

MODERNIZATION OF THE EDUCATIONAL PROCESS THROUGH THE IMPLEMENTATION OF A MODERN STRATEGY FOR ENSURING INFORMATION SECURITY

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Abstract: The article makes an attempt to comprehend modernization of education processes today in terms of information security. The issue of information security in higher education is considered within the planes of radicalization and soft power strategy. It is showed that educational security today became one of the crucial components of national security of any state. The authors claim that the process of internationalization, which today embraces and unites the international, intercultural and global levels, requires rethinking and new design of the goals, functions, and forms of implementation of training, especially in higher education, in particular within the social construction of the individual narrative of higher education student in the information landscape.

Keywords: modernization of education; educational process; security; radicalization.

1 Introduction

Today, in the information age, there is a paradigm shift in education. Information technologies are increasingly penetrating the educational process. However, at the same time, education is beginning to play an increasingly important role as a factor in national security. National security is the protection of society, the state, and the individual in various areas of life from external and internal threats, ensuring the progressive sustainable development of the country. National security presupposes the preservation of themselves by society, the state, and individuals, which reflects its axiological aspect. At the same time, life, both of society and individual, is the highest value. Implementing the task of self-preservation involves ensuring a decent level of education. The modern education system, as a subsystem of society and the state where it operates, is designed to solve problems of education and training, and the formation of social characteristics of the country's human potential [9; eleven; 12; 27; 31]. Namely it lays the foundations for ensuring the national security of society, the state and the individual; the strengths and vulnerabilities of this process depend on it, which is emphasized, in particular, by Ukrainian scientist Kryshchanovych within multidisciplinary paradigm of science and education [16-21].

An important characteristic of national security is that it must be adequate to the culture and mentality of a certain society, since it can be fully ensured only within a certain territory in relation to a specific people within the boundaries of its historical development, relying not only on material, technical, economic, the social and political base of the country, but also on its cultural and intellectual potential.

To justify the fact that education serves as an important factor of national security, researchers use related concepts that inherently reflect complementary aspects (parts) of the country's holistic security system, namely: a) cultural security, aimed at developing and implementing measures to protect national culture, traditions, moral and axiological foundations of the people; b) educational security, aimed at developing and implementing measures to protect subjects of the educational process from threats associated with the implementation of this

process, as well as the ability to manage, predict, and prevent them; c) national security of the education system, which implies ensuring the effective functioning of the educational space based on timely counteraction to endogenous and exogenous challenges and threats to the security of society and the state [25]. Thus, ensuring national security directly depends on the effectiveness of the current education system in the state and the characteristics of the educational space.

Among the most important modern problems, the problem of modernization of education should be noted. This involves the creation of a security mechanism for the educational environment. At the same time, today the modernization process often occurs without a clear and precise understanding of its goals. Meanwhile, to ensure the security of the education system, clear ideas are needed about what kind of specialists society needs, what is the relationship between the prospects for the development of education and the prospects for the development of society, what are the mechanisms for integrating the existing educational system into the global educational space.

Today, the task of effective development of the domestic educational space is a determining factor in all other components of national security - society, state, social institutions, family, individual. However, solving this problem is quite difficult. In particular, it is necessary to find a balance between the following contradictory trends: strengthening academic mobility and maintaining and developing the intrinsic value of national education, as well as between the openness of education (it needs self-organization) and the preservation of autarky (to ensure its national identity). Making fundamental adjustments to a number of main directions of educational policy can fully ensure national security in the modern century.

A logical consequence of the inclusion of education in the system of national security components is that in recent years the concept of educational security has appeared in scientific and political discourse.

The category of educational security is presented in a multifaceted way: meeting educational needs from the regional to the national level, aimed at "improving the quality of people's intellectual development", "sustainability of the process of knowledge reproduction", promoting and providing opportunities for "life-long education", "sustainable continuity of the modernization process by educational institutions (schools, colleges, municipal educational complexes, etc.), the content of knowledge reproduction" [13].

All components of educational security, in turn, face both internal educational threats (insufficient funding for the educational process, design and implementation of educational standards that are not adapted and inappropriate to the needs of modern society, the outflow of highly qualified personnel from the education sector, etc.) and external ones (attempts to influence the national educational system using soft power tools, direct threats to cybersecurity, as well as attempts to destabilize and radicalize sentiment among students, creating narratives of violent public riots, etc.).

If to step back from a narrow didactic point of view, education is nothing more than a process of cultural transmission. Culture, in turn, is the result of education in the broad sense of the word. In modern conditions, the education system has essentially remained the only institution of the state that forms the spiritual foundations of the individual against the backdrop of powerful and not always positive flows of information penetrating through the channels of modern media. Moreover, the increasing penetration of information technologies (including AI and ML) into the educational process, in addition to clearly positive results, also creates new threats for which the educational environment is often unprepared. All this determines the need for detailed and in-depth research into the problem of

information security in the landscape of modernization of the educational process.

2 Materials and Methods

The research methods were general socio-philosophical principles and methods of cognition, widely used in the study of social processes, as well as general scientific approaches related to the peculiarities of the analysis of the subject of study.

The methodological basis of the research is the dialectical method. The study was based on dialectics and a systematic approach, which made it possible to comprehensively approach the study of the relationship between national security and the education sector. The solution to theoretical problems of modernization of education in the information security landscape is carried out through cultural-functional, interdisciplinary, system-structural, and structural-functional approaches.

3 Results and Discussion

The content and methods of innovative education are the result of a change in educational standards in terms of the formation of an enlightened society, i.e., society of information civilization. At the same time, the main principles of modernization of education at the present stage are: humanization, fundamentalization, informatization, continuity, and openness. Informatization and openness provide excellent opportunities for academic contacts, knowledge exchange, academic mobility, improvement of curricula and competency patterns, which helps to increase the level of competitiveness of graduates not only in the national but also in the international labor market. At the same time, this same openness creates new specific challenges and threats.

Today, the dissemination of information truly occurs 'at the speed of light', and the main problem is not so much the ability to receive information, but rather protection from unreliable, false, and sometimes directly harmful information. The authors of the UNESCO Report note that freedom of expression conflicts with the safety of members of society [25]. This is especially clear from the information contained on the Internet: recipes for narcotic drugs, "methodological recommendations" for committing suicide, materials containing calls to commit extremist and terrorist actions, and so on. Such an interpretation of individual freedom as the personal right of an individual, which does not correlate with the philosophical and legal categories of responsibility to society, the principles of collectivism and cooperation, and the lack of moral principles sometimes leads to irreversible consequences.

Some students are subject to disorganization and the active influence of various extremist ideologies that promote the decomposition of legal norms and ideological and political values. The phenomenon of radicalization is a complex phenomenon. Virtual communities of students, even within the same university or campus, can become an information "target" of extremist and terrorist organizations, with the goal of launching a "snowball" of extremist narratives, which will subsequently be 'broadcast' by the students who accepted them outside of this particular community. Young people fulfill the fundamental need for socialization, and also broadcast their attitudes and values to the whole world. Along with universal values, other destructive values are also broadcast, having the explicit or implicit nature of extremism and terrorism.

Schlegel and Kowert [29] in their book "*Gaming and Extremism: The Radicalization of Digital Playgrounds*", investigate the issue of gaming environment as a 'site' for radicalization. This book explores the "gamification of extremism", tracking the rise in the use of games for radicalization, recruitment, and mobilization as well as the spread of extremist ideology. Given that digital gaming technologies are becoming a common teaching tool used in both schools and colleges, this problem is equally crucial for education.

A functional and formalized educational system has been built in Iraq and Syria by the terrorist political group known as the Islamic State in Iraq and Syria (ISIS), which adheres to Salafist jihadist doctrine. This is something that many people are ignorant of [28]. In fact, ISIS has produced a sizable body of instructional content as well as a pretty complex curriculum in a short length of time. It is estimated that over 150,000 pupils attended ISIS schools between 2014 and 2017, which equates to almost one-third of school-age youth living under the dictatorship [28]. Modern curricula are required to include computer science and technology [7], and ISIS's curriculum is no different. In fact, ISIS emphasizes in the preface to its programming textbook that proficiency in programming is essential for both guaranteeing the society's technological and scientific autonomy as well as for utilizing and developing current technology in both peace and war. Apparently, the components of such curriculum have the ability to permeate learning resources for students worldwide under the open settings of higher education today.

Particular consideration should be given to the textbook's very final exercise. With "oil prices" as its theme, the "Dinar Challenge" [7] (see Figure 1) is not strictly military or religious in nature, but it is highly politicized in its context, and the idea of reinstating the dinar is closely associated with the totalitarianism of ISIS, as it alludes to the glorification of the past caliphates. Given that caliphates are theocratic governmental systems, this concept may be seen as having a religious bent. Furthermore, there is little connection between the programming abilities required for this activity and the iconography, which is mostly of a military character. While the exercise is a logic problem where students must program a game to identify which of four identical objects (dinars) weighs less than the others, the exercise's contextual introduction refers to "the greatest swindle, theft, and fraud operation in history carried out for decades until today" - that is, the sale of oil by the United States and the other "states of the tyrannical crusading coalition" at an unreasonably low price [7].

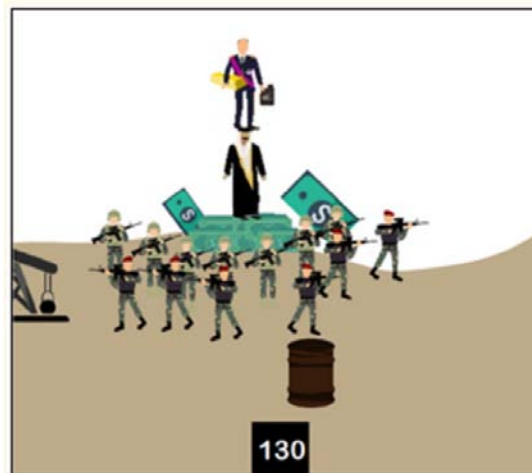


Figure 1. "Dinar Challenge" [7]

Figure 2 allows seeing that growth in the number of terrorist attacks in the USA by ideology actually coincides with the upward trend of increasing openness and convergence in education.

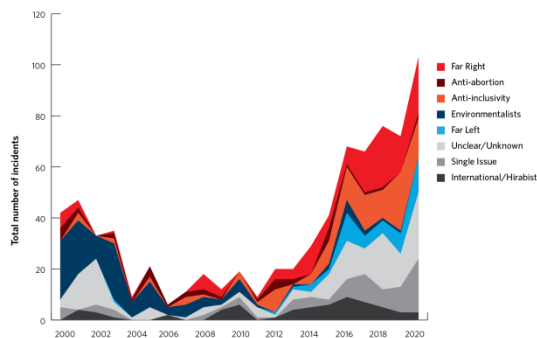


Figure 2. Terrorist attacks in the United States by ideology, 2000-2020 [14]

Moreover, international education becomes a soft power tool [1]. It has been noted that many governments have turned to soft power in an attempt to further their foreign policy objectives since the collapse of the bipolar global order. The primary causes of this trend are the growing interdependence of states and the high cost that countries incur when using force to pursue their foreign policy goals. In this setting, soft power tools began to play a more significant role in national foreign policies, and we anticipate that this role will continue to grow in the years to come. Among the most potent tools of soft power are culture and education.

These days, a state's capacity to aid in the development of its rivals or neighbors determines how much influence it has in international politics [3]. Moreover, nations must struggle to maintain their authority over the principles and regulatory framework of the contemporary international order throughout this moment of global political system transformation. A major theme of the new century is the competition between various ideals and paradigms of national and socio-economic development. These days, the advancement of human development—the cornerstone of the emergence of the new knowledge-based economy—makes this style of leadership unachievable. For this reason, a lot of aspirational emerging nations (including Brazil, Russia, India, and China) that are keen to implement novel economic models give significant consideration to the modernization and globalization of their domestic educational systems [26]. The only way for a modern state to gain a significant competitive edge in the "global competition for minds" and draw in the best international students is to have a well-developed educational system that satisfies the demands of an inventive, high-tech economy and is integrated into the international educational and scientific space. One of the state's most crucial tools of soft power is the provision of educational opportunities for international students.

It is important to note that politics and/or geopolitics are deeply ingrained in today's educational system. Graduates from overseas schools not only become highly skilled workers in their home nations, but they also have the potential to become so-called "Trojan horses" [22]. Recent political developments have shown that world leaders may be tolerant of and partial to the nations in which they received their education. The Soviet Union employed tactics, particularly during the Afghan War, to persuade the country's intellectual and political elites to adopt their ideology in an effort to install a regime that would be sympathetic to the Soviet Union. One of them, for example, was Nur Mohammad Taraki. It should be mentioned that Taraki led the "Hulk" (People) group and served as the Secretary-General of the PDPA. Furthermore, it is well known that the Soviet Union worked to instill its ideology in the Afghan people by studying pro-Soviet Afghan officials in the USSR. However, the Soviet Union's extreme rigidity and the forced adoption of its ideologies had a detrimental impact, which made the Afghan people feel distrustful of the Soviet Union and its beliefs. It is especially evident in the information age, when messages can be created and shared instantaneously, and where digital

technologies, academic mobility, and exchange greatly facilitate the systemic influence of information on teachers and students in international educational institutions.

Understanding the increasing role of modern universities in the global space, states are joining the competition for active, purposeful applicants. Host universities receive additional investment to further their foreign policy goals, while sending countries gain access to new knowledge and skills through the production of qualified specialists. Many educational migrants maintain close ties with their state and even participate in improving the national education system. International academic mobility is one of the most obvious indicators of the effectiveness of the "soft power" of higher education and at the same time the main driving force of internationalization, which becomes a necessary condition for the adaptation of higher education to the demands of the modern world order [22].

Education is one of the six sub-indices used by Portland's Soft Power Measurement Survey, together with culture, engagement, digital, businesses, and government, to gauge a nation's soft power internationally. The results are published in the Soft Power 30 Report. Education was applied. As stated in the report [24], "The ability of a country to attract international students, or facilitate exchanges, is a powerful tool of public diplomacy that delivers returns well into the long-term. Even for states carrying a history of bilateral animosity, there is a positive effect on perceptions and ties when people study abroad. Returning international students often become third-party advocates for their host country of study".

Knight [15] separated IHE into three generations in the modern age. The "satellite model", which refers to the establishment of satellite offices, branch campuses, research centers, and management offices abroad, is the second generation. The first generation, known as the "classic model", consists of collaborative activities both domestically and internationally through international partnerships and the exchange of international students and staff. By "co-founding international universities" in other nations through international partnerships, the third generation improves upon the second generation model [15]. Universities are keeping an eye on and noting the political and economic environments of the countries in which they choose to open their offices, especially with regard to elements perceived as externalizations of soft power, according to Aparecido & Schettini's research on Brazil's educational system [4]. In a similar vein, Saudi Arabia has used its soft power to expand Islamic culture globally by establishing several institutions and schools abroad [2].

One of the bright examples is China. The Chinese government is utilizing educational diplomacy to disseminate Chinese language, culture, and official narratives in an effort to foster a sense of national pride. Beijing purposefully created a number of Confucius institutes throughout the globe to demonstrate its soft power [23]. Through education, China is benefiting in both directions. Education is typically seen as a soft power that may benefit the host nation. On the other hand, China benefits from being a sending nation as well. By means of its Internationalization of Higher Education strategy, China has strategically formulated its foreign policy objectives and equipped its students to serve as Chinese ambassadors while they study abroad [6].

Academics from China are reportedly being recruited by China as well. Harvard Chemistry Professor Charles Lieber was detained and charged of being a Chinese agent. Nonetheless, a large number of other scholars have defended him. Although he has not yet had a trial, he has asked for his case to be moved up quickly since he has terminal cancer. The majority of the top twenty-one British universities are involved in research projects or are sponsored by groups having links to the Chinese military. Oxford University is hosting students from China's University of Defence Technology [10].

Such an active and rapid implementation of soft power strategies and tactics in the global educational space would be impossible without modern information technologies. At the same time, they are used both to ensure communications and to embed the desired narratives into the educational process, including with the help of educational tools based on artificial intelligence and machine learning. There are also concerns relating to cybersecurity, due to dissemination of foreign developments of both digital learning platform for students and solutions for universities' corporate information systems. Here is the 'broad field' for data theft, trojan viruses, various spyware, etc.

There is no doubt that in these conditions, the sustainable and secure development of the nation in the context of an ever-increasing threat to national security presupposes the formation of a new educational paradigm through the formation of high-level educational needs among the population, the identification of ways to develop and satisfy the educational needs of the population at the level of educational institutions, the formation in the minds of students of civil responsibility for the final knowledge system, the system of legal responsibility of state educational and administrative institutions at all levels for the implementation of the educational security program.

A schematic representation of the social construction of the individual narrative of a higher education student in the information environment may be seen in Figure 3 below. Put differently, individuals in this hyperconnected age create their identities and worldviews through a variety of interactions that largely stem from "online" small groups (friends, family) and then spread throughout the greater community [30]. The relational theories to radicalization, which hold that the process occurs "in a dynamic constellation of multiple spaces and social relationships over time", are ideally suited to this view [8]. Therefore, the state, educators, businesses, public organizations, and others should focus their efforts on providing information security for each of these components, both alone and collectively.

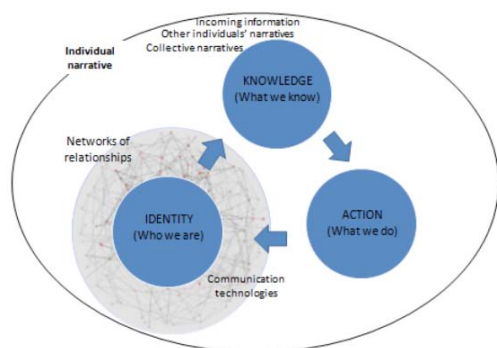


Figure 3. The social construction of the individual narrative of higher education student in the information landscape [5]

The process of internationalization, which today embraces and unites the international, intercultural, and global levels, requires rethinking and new design of the goals, functions, and forms of implementation of education at the highest level. Curricula should organically combine regional (national) specifics with international (world) trends of modern science and practice.

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