and AR	formation of realistic training environment	30,2
	dynamic scenario customization	34,5
	implementation of remote training and collaboration	11,1
	risk-free training	24,2
	Totally	100
Cybersecurity training platforms	network security training	41,2
	formation of information literacy	23,1
	adaptation to emerging threats	22,1
	engagement of collaborative exercises	13,6
	Totally	100
Online learning platforms	cost-effective training	24,7
	using of adaptive learning technologies	31,8
	continuous professional development	17,6
	using multimedia content	25,9
	Totally	100
Remote training	flexibility for students	30,9
	possibility to study in the challenging environment	27,6
	continuous assessment and feedback	14,5
	integration with Learning Management Systems (LMS)	27,0
	Totally	100
Big Data analytics	introduction of predictive analysis	44,7
	possibility for real-time mission planning	14,9
	enhancement of adaptability of educational environment	12,7
	organization of post-exercises analysis	27,7
	Totally	100
E-learning	providing continuity of education for future professionals	16,2
	safety and security during war	20,3
	introduction of real-time communication	18,1
	using diverse learning resources	27,3
	support of remote assessment	10,6
	development of digital skills	7,5
	Totally	100
Secure communication technologies	exchange of necessary information	19,9
	protection of sensitive information	23,7
	organization of virtual meetings	13,6
	storage and sharing of educational resources	42,8
	Totally	100
Drone technology training	mission-specific training	39,8
	formation of adaptive training environment	23,4
	implementation of innovative military applications	26,5
	formation of readiness to innovations	10,3
	Totally	100
Machine Learning and AI	formation of personalized training	30,2
	virtual tutoring	29,0
	predictive analytics	17,6
	continuous adaptation to student needs	13,1
	efficient of allocation of resources	9,1
	Totally	100

Source: based on the survey results.

It is important to emphasize that the implementation of securitization of higher education during war raises the ethical considerations, including issues related to privacy, surveillance, and the responsible use of advanced technologies. Particularly, it refers to institutions of higher military education that train future military professionals.

Discussion

The study devoted to the role of higher education for ensuring national security in Ukraine is especially relevant when the full-scale war has started and created a number of challenges that impede the harmonious development of education system and suspend many positive processes oriented towards modernization and digital transformations. The results demonstrated that higher education in Ukraine is facing numerous challenges during war, impacting both access to and the quality of education. Thus, it was found that the challenges refer to damaged educational infrastructure, loss of human resources due to displacement or migration (Bondarenko, 2022) and lacking of educational opportunities since many children and young people are forced to leave school to support their families or due to safety concerns (Galynska & Bilous, 2022). Moreover, the experience of war has a profound impact on the mental health of students and teachers, affecting their ability to learn and teach effectively (Seleznova et al., 2023), and it is very important to mention that there are no known long-term side effects of war on the system of higher education and the level of training of students in particular. In the conditions of war, students have limited access to the educational process, suffer from post-traumatic syndrome, experience a decrease in motivation and cognitive processes. Young people may be in dangerous conditions or in a forced evacuation, where learning is quite difficult. Obviously, educators frequently raise the question of educational losses that means loss of knowledge and skills, academic regression due to certain interruptions in the education of a particular student (Galynska & Bilous, 2022; Iliichuk, 2023).

That is why the restoration of the educational process in the institutions of higher education offline or in a hybrid mode is extremely important because learning is a process that gives students some support, a sense of stability and security. At the same time, preserving higher education in the country is a guarantee of its sustainable development. Therefore, today, despite the difficult conditions, it is important to support and try to improve the quality of education. In this context the concept of “securitization of higher education” emerges. The results show that securitization of higher education is closely connected with enhancement of national security of a country since it refers to integration between curriculum and national security strategies during times of conflict or war.

With the experience of securitization within the institutions of higher education it was proved that its key aspects involve strategic importance, military training modernization, conducting research to enhance military capabilities and introduce innovations, development of technological advancements relevant to defense and security. Additionally, securitization of higher education may be recognized through military-university partnerships, prioritizing research that have dual-use application. The findings devoted to the study of securitization of

education focus on its advantages (Ubaydullaeva, 2023). Thus, being an integration between curriculum and national security strategies, securitization is oriented towards protection of students and academic staff, preservation of learning continuity, protection of research property, facilitation of crisis response training, supports international collaboration, and prevention from unlawful activities (Budnyk et al., Markiewicz, 2023; Sherman et al., 2022). Therefore, considering the above-mentioned advantages, it was found that the enhancement of national security occurs by means of securitization in the Ukrainian institutions of higher education.

The survey demonstrated that securitization of higher education may be implemented through a number of educational practices: STEM education, strategic talent development, R&D priorities, international collaboration, crisis response training, national security scholarships and funding, simulation-based learning, VR and AR, cybersecurity training platforms, online learning platforms for military courses, remote training, such as webinars, video conferencing, and virtual classrooms, Big Data analytics, e-learning, secure communication technologies, drone technology training, machine learning and AI for defense applications. Implementation of securitization of higher education during war raises the ethical considerations, including issues related to privacy, surveillance, and the responsible use of advanced technologies.

STEM education. According to Mohammed Isa (2022) STEM education is aimed at producing scientifically literate citizens and potentially scientific and technical human resources. Garcia (2023) states that STEM education fosters a culture of innovation that has direct applications in national security. In addition, STEM expertise is significant in identifying vulnerabilities in the society, implementing effective protective measures, and responding to potential threats that could impact national security (Saw, 2020). These definitions lead to reassessment of STEM education and show that it plays a significant part in enhancement of national security when contributing to various aspects of defense, innovation, and technological advancement. Recent findings show that STEM education equips individuals with the skills to understand and respond to emerging threats (Ješková et al., 2022). This resulted in conclusion that the above-mentioned qualities of STEM education, its adaptability in particular, are essential for national security preparedness. The respondents confirm that STEM education as an education practice enable to form cognitive intelligence among students, develop their creative skills and, therefore, increase their competitiveness. Regarding the survey results, it is possible to reveal that STEM education provides building professional competencies among students which are necessary for country's stability and national security enhancement such as critical thinking, motivation to acquire engineering skills, digital literacy, engineering and technical expertise, readiness to innovations. Analyzing the advantages of STEM education and its contribution to national security, it was found that acquiring STEM competencies future professionals are equipped with deep knowledge on technical possibilities and become able to promote technical advancement in the country.

Strategic talent development helps to form critical skills, expertise, and leadership capabilities among future professionals required for national security (Järvi & Khoreva, 2020). This includes technical skills in areas such as cybersecurity, intelligence analysis, and engineering, as well as strategic thinking, adaptability, and effective communication. Also,

strategic talent development facilitates building of a diverse and inclusive environment oriented towards reflecting the complexity of the challenges faced by the nation (Haziazi, 2021). Obviously, developing strong leadership capabilities is a condition for effective national security management. Strategic talent development focuses on identifying individuals with strong leadership skills and ensures their continuing learning. Rožman et al. (2023) confirm that the development of technology enables economic growth but, at the same time, it causes an unfavorable impact on the labor market. It means that strategic talent development is oriented towards rapidly changing demands of the jobs and forms a set of essential knowledge and competencies related to new technologies and processes of Industry 4.0 (Whysall et al., 2019). The survey participants considered that strategic talent is developed through leadership involvement and support the goals of educational process. They confirm that focusing on students' high potentials and implementation of structured on-the-job assignments lead to developing leadership competencies significantly and, therefore, the enhancement of organization efficiency. Importantly, it was found that the curriculum must be oriented towards the future activities when skilled professionals are able to manage personnel, inspire the teams, and achieve organizational objectives using creative approaches. These results need to be read within the context of theoretical framework of the research problem. Consequently, the findings reveal that national security enhancement requires leadership who are aware of planning, decision making, effective communication, development of subordinates, positive interpersonal relations, emotional intelligence, and change management. Strategic talent development as the educational practice is linked to a systematic approach to identifying, cultivating, and maximizing the potential of future professionals with exceptional abilities or talents.

R&D priorities refer to the specific areas or topics that educational institutions identify as having strategic importance for national security. In the Ukrainian context R&D priorities, first of all, include cybersecurity (Eichensehr, 2022), advancements in military technology and weaponry systems, unmanned aerial vehicles (UAV) in particular (Kunertova, 2023) since these dimensions reflecting the evolving nature of modern security challenges. Regarding the emerging threats within the country R&D priorities must include surveillance and intelligence for national security purposes (Burke, 2022), technologies and tactics to prevent and respond to terrorist activities (Knyzhenko et al., 2020), border security and integrated border management (Loschi & Russo, 2021). Other important domains refer to information warfare and strategic communication (Burke, 2022; Karpchuk, 2022), autonomous systems and AI-based technologies (Chmyr & Bhinder, 2023) because they offer a range of capabilities enhancing operational efficiency, decision-making, and strategic advantage of the military. The survey confirmed the important role of human performance improvement to optimize the capabilities of military personnel during combat operations. Since military training is aimed to prepare individuals for the unique demands and challenges of military service (Bhinder, 2019; Polovnikov et al., 2020), R&D priorities focus on skill development, leadership formation, building of tactical and strategic thinking, adaptability improvement, and fostering of team cohesion. In addition, special attention is drawn towards ethical and legal implications of martial law during the full-scale Russian aggression (Espindola, 2023). The respondents emphasized that R&D priorities within the educational process contribute to formation of

cognitive knowledge and professional skills. They increase knowledge integration, encourage international collaboration, and enhance motivation to future professional activities significantly. The introduction of effective R&D approaches results in presenting applicable projects that can be used in the military sphere particularly. In higher education R&D may be implemented through project-based learning or case study when future professionals are engaged in problem-solving and knowledge construction in authentic professional context to develop real-world products independently.

Crisis response training for the enhancement of national security in the institutions of higher education involves preparing future professionals to effectively respond to and manage crises, emergencies, and security threats (Opatska et al., 2024). This type of training facilitates the development of skilled individuals capable of contributing to safety and security of a nation. Crisis response training requires adoption of multidisciplinary approach, involving various fields such as emergency management, law enforcement, healthcare, psychology, and communication (Willis et al., 2023). Also, the training should incorporate the use of technology for crisis communication, data analysis, and incident monitoring (Che et al., 2022). This includes training on emergency notification systems, social media monitoring, and the use of specialized software for crisis management. During war crisis response training has a number of advantages concerning the increase of effectiveness of military and civilian personnel (decision-making, coordination and communication, risk management, leadership development, formation of adaptability) (Opatska et al., 2024; Willis et al., 2023). Introducing crisis response training within educational institutions, future professionals will be able to enhance community resilience to respond to a wide range of emergencies.

The respondents insisted that the institutions of higher education promoting students' learning, exploration, and self-development must prepare future professionals to respond a crisis and manage it effectively. The results obtained during the survey revealed that crisis response training includes behaviour during rocket shelling, air raid, mass violence event, or terrorist attack. Additionally, the findings testify that the curriculum must be aimed at promotion optimal students' development post-trauma because wrong actions of educators or administrators may lead to long-term consequences to achieve the highest efficiency. The participants of educational process admit that crisis response training is organized in two schemes: individually or in groups. Individual technique is focused upon development of response skills individually and suggests working with a student solely. Group technique concerns the involvement of group activities and oriented towards the use of case studies. The research proved that addressing individual or group trauma as well as identification of institution-based interventions is important during the war and it may provide sustainable education environment. Overall, crisis response training is to enhance preparedness, coordination, and resilience in the face of unexpected and challenging situations that is very important in the context of Ukraine.

Innovative teaching technologies. The implementation of innovative teaching technologies in higher education plays an important role in enhancing national security since they contribute to efficiency of educational process resulted in preparing skilled professionals able to address emerging challenges. The findings show that simulation-based learning (Maistrenko et al.,

2020), e-learning (Galynska & Bilous, 2022), machine learning and AI-based tools (Chmyr & Bhinder, 2023) have a special place in current higher education and demonstrate the amazing results in formation of professional competencies. The respondents indicated that innovative teaching technologies enable the development of specialized programs addressing the growing threats in the modern world. The findings prove the positive effect of innovative technologies oriented towards adaptability potentials of higher education. Further it suggests that its innovative teaching environment remains adaptable to changing threat landscapes. According to the survey, virtual simulations and scenario-based training as well as AI-based tools provide students with realistic experiences related to national security challenges and contribute to formation of global competence, critical thinking and decision-making. Innovative teaching technologies support e-learning and allow future professionals to access educational resources freely and support continuous professional development. Thus, it was presented that innovative teaching technologies improve the process of professional training and prepare adaptable workforce, ultimately enhancing a nation's capacity to address contemporary national security challenges effectively.

At the same time, it is worth mentioning that while security concerns in higher education are valid, critics argue that securitization can have negative consequences (Murphy, 2020). Firstly, securitization tends to prioritize physical security, such as protection from violence and attacks, over broader educational goals. In some cases, securitization can lead to an increased military presence in the institutions of higher education, which can disrupt the educational process and undermine the role of education in promoting peace and tolerance (Ubaydullaeva, 2023). The findings show that excessive securitization can have negative consequences, such as suppression of academic discourse and possible militarization of curriculum (Abdelaziz, 2023). It is logical that while securitization of higher education can be important phenomenon, it is also essential to maintain some balance between security measures and preserving the openness and academic freedom that are fundamental to higher education.

Conclusions

The following conclusions are drawn after analyzing the research results:

1) Education was defined as a priority social phenomenon that provides the socio-economic, technological, cultural enhancement of community. In the context of national security, education system cultivates skilled and knowledgeable professionals who are able to face modern world challenges. During the research it was proved that higher education is responsible for the development of skills, knowledge, abilities, and universal values that individuals bring to the economic and productive activities within the society.

2) The findings showed that strong education system is linked to economic stability and prosperity, and resulted in enhancement of a nation's ability to invest in defense and infrastructure. Higher education serves both immediate and long-term purposes during times of war. The established system ensures the continuity of education, provides psychological and social support for individuals affected by the war, creates a sense of normality and social

interaction for pedagogical staff and students. In addition, education is a powerful tool for promoting peace and tolerance, and the curricula oriented towards conflict resolution, human rights, and cross-cultural communication contribute to building a peaceful post-war society.

3) The research showed that securitization of higher education is closely connected with enhancement of national security of a country. According to the findings, securitization refers to integration between curriculum and national security strategies during times of conflict or war. It was found that the key aspects of the securitization of higher education concern its strategic importance, modernization of military training, conducting research to enhance military capabilities and introduce innovations, development of technological advancements relevant to defense and security. Securitization of higher education may be implemented through a number of educational practices, including STEM education, strategic talent development, R&D, international collaboration, crisis response training, national security scholarships, simulation-based learning, VR and AR, cybersecurity training, online learning, remote training, Big Data, e-learning, secure communication, drone technology training, machine learning and artificial intelligence.

The research can be implemented within the institutions of higher education to increase the efficiency of educational process and to enhance national security in a country. Also, the considerations developed during the survey can be applicable for modernization of higher military education in Ukraine in order to prepare skilled military professionals and, therefore, strengthen the defensive potentials of a nation.

The research described the approaches to understanding the concept of higher education in the context of national security. It concerns human capital growth, building new knowledge, introduction of innovative technologies and solutions facilitating economic growth and competitiveness. Higher education is considered to be a tool for ensuring national security in a country since it contributes to professional and personal development, formation of professional competencies, and implementation of innovations. At the same time, the survey, describing a number of functions of higher education in ensuring national security, does not reveal the challenges the system of higher education facing at the current stage of development. The detailed analysis of difficulties that are encountered by the participants of educational process may improve the quality of higher education during wartime and modernize the system of training of future professionals within the institutions of higher education.

It was argued that category of securitization of higher education is closely connected with enhancement of national security of a country, particularly during the war. The concept was defined as integration between curriculum and national security strategies during times of conflict or war and outlined its key aspects oriented towards its strategic importance, modernization of military training, conducting research, development of technological advancements. Securitization of higher education may be implemented through a number of educational practices such as STEM education, strategic talent development, R&D priorities, international collaboration, crisis response training, national security scholarships and funding, simulation-based learning, VR and AR, cybersecurity training, online learning, remote training, Big Data analytics, e-learning, secure communication technologies, drone technology

training, machine learning and AI for defense applications. But further research must consider the ethical considerations of securitization and study the issues related to privacy, surveillance, effective application of advanced technologies within the educational process.

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The survey was conducted on the principles of anonymity and voluntary participation. All the respondents were informed about the survey, the research methods applied, the potential benefits and risks of participating, and the length of the study. The data collected during the study was kept confidential to protect the privacy of research participants and we removed any identifying information from databases that contain sensitive data.

References

- Abdelaziz, M. (2023) Consequences of Securitization Process on Internal and External Levels in Türkiye (2011-2022). *Open Journal of Political Science*, 13, 453-475. <https://doi.org/10.4236/ojps.2023.134027>.
- Alam, M. M., Fawzi, A. M., Islam, M. M., & Said, J. (2022). Impacts of COVID-19 pandemic on national security issues: Indonesia as a case study. *Security Journal*, 35, 1067–1086. <https://doi.org/10.1057/s41284-021-00314-1>.
- Ali, N., Afwadzi, B., Abdullah, I., & Mukmin, M. I. (2021). Interreligious Literacy Learning as a Counter-Radicalization Method: A New Trend among Institutions of Islamic Higher Education in Indonesia. *Islam and Christian-Muslim Relations*, 32(4), 383-405. <https://doi.org/10.1080/09596410.2021.1996978>.
- Aparicio, G., Iturralde, T., & Rodríguez, A.V. (2023). Developments in the knowledge-based economy research field: a bibliometric literature review. *Management Review Quarterly*, 73, 317–352. <https://doi.org/10.1007/s11301-021-00241-w>.
- Aramaki, A. A., Sedghgooyan, S., Lashgari, N., & Rasoul, N. N. (2023). The Role of Knowledge-Based Economy in Third Generation Universities. *International Journal of Scientific Research and Management*, 11(02), 4547-4563. <https://doi.org/10.18535/ijssrm/v11i02.em04>.
- Ashwin, P. (2022). The educational purposes of higher education: changing discussions of the societal outcomes of educating students. *Higher Education*, 84, 1227–1244. <https://doi.org/10.1007/s10734-022-00930-9>.
- Betsas, I. S., & Charalambous, D. P. (2023). Historical Representations of University Students: Post-War Discourses in the Greek Student Press. *Education Sciences*, 13(11), 1079. <https://doi.org/10.3390/educsci13111079>.

- Bhinder, N. V. (2019). Professional Training of Border Guards in Ukraine: Challenges and Opportunities Related to Emerging Security Threats. *Educational Process: International Journal*, 8(1), 72-84. <http://dx.doi.org/10.22521/edupij.2019.81.5>.
- Bing B. (2023). The impact of higher education on high quality economic development in China: A digital perspective. *PloS one*, 18(8), article number e0289817. <https://doi.org/10.1371/journal.pone.0289817>.
- Bondarenko, H. (2022). Ukrainian Education in Wartime: Challenges and Problems. *The Journal of V. N. Karazin Kharkiv National University. Series: History*, 62, 142-159. <https://doi.org/10.26565/2220-7929-2022-62-06>.
- Branowicki, W. (2023). Peculiarities of determining the legal status of the National Security and Defense Council of Ukraine as a subject of public administration. *Administrative Law and Process*, 1(40), 5-20. <https://doi.org/10.17721/2227-796X.2023.1.01>
- Brown, G.W., Bridge, G., Martini, J., Um, J., Williams, O. D., Tsachoua Choupe, L. B... Kandel, N. (2022). The role of health systems for health security: a scoping review revealing the need for improved conceptual and practical linkages. *Global Health*, 18, 51. <https://doi.org/10.1186/s12992-022-00840-6>.
- Budnyk, O., Kushniruk, S., Tsybulko, L., Shevchenko, A., Fomin, K., & Konovalchuk, I. (2022). Education innovations: new wartime experience of Ukrainian universities. *Journal for Educators, Teachers and Trainers*, 13(5), 464-471. <https://doi.org/10.47750/jett.2022.13.05.042>.
- Burke, P. (2022). The issue in the collection, verification and actionability of citizen-derived and crowd-sourced intelligence during the Russian invasion of Ukraine. *Strategic Panorama*, 94-103. <https://doi.org/10.53679/2616-9460.specialissue.2022.09>.
- Cai, Y., & Wolff, L.-A. (2023). Education and Sustainable Development Goals. *Sustainability*, 15(1), 643. <https://doi.org/10.3390/su15010643>.
- Carden, J., Jones, R. J., & Passmore, J. (2022). Defining Self-Awareness in the Context of Adult Development: A Systematic Literature Review. *Journal of Management Education*, 46(1), 140-177. <https://doi.org/10.1177/1052562921990065>.
- Chankseliani, M., Qoraboyev, I., & Gimranova, D. (2021). Higher education contributing to local, national, and global development: new empirical and conceptual insights. *Higher Education*, 81, 109–127. <https://doi.org/10.1007/s10734-020-00565-8>.
- Che, S., Kamphuis, P., Zhang, S., Zhao, X., & Kim, J. H. (2022). A Visualization Analysis of Crisis and Risk Communication Research Using CiteSpace. *International journal of environmental research and public health*, 19(5), 2923. <https://doi.org/10.3390/ijerph19052923>.

- Cheng, E. C. K. (2021). Knowledge transfer strategies and practices for higher education institutions. *VINE Journal of Information and Knowledge Management Systems*, 51(2), 288-301. <https://doi.org/10.1108/VJIKMS-11-2019-0184>.
- Chmyr, V., & Bhinder, N. (2023). AI in the Higher Military Institutions: Challenges and Perspectives for Military Engineering Training. *Rupkatha Journal* 15(4). <https://doi.org/10.21659/rupkatha.v15n4.11>.
- Crombe, K., & Nagl, J. A. (2023). A Call to Action: Lessons from Ukraine for the Future Force. *Parameters*, 53(3). <https://doi.org/10.55540/0031-1723.3240>.
- Demirkol, A. (2022). An Empirical Analysis of Securitization Discourse in the European Union. *Migration Letters*, 19(3), 273–286. <https://doi.org/10.59670/ml.v19i3.1832>.
- Dong, Y., & Zeb, S. (2022). Role of higher education system in promoting law abiding behavior among students. *Frontiers in psychology*, 13, article number 1036991. <https://doi.org/10.3389/fpsyg.2022.1036991>.
- Eichensehr, K. E. (2022). Ukraine, Cyberattacks, and the Lessons for International Law. *AJIL Unbound*, 116, 145-149. <https://doi.org/10.1017/aju.2022.20>.
- Espindola, J. (2023). Facial Recognition in War Contexts: Mass Surveillance and Mass Atrocity. *Ethics & International Affairs*, 37(2), 177-192. <https://doi.org/10.1017/S0892679423000151>.
- Fakai, U. R., Namagare, F. M., Abdullahi, Z., & Dabai, N. U. (2023). Science Education: A Vital Tool for Promoting National Security for Sustainable Development. *International Journal of Integrative Research*, 1(10), 571–580. <https://doi.org/10.59890/ijir.v1i10.179>.
- Fouad, N. S. (2021). Securing higher education against cyberthreats: from an institutional risk to a national policy challenge. *Journal of Cyber Policy*, 6(2), 137-154. <https://doi.org/10.1080/23738871.2021.1973526>.
- Galynska, O., & Bilous, S. (2022). Remote learning during the war: challenges for higher education in Ukraine. *International Science Journal of Education & Linguistics*, 1(5), 1–6. <https://doi.org/10.46299/j.isjel.20220105.01>.
- Garcia, M. B. (2023). Fostering an Innovation Culture in the Education Sector: A Scoping Review and Bibliometric Analysis of Hackathon Research. *Innovative Higher Education*, 48, 739–762. <https://doi.org/10.1007/s10755-023-09651-y>.
- Hajdari, L., Krasniqi, J., Limani, B., & Chen, A. (2024). The role of international education on public diplomacy: the case of Kosovo International Summer Academy. *Humanities and social sciences communications*, 11, 105. <https://doi.org/10.1057/s41599-023-02591-0>.
- Haziazi, M. (2021) Development of Framework for Talent Management in the Global Context. *Open Journal of Business and Management*, 9, 1771-1781. doi: 10.4236/ojbm.2021.94096.

- Hirsch Ballin, E., Dijstelbloem, H., & de Goede, P. (2020). The Extension of the Concept of Security. In: Hirsch Ballin, E., Dijstelbloem, H., de Goede, P. (eds) *Security in an Interconnected World. Research for Policy*. Springer, Cham. https://doi.org/10.1007/978-3-030-37606-2_2.
- Hsieh, C.-C. (2020). Internationalization of higher education in the crucible: Linking national identity and policy in the age of globalization. *International Journal of Educational Development*, 78, 102245. <https://doi.org/10.1016/j.ijedudev.2020.102245>.
- Hurt, A., Reed, S., Dykeman, K., & Luu, J. (2023). Ensuring Educational Continuity in the Midst of Crisis: Policy and Planning During the COVID-19 Pandemic. *Educational Policy*. <https://doi.org/10.1177/08959048231215488>.
- Ilichuk, L. (2023). Ukrainian education in the conditions of war: New challenges, threats and vectors of changes in the context of ensuring the quality of education. *Mountain School of Ukrainian Carpaty*, 28, 16-21. <https://doi.org/10.15330/msuc.2023.28.16-21>.
- Järvi, K., & Khoreva, V. (2020). The role of talent management in strategic renewal. *Employee Relations*, 42(1), 75-89. <https://doi.org/10.1108/ER-02-2018-0064>.
- Ješková, Z., Lukáč, S., Šnajder, L., Guniš, J., Klein, D., & Kireš, M. (2022). Active Learning in STEM Education with Regard to the Development of Inquiry Skills. *Education Sciences*, 12(10), 686. <https://doi.org/10.3390/educsci12100686>.
- Karpchuk, N. (2022). Information and Communication Policy in Wartime: the Case of Ukraine. *Historia i Polityka*, 40(47), 125–140. <https://doi.org/10.12775/HiP.2022.017>.
- Kholiavko, N., Popelo, O., Melnychenko, A., Derhaliuk, M., & Grynevych, L. (2022). The role of higher education in the digital economy development. *Revista Tempos e Espaços em Educação*, 15(34), article number e16773. <https://doi.org/10.20952/revtee.v15i34.16773>.
- Kioui, V., & Voulvoulis, N. (2022). Education for Sustainable Development as the Catalyst for Local Transitions Toward the Sustainable Development Goals. *Frontiers in Sustainability*, 3. <https://doi.org/10.3389/frsus.2022.889904>.
- Knyzhenko, O., Markelova, A., & Shamara O. (2020). Inevitability of criminal legal responsibility for formation of terrorist organizations and its' assistance: on materials of judicial practice of Ukraine. *International Journal of Legal Studies*, 7(1), 317-328. <https://doi.org/10.5604/01.3001.0014.3124>.
- Kokhan, I. I. (2019). Formation of Moral-Aesthetic Competence of Future Specialists. *Adaptive Management: Theory and Practice. Series Pedagogics*, 6(11). [https://doi.org/10.33296/2707-0255-6\(11\)-08](https://doi.org/10.33296/2707-0255-6(11)-08).
- Kornelakis, A., & Petrakaki, D. (2020). Embedding employability skills in UK higher education: Between digitalization and marketization. *Industry and Higher Education*, 34(5), 290-297. <https://doi.org/10.1177/0950422220902978>.

- Kot, N., & Lytvychenko, D. (2022). Psychological support for higher education students during the war: innovative online camp. *European humanities studies: State and Society*, 4, 104-124. <https://doi.org/10.38014/ehs-ss.2022.4.08>.
- Krstić, M., Filipe, J. A., & Chavaglia, J. (2020). Higher Education as a Determinant of the Competitiveness and Sustainable Development of an Economy. *Sustainability*, 12(16), 6607. <https://doi.org/10.3390/su12166607>.
- Kryvyzyuk, L., Levyk, B., Khrypko, S., & Ishchuk, A. (2021). The Phenomenon of National Security within Postmodern Cultures: Interests, Values, Mentality. *Postmodern Openings*, 12(3), 77-95. <https://doi.org/10.18662/po/12.3/328>.
- Kunertova, D. (2023) Drones have boots: Learning from Russia's war in Ukraine. *Contemporary Security Policy*, 44(4), 576-591. <https://doi.org/10.1080/13523260.2023.2262792>.
- Liwång, H., Andersson, K. E., Bang, M., Malmio, I., & Tärnholm, T. (2023) How can systemic perspectives on defence capability development be strengthened? *Defence Studies*, 23(3), 399-420. <https://doi.org/10.1080/14702436.2023.2239722>.
- Loschi, C., & Russo, A. (2021) Whose Enemy at the Gates? Border Management in the Context of EU Crisis Response in Libya and Ukraine. *Geopolitics*, 26(5), 1486-1509. <https://doi.org/10.1080/14650045.2020.1716739>.
- Lugovyi, V., Kalashnikova, S., Talanova, Z., & Vlasova, I. (2023). Transformation of higher education in Ukraine: Impact of the war and objectives for post-war recovery. *European Journal of Education*, 58, 611-628. <https://doi.org/10.1111/ejed.12584>.
- Lutsenko, Y., Tarasiuk, A., Kryzhna, V., Motyl, V., & Dimich, A. (2021). Legal aspects of civil-military cooperation in comparative context. *Amazonia Investiga*, 10(48), 138-149. <https://doi.org/10.34069/AI/2021.48.12.15>.
- Maistrenko O. B., Bubenshchikov P. B., & Stetsiv C. B. (2020). The use of simulation modelling tools in a practical training for the prospective officers of the armed forces of Ukraine. *Information Technologies and Learning Tools*, 75(1), 186-201. <https://doi.org/10.33407/itlt.v75i1.2676>.
- Marchenko, T. (2023). Higher education during the war times in Ukraine. *Scientific Journal of Polonia University*, 59(4), 49-57. <https://doi.org/10.23856/5907>.
- Markiewicz, T. (2023) The vulnerability of securitisation: the missing link of critical security studies. *Contemporary Politics*. <https://doi.org/10.1080/13569775.2023.2267371>.
- Matafora, B., Hahn-Laudenberg, K., & Abs, H.J. (2021). Assessing the National Identity and Sense of Belonging of Students in Germany with Immigration Backgrounds. *Journal of Social Science Education*, 20(2). <https://doi.org/10.4119/jsse-3628>.

- Meunier, F. (2019). Construction of an Operational Concept of Technological Military/Civilian Duality. *Journal of Innovation Economics & Management*, 29, 159-182. <https://doi.org/10.3917/jie.029.0159>.
- Mohammed Isa, I. (2022). (Critical Review) Repositioning Science and Technology Education for Security and National Economic Growth and Development in Nigeria. *International Journal of Asian Education*, 3(3), 205-210. <https://doi.org/10.46966/ijae.v3i3.293>.
- Murphy, M. P. A. (2020). COVID-19 and emergency eLearning: Consequences of the securitization of higher education for post-pandemic pedagogy. *Contemporary Security Policy*. <https://doi.org/10.1080/13523260.2020.1761749>
- Naida, I., Rudenko, Y., Derbak, A., Chobaniuk, M., & Cherevko, S. (2023). State policy on the formation of patriotic education for the youth. *Revista Eduweb*, 17(2), 138-148. <https://doi.org/10.46502/issn.1856-7576/2023.17.02.12>.
- Nakata, S., & Takezawa, M. (2023). Conditions under which faithful cultural transmission through teaching promotes cumulative cultural evolution. *Scientific Reports*, 13, article number 20986. <https://doi.org/10.1038/s41598-023-47018-7>.
- Novytskyi, N. V., Shcherbyna, L. I., Pyvovarov, V. V., Olha Ye. Kartamysheva, O. Ye., Lysodyed, O. V. (2022). Ukraine's constitutional doctrine of national security. *Revista Científica General José María Córdova*, 20(38), 387-406. <https://doi.org/10.21830/19006586.902>.
- Nychkalo, N., Ovcharuk, O., HordiienkoV., & Ivanyuk, I. (2022). Ukrainian education in the conditions of the Russian war: Trials, new experiences, prospects. *UNESCO Chair Journal Lifelong Professional Education in the XXI Century*, 1(5), 7-39. [https://doi.org/10.35387/ucj.1\(5\).2022.7-39](https://doi.org/10.35387/ucj.1(5).2022.7-39).
- Nyman, J. (2023). Towards a global security studies: what can looking at China tell us about the concept of security? *European Journal of International Relations*, 29(3), 673-697. <https://doi.org/10.1177/13540661231176990>.
- Opatska, S., Johansen, W., & Gordon, A. (2024). Business crisis management in wartime: Insights from Ukraine. *Journal of Contingencies and Crisis Management*, 32, article number e12513. <https://doi.org/10.1111/1468-5973.12513>.
- Pedroso, J. E. P., Sasana, R., & Valencia, K. (2023). Social Studies Practice Teacher's Views on Culturally Responsive Teaching. *EIKI Journal of Effective Teaching Methods*, 1(3). <https://doi.org/10.59652/jetm.v1i3.34>.
- Polovnikov, V., Khalymon, S., Komziuk, A., & Kopanchuk, V. (2020). Social issues of the State Border Guard Service of Ukraine personnel management. *Amazonia Investiga*, 9(29), 395-406. <https://doi.org/10.34069/AI/2020.29.05.44>.
- Pursiainen, C. H., Abdel-Fattah, D., & Staupe-Delgado, R. (2022). Higher Education and the Changing Situation of Societal Security in the Baltic Sea Region. *Journal on Baltic Security*, 8(2), 83-129. https://doi.org/10.57767/jobs_2022_0015.

- Reindl, M., Auer, T., & Gniewosz, B. (2022). Social Integration in Higher Education and Development of Intrinsic Motivation: A Latent Transition Analysis. *Frontiers in psychology*, 13, article number 877072. <https://doi.org/10.3389/fpsyg.2022.877072>.
- Rožman, M., Tominc, P., & Štrukelj, T. (2023). Competitiveness Through Development of Strategic Talent Management and Agile Management Ecosystems. *Global Journal of Flexible Systems Management*, 24, 373-393. <https://doi.org/10.1007/s40171-023-00344-1>.
- Saw, G. K. (2020). Leveraging Social Capital to Broaden Participation in STEM. *Policy Insights from the Behavioral and Brain Sciences*, 7(1), 35-43. <https://doi.org/10.1177/2372732219895997>.
- Seleznova, V., Pinchuk, I., Feldman, I., Virchenko, V., Wang, B., & Skokauskas, N. (2023). The battle for mental well-being in Ukraine: mental health crisis and economic aspects of mental health services in wartime. *International Journal of Mental Health Systems*, 17, 28. <https://doi.org/10.1186/s13033-023-00598-3>
- Semenog, O. (2020). Academic culture as a composition of national innovation security. *UNESCO Chair Journal Lifelong Professional Education in the XXI Century*, 2, 48-53. [https://doi.org/10.35387/ucj.2\(2\).2020.48-53](https://doi.org/10.35387/ucj.2(2).2020.48-53).
- Sherman, M., Puhovski, E., Kambalova, Y., & Kdyrova, I. (2022). The Future of Distance Education in War or the Education of the Future (The Ukrainian Case Study). *Futurity Education*, 2(3), 14-23. <https://doi.org/10.57125/FED/2022.10.11.30>.
- Siedschlag, A. (2022). Civic Homeland Security Culture: A Poll Study Approach and the Example of Pennsylvania. In: Masys, A.J. (eds) *Handbook of Security Science*. Springer, Cham. https://doi.org/10.1007/978-3-319-51761-2_39-2.
- Taka, M. (2023) When education in emergencies fails: learners' motivations for a second chance education in post-conflict Rwanda. *Compare: A Journal of Comparative and International Education*, 53(2), 217-234. <https://doi.org/10.1080/03057925.2021.1886908>.
- Trubavina, I., Cherednychenko, O., Oliinyk, N., & Nedria, K. (2023). Ukrainian Identity Development in the Education System in the Conditions of Martial Law in Ukraine. *Educational Challenges*, 28(1), 161-174. <https://doi.org/10.34142/2709-7986.2023.28.1.13>.
- Ubaydullaeva, D. (2023). Securitization of Higher Education Expansion in Authoritarian States: Uzbekistan's Seemingly "Elite" Tertiary System. *Problems of Post-Communism*, 70(3), 305-316. <https://doi.org/10.1080/10758216.2021.1974886>.
- Ulven, J. B., & Wangen, G. (2021). A Systematic Review of Cybersecurity Risks in Higher Education. *Future Internet*, 13(2), 39. <https://doi.org/10.3390/fi13020039>.

- Verkhovna Rada of Ukraine. (2020). On strategy of national security of Ukraine: Decision of the National Security and Defense Council of Ukraine No 392/2020 from September 14, 2020. Retrieved from: <https://zakon.rada.gov.ua/laws/show/392/2020#Text>.
- Vodolaskova, K. (2021). The role of law higher education institutions for the civil society development. *Scientific Works of National Aviation University. Series: Law Journal "Air and Space Law"*, 3(60), 202-210. <https://doi.org/10.18372/2307-9061.60.15976>.
- Vovchenko, O. (2023). The role of HEIs of Ukraine in the Implementation of Social Innovations. Professional Education: Methodology. *Theory and Technologies*, 17, 65-78. <https://doi.org/10.31470/2415-3729-2023-17-65-78>.
- Weda, S., Rahman, F., Samad, I. A., Gunawan, F., & Fitriani, S. S. (2022). How Millennials Can Promote Social Harmony through Intercultural Communication at Higher Education. *Randwick International of Social Science Journal*, 3(1), 231-243. <https://doi.org/10.47175/rissj.v3i1.398>.
- Whysall, Z., Owtram, M., & Brittain, S. (2019). The new talent management challenges of Industry 4.0. *Journal of Management Development*, 38(2), 118-129. <https://doi.org/10.1108/JMD-06-2018-0181>.
- Willis, T., Kern, L. J., Hedden, B. J., Nelson, V., Comartin, E., & Kubiak, S. (2023). The impact of Crisis Intervention Team (CIT) training on police use of force. *Journal of Offender Rehabilitation*, 62(3), 157-173. <https://doi.org/10.1080/10509674.2023.2182863>.
- Winter, C., Heath-Kelly, C., Kaleem, A., & Mills, C. (2022). A moral education? British Values, colour-blindness, and preventing terrorism. *Critical Social Policy*, 42(1), 85-106. <https://doi.org/10.1177/0261018321998926>.
- Wyřbek, H. (2022). National security challenges and threats. *Wiedza obronna*, 279(2). <https://doi.org/10.34752/2022-e279>.