

1

**DIGITAL TOOLS OF MILITARY-PATRIOTIC ORIENTATION
FOR STUDENTS****ABSTRACT**

The section of the monograph "Digital tools of military-patriotic orientation for students" is devoted to the substantiation of theoretical-methodological, empirical and methodical aspects of the introduction of digital technologies into the system of military-patriotic education of schoolchildren. The relevance of the study is due to the need to strengthen the national-patriotic component of the educational process in the conditions of digitalization of education and modern security challenges of military Ukraine, which require the formation of stable value orientations, civic responsibility and readiness to defend the state in students. The first section of the monograph systematizes the theoretical foundations of military-patriotic education, clarifies its essence as an integrated pedagogical phenomenon, defines its structure, principles and functions, outlines regulatory and conceptual approaches to the implementation of educational tasks in educational institutions. The potential of the digital educational environment is emphasized as a factor in increasing the motivational, cognitive, and value-semantic components of military-patriotic education. The second section is devoted to monitoring the effectiveness of military-patriotic education of high school students in secondary education institutions. The system of criteria, indicators, and levels of the formation of military-patriotic education is substantiated, the results of empirical research are presented, their quantitative and qualitative analysis is carried out, and key problems and pedagogical conditions for increasing the effectiveness of the educational process are identified. The third section defines the methodological principles for implementing digital tools of a military-patriotic orientation, in particular digital educational projects, interactive platforms, multimedia resources, and virtual environments. Practically oriented recommendations are proposed for their integration into the educational process, and models and forms of work with students are outlined. The materials of the monograph can be used in research, educational, and upbringing activities of educational institutions of various levels.

KEYWORDS

Educational digital tools, military-patriotic orientation, education seekers, theoretical and methodical principles, legal basis, state cultural policy, pedagogical conditions, content, forms, methods.

Modern realities, in particular the struggle to preserve the state sovereignty and territorial integrity of Ukraine, actualize the need to strengthen the military-patriotic education of the younger generation.

Currently, the formation of a sense of patriotism, defense consciousness, readiness to defend the Motherland, and competencies in the field of security and defense in young people are urgent tasks of today. Modern military-patriotic education is the foundation, on which the personality of a citizen of Ukraine is built. Its goal is to prepare schoolchildren for the defense of Ukraine, which is based on patriotic and national values, the formation of a positive image of Ukraine's defender, and an active civic position. One of the key means of achieving the goals and objectives of military-patriotic education of schoolchildren in the conditions of Russia's war against Ukraine is modern digital technologies. The value of the achievements of modern digital technologies in the military-patriotic education of schoolchildren lies in their transformative potential for creating a dynamic, interactive and accessible educational environment, in which national values, patriotic consciousness and patriotic feelings are formed. Such innovative digital technologies as virtual reality and artificial intelligence tools, developments in the direction of creating a holistic metaverse, social media and video games make it possible to borrow augmented reality to influence the growing personality. The creation and implementation of appropriate educational technologies, the development of digital resources and tools contribute to: the active participation of schoolchildren in the process of implementing interactive projects; allow them to research facts and implement virtual tours of historical places; initiate online games, webquests, online surveys; gamify the educational process, which stimulates activity, creativity and independence of students' thinking and behavior; stimulate interest in military-patriotic activities.

1.1 THEORETICAL PRINCIPLES OF MILITARY-PATRIOTIC EDUCATION OF STUDENTS

The issues of military-patriotic education of youth have always been an integral part of the national security system of our country. The problem is actualized by the need to defend against armed and information aggression from the Russian Federation, which requires a significant strengthening and modernization of military-patriotic education of youth. Military-patriotic education is also a powerful tool for forming national consciousness, fostering a sense of dignity, and affirming Ukrainian identity.

The problem of military-patriotic education of the younger generation has been reflected in the works of modern scientists. Among them:

- V. Shevchenko's dissertation research "Psychological features of military-patriotic education of students of senior adolescence and youth", which substantiates the motivational structure of students' participation in military-patriotic events, presents readiness for military-patriotic education in five aspects; practical recommendations are provided for improving the training of future teachers for pre-prescription training [1];
- dissertation research by R. Prots "Ethno-pedagogical principles of military-patriotic education of youth by means of physical culture and sports", which substantiates and experimentally tests organizational and pedagogical conditions that, based on an ethno-pedagogical approach, contribute to the introduction of the experience of Cossack pedagogy into the system of military-patriotic education: mastering the ideological and mental basis and elements of the martial arts of Ukraine in the process of pre-prescription training as the final stage of military-patriotic education in a general secondary education institution [2];

– M. Kovba's dissertation research "Military-patriotic education of high school students in the education system of Ukraine (first quarter of the 21st century)" reveals the theoretical and methodological principles of military-patriotic education of high school students. The study showed that its main prerequisites were political (conditions for the development of education, the formation of national consciousness, new conceptual approaches, the readiness of young people to defend the Motherland), economic (financing of programs), organizational (complications of program implementation, adaptation of educational programs to training for service in the Armed Forces of Ukraine and other law enforcement agencies) and socio-cultural (revival of national culture and historical memory, the influence of globalization and information technologies, the use of innovations to popularize military-patriotic values) [3]. M. Kovba highlights promising trends in modern military-patriotic education of youth: a strategic approach as a guarantee of efficiency, taking into account security challenges, integration of patriotic education into the educational process of general and specialized schools, combining theoretical knowledge and practical skills. Particular attention is paid to the introduction of innovative technologies and media resources that provide access to information and contribute to the formation of patriotic values, in particular through digital tools: online lessons, video lessons, webinars, online games and virtual excursions [3];

– scientific publication by V. Shynkarenko "Military-patriotic education of high school students in general secondary education institutions", which specifies the purpose of the work of general secondary education institutions on military-patriotic education; it has been found that for the effective organization of military-patriotic education, it is first necessary to create an information base, on which all further work will be built; It has been proven that cooperation with various institutions and museums plays a major role in organizing military-patriotic work, and the content of such work allows us to reveal the causes of the most important historical events, analyze the grandiose scale of major battles, the creative ideas of our hetmans, and depict the images of heroes and their exploits [4];

– the article by T. Tsypan "Military-patriotic education of schoolchildren under martial law" identifies factors that influence the formation of readiness for the defense of Ukraine in schoolchildren: individual-psychological, psychological-pedagogical, socio-pedagogical; forms of military-patriotic education of schoolchildren in extracurricular educational work of a general secondary education institution are thoroughly characterized, among which practice-oriented ones occupy a prominent place. The educational potential of children's and youth military-sports, military-patriotic games is revealed, including: "Defender of Ukraine", "Patriot", "Sokil" ("Jura") [5];

– V. Ragozina's publication "Military-patriotic education of students and youth: organization of an all-Ukrainian survey" covers a survey of high school students and teachers of general secondary education institutions on the problem of military-patriotic education, implemented at the all-Ukrainian level in the period from October to November 2023, the purpose of which is to identify the state of military-patriotic education in the GSEI, in particular, by determining the readiness of teachers to implement modern concepts of military-patriotic education in the conditions of the educational process, as well as taking into account the requests of high school students themselves in this process [6];

– K. Zhurba's article "Military-patriotic education of high school students under war conditions" highlights the results of an experimental study on identifying the attitude of high school students to military-patriotic education, involvement in military-patriotic activities, motivation, desire to serve in the Armed Forces

of Ukraine, competencies that could be needed during service in the army, etc. The study allowed us to identify trends, problems, and prospects in the military-patriotic education of high school students. [7];

- T. Skyrda's scientific publication "Military-patriotic education under martial law: challenges of Ukrainian education" substantiates the factors and challenges for organizing education under martial law (security, psychological, organizational, resource, digital). The practical direction is shown: safety of life, basics of survival, first aid, game and modeling exercises with elements of evacuation and orientation. It is highlighted that modern military-patriotic education requires integration into the educational process, flexibility, a combination of training and systematic educational work with adaptation to mixed forms of education and the creation of a safe environment [8];

- methodical recommendations "Forms and methods of creating students' readiness to defend the Motherland" (M. Zubaly, O. Ostapenko, M. Tymchuk), which reveal the main forms and methods, their essential classifications and conditions for increasing the effectiveness of military-patriotic activity to form high school students' readiness for military service in difficult conditions. The scientists have developed practical recommendations for improving military-patriotic activity to form pre-conscription youth's readiness to defend the Motherland [9];

- methodical manual by B. Shapovalov and Z. Dikhtyarenko "Methodical tools for forming high school students' readiness to defend Ukraine", where the authors substantiate the need to introduce new approaches to a complex pedagogical process – the formation of high school students' readiness to defend the Motherland in the context of the provisions of the "New Ukrainian School" reform. The scientists have identified, theoretically substantiated, and tested the pedagogical conditions for forming high school students' readiness for military service and defense of the Motherland, and have considered the role and place of military-patriotic and sports games in the process of forming high school students' readiness for defense of the Motherland [10];

- educational and methodical manual "Military-patriotic education of students under conditions of ideological and worldview confrontation" (O. Ostapenko, K. Zhurba, M. Zubaly, I. Kuzora, M. Tymchuk, N. Kasych, D. Binetsky) contains clarification of the essence of the concept of "military-patriotic education of high school students under conditions of ideological and worldview confrontation", definition of criteria for military-patriotic education of high school students under conditions of ideological and worldview confrontation with corresponding indicators; clarification of the state of military-patriotic education of high school students in conditions of ideological and worldview confrontation; methods of military-patriotic education of younger and older adolescents in the process of physical health-improving activity and mass physical education work and outlines the effectiveness of military-patriotic education of younger and older adolescents in the process of physical health-improving and mass physical education work [11].

The educational-methodical manual "Organizational and Pedagogical Conditions and Technologies for Ensuring the Unity of Physical and Military-Patriotic Education of Students in General Secondary Education Institutions" is thorough in the context of military-patriotic education, which reveals the theoretical and methodical principles of military-patriotic education of students of secondary education institutions; highlights the state of military-patriotic education of high school students; the experience of military-patriotic education of schoolchildren in foreign practice; theoretical aspects of the unity of physical and military-patriotic education of students of secondary education institutions. The organizational and pedagogical conditions for ensuring the unity of physical and military-patriotic education of high school students

by means of physical culture and health-improving activities are determined and theoretically substantiated; pedagogical innovations in ensuring the unity of physical and military-patriotic education of students are highlighted; technologies for ensuring the unity of physical and military-patriotic education of high school students in the process of applied physical training are clarified [12].

At the present stage, a legal basis for the system of military-patriotic education has been formed. The Laws of Ukraine "On the Basic Principles of State Policy in the Sphere of Strengthening Ukrainian National and Civic Identity" (2022), "On the Fundamentals of National Resistance" (2022), and the Military Security Strategy of Ukraine (approved by Decree of the President of Ukraine dated March 25, 2021 No. 121) update the need to increase the level of Ukraine's defense capability, unite Ukrainian society, provide military-patriotic education of citizens, provide the defense of the state with a national character, and prepare the country's population to defend the state [13].

The Law of Ukraine "On the Fundamentals of National Resistance" (as amended on March 31, 2023) - legalizes the legal and organizational principles of national resistance, determines the foundations of its preparation and conduct; regulates the tasks and powers of the security forces and defense forces, as well as other entities related to the preparation and conduct of national resistance; defines the foundations of building a resistance movement and the readiness of Ukrainian citizens for national resistance [14].

The Military Security Strategy of Ukraine (approved by the Decree of the President of Ukraine "On the Decision of the National Security and Defense Council of Ukraine "On the Military Security Strategy of Ukraine" dated March 25, 2021 No. 121) is a doctrinal document that: defines the concept of comprehensive defense of Ukraine to ensure the sovereignty and territorial integrity of the state in accordance with the Constitution of Ukraine and within the state border of Ukraine; promotes Ukraine's integration into the Euro-Atlantic security space and acquisition of NATO membership; outlines the priorities and objectives of implementing state policy in the military sphere, defense and military construction; establishes the principles of transforming the defense forces [15].

The concept of national-patriotic education in the education system of Ukraine (Order of the Ministry of Education and Science of Ukraine dated June 6, 2022 No. 527) emphasizes that military-patriotic education should form a readiness to defend Ukraine in the younger generation; the development of the desire to acquire military professions, to serve in the Armed Forces of Ukraine as a special type of civil service. Its content is determined by the national interests of Ukraine and is designed to ensure the active participation of citizens in preserving its security from external threats. The systemic organization of military-patriotic education should be aimed at the formation of psychological, physical and moral-spiritual readiness for service in the Armed Forces of Ukraine [16].

As the authors of the methodical recommendations "Methodical toolkit for ensuring the unity of physical and military-patriotic education of students of secondary education institutions" state, the period of martial law and post-war reconstruction of Ukraine is characterized by a number of short- and medium-term challenges, such as:

- institutional (ensuring the ability of government bodies and the education system to implement policies to overcome the consequences of the war with limited resources; key tasks: performing defense functions, developing security infrastructure, forming defense awareness and competencies in children and youth);

- infrastructural due to the fact that Russia's military aggression against Ukraine caused the largest humanitarian crisis in Europe since World War II, forcing millions of Ukrainians to become internally displaced persons or refugees;
- socio-cultural (loss of access to housing, medical facilities and basic needs, which increases the risks of social conflicts; strategic tasks: stimulating the return of refugees, creating digital educational platforms, ensuring national and military-patriotic education);
- educational related to the specifics of Russian aggression and the militarization of youth in the occupied territories; tasks: forming competencies in the field of security, skills of behavior in combat and emergency situations, preparation for actions in the deoccupied territories [17].

The challenge is to form a state cultural policy aimed at de-russification and elimination of the consequences of the colonial past, with an emphasis on honoring the heroes of the struggle for independence and modern heroes of the Russian-Ukrainian war. It is necessary to restore the historical memory of the Ukrainian people and rethink historical experience. Due to Ukraine's long stay in different empires, cultural interpenetration has arisen, which complicates the determination of authenticity. At the level of education and culture, the remythologizing of iconic historical figures and the reinterpretation of cultural heritage are important to support state-building processes [17]

T. Skyrda identified key challenges for Ukrainian education in wartime that affect military-patriotic education: violation of the security function of schools due to shelling and destruction; massive internal displacement of the population, which creates unevenness of human resources and educational opportunities; differences in the life experience of education seekers, which requires individualization and a flexible approach; increased psychological vulnerability of children and teachers, which requires systematic emotional support; distribution of digital content with the risk of disinformation and propaganda [8].

According to S. Lazorenko, military-patriotic education is "the process of implementing the formation of citizens' readiness to defend their country, promoting and improving the defense and security of Ukraine, increasing the prestige of military and civil service in the structural ranks of the Armed Forces of Ukraine.

Military-patriotic education is a systematic activity of state authorities, public organizations, aimed at developing in the future young and educated generation their own patriotic views, loyalty to their state, and always being ready to fulfill constitutional and public duties to protect state sovereignty and national interests of their country. Such education serves as a key component of the educational process of growing youth and forms the personal traits of a spiritual and cultural citizen of Ukraine" [18].

P. Onyshchuk understands military-patriotic education as the process of developing a clear idea in an individual about the patterns of development of patriotic ideas, understanding the role of historical knowledge about one's country, about one's people, its traditions and customs, developing stable patriotic beliefs and the ability to defend them in real life conditions [19].

The activity of an individual aimed at ensuring high military power, state security is a highly conscious activity of a person who, with the help of any military means, active socially significant activity, contributes to the growth of the state's defense capability, its military power [20].

Researchers O. Ostapenko and M. Tymchyk define military-patriotic education of students under conditions of ideological and worldview confrontation as a system of methodological approaches, pedagogical

goals, methods, forms, techniques and ways, the implementation of which protects the individual from the influence of an aggressive information environment and ensures the formation of high patriotic consciousness in young people, a sense of loyalty, love for the Motherland, readiness to defend Ukraine with weapons in their hands; motivation to acquire military professions and serve in the Armed Forces of Ukraine [21].

According to K. Zhurba, "military-patriotic education is an integrated educational process aimed at forming in young people a conscious attitude towards the defense of their state, defense consciousness, love for the Motherland, relevant competencies and readiness to act in the interests of society and the nation, increasing the prestige of military service. Modern military-patriotic education of high school students is based on such values as patriotism, dignity, responsibility, optimism, moral stability" [22].

The Law of Ukraine "On the Basic Principles of State Policy in the Sphere of Establishing Ukrainian and Civic Identity" defines military-patriotic education as a comprehensive educational process aimed at forming in citizens of Ukraine a defense consciousness, readiness for national resistance, increasing the social significance and respect for military service, and motivating citizens to acquire the necessary competencies in the sphere of security and defense [23].

The purpose of military-patriotic education of children and youth is to foster a sense of selfless love for the Ukrainian people and state, to form a defense consciousness, readiness for national resistance, and to motivate them to acquire the necessary competencies in the field of security and defense through the purposeful activities of educational institutions, public associations, the family, state and local government bodies, and law enforcement agencies. Readiness to defend Ukraine is a value-motivational, conscious, and operational-practical readiness of an individual for military-patriotic activity. The formation of defense consciousness as a leading element in the structure of an individual is impossible without the formation of a national cultural and spiritual identity, the preservation and protection of the spiritual and moral values of the Ukrainian people, its sovereignty, and the territorial integrity of Ukraine [13].

A seeker of education becomes an active defender of his/her country primarily due to internal motivation, and not only external training, through conscious military-patriotic education and acquisition of military-applied skills in practical activities. Such activities reflect the internal position of the individual, promote self-education and self-development, awaken patriotic feelings, cognitive interest in military affairs and form appropriate relationships. In the educational process, methods of practical involvement activate volitional efforts, accumulate experience of patriotic behavior, especially in extreme conditions, which sometimes require physical and moral sacrifice or self-sacrifice. Military-patriotic activities should receive public recognition, motivate for service, increase the prestige of military professions and stimulate the mastery of military-applied skills [24].

The system of military-patriotic education should contribute to the implementation of the dominant social goal - strengthening the country's defense capability, which is expressed in the formation of a set of high moral-psychological, heroic-moral, worldview, physical and military-professional qualities necessary for the fulfillment of patriotic duty. The basis of values, on which military service is based are: military and civil duty, military professionalism, moral and volitional stability and readiness [25]

The Concept of national-patriotic education in the education system of Ukraine (2022) states that educational institutions should contribute to "ensuring the young generation of developed patriotic

consciousness and responsibility, a sense of loyalty, love for the Motherland, respect for the national, historical, cultural and spiritual values of the Ukrainian people, its historical and cultural heritage and traditions, the state language and state symbols of Ukraine, concern for the common good, nature, preservation and respect for national memory, and the formation of an active civic position" [16].

Researchers I. Bekh, L. Kanishevska, R. Malynoshevsky are convinced that a systematic approach to military-patriotic education "ensures the integrity and integration of educational and educational processes, educational influences and self-development of the individual throughout life; makes it possible to coherently combine the professional efforts of all subjects of military-patriotic education" [26].

The Law of Ukraine "On the Basic Principles of State Policy in the Sphere of Strengthening Ukrainian and Civic Identity" (as amended on 13.12.2022) defines the directions of military-patriotic education of youth:

- 1) formation of defense consciousness;
- 2) popularization of military service;
- 3) involvement of citizens in promoting the security and defense of Ukraine;
- 4) development of military-applied and service-applied sports, technical creativity and innovations;
- 5) broad involvement of schoolchildren in national, regional and local military-patriotic education events;
- 6) mandatory teaching of the subject "Defense of Ukraine" during specialized secondary education;
- 7) training of qualified personnel potential from among war veterans, persons with special merits to the Motherland, participants of the Revolution of Dignity with their subsequent involvement in the organization and implementation of educational activities on initial military training, implementation of programs, projects and events of military-patriotic education;
- 8) involvement of war veterans, persons with special merits to the Motherland, participants of the Revolution of Dignity in the organization and implementation of programs, projects and events of military-patriotic education [23].

According to the Decree of the President of Ukraine "On the Concept of Pre-Conscription Training and Military-Patriotic Education of Youth", military-patriotic education should be carried out in the following areas:

- study of the history of the Ukrainian army (the purpose, organizational structure, armament and tactics of conducting combat operations are considered);
- familiarization with the legislation on military issues (the Constitution of Ukraine, the laws of Ukraine "On the Defense of Ukraine", "On the Armed Forces of Ukraine", "On General Military Duty and Military Service" and "On Mobilization Training and Mobilization");
- familiarization with the structure and tasks of the Armed Forces of Ukraine and other military formations (types of the Armed Forces of Ukraine, directions of their reform and development, main types of weapons and military equipment, professions used in the troops);
- studying the basics of Civil Defense of Ukraine (methods and means of protecting the population from the consequences of accidents, catastrophes, natural disasters and modern means of destruction, the damaging effects of the main dangerous chemicals used in industry and agriculture, the procedure for notifying the population about civil defense measures, the basics of rescue and other emergency work during the elimination of the consequences of accidents, catastrophes, natural disasters);

- acquiring practical skills in the basics of military affairs, including fire, tactical, applied physical and medical and sanitary training;
- psychological training is aimed at forming in a young person psychological readiness for activities as part of a military team in conditions of military service, as well as for actions in extreme situations [27].

The key methods of educating patriotism include:

1. Spiritual identification. A growing personality, joining his/her people both historically and in its present, must not only verify his/her values, but also adopt those that are inherent in him/her and on which he/she relies in his/her highly significant activity and struggle.

2. A historical figure or his/her contemporary. For a personality that is only growing in his/her patriotic direction, a certain person who significantly exceeds him/her in his/her spiritual power is of significant importance. Such a person can be a historical figure or his/her contemporary. The content of the assimilation should be the patriotic action of the growing personality and the patriotic actions of the indicated figures. Having passed the stage of spiritual identification, a personality that is growing patriotically is able to carry out his/her own objective self-assessment.

3. Involving the growing individual in common patriotically oriented affairs with their peers. As a result, they will develop a collective experience of a deep degree of participation in human aspirations and their realization.

4. In the upbringing of patriotism, not only its situational manifestation is important, but also the constant life of the individual in it, which is the greatest meaning. For this, it is necessary to practice spiritual reflection, during which the individual is able to carry out critical work on his/her own motives and actions, to formulate an individual patriotic trajectory [13].

1.2 MONITORING THE EFFECTIVENESS OF MILITARY-PATRIOTIC EDUCATION OF HIGH SCHOOL STUDENTS IN SECONDARY EDUCATION INSTITUTIONS

Unprecedented challenges caused by the large-scale war of the Russian Federation against Ukraine, which has been ongoing since 2022, have led to a fundamental change in the security and social priorities of the state. This determines the need for a systemic transformation of the educational paradigm. The need to adapt the content, forms and methods of pedagogical activity to the changing external and internal environment makes the implementation of regular monitoring of military-patriotic education of students in secondary education institutions relevant.

28,464 high school students and 21,665 teachers of secondary education institutions in Ukraine participated in the all-Ukrainian survey. The empirical stage of the study was based on the questionnaire method using differentiated packages of standardized questions for the student and pedagogical community. The use of digital tools (cloud services) ensured the efficiency of data collection, convenience for respondents and automation of analytical processing of results by the expert group.

The diagnostic toolkit was developed to identify systemic contradictions in the content and organizational structures of military-patriotic education of high school students. Such an analytical approach is aimed

at creating a fundamental basis for implementing operational and constructive transformations in the field of national security and education in the shortest possible time. It is expected that the verified data will become a conceptual basis for: modernizing the content of military-patriotic education of high school students; designing adaptive forms and methods of working with students in conditions of prolonged martial law; bringing educational practice into line with current regulatory legal acts and state educational strategies.

To determine the level of reflection of high school students on the role of historical memory in state-building processes, an empirical study was conducted. The respondents were asked to assess the degree of influence of knowledge about Ukraine's past on its current and future subjectivity.

The results of the statistical analysis showed the following:

- 49.7% of the respondents demonstrate a formed national identity, considering knowledge of history as a fundamental factor in the development of a sovereign state;
- 42.3% of the respondents showed a tendency to a subjective approach, where the significance of historical heritage is determined by the individual needs of the individual;
- 8.0% of the students were identified as a group with a low level of awareness of historical continuity, which considers the past irrelevant to the current challenges of the present.

Despite the fact that almost half of the respondents (according to preliminary data) determine the importance of historical continuity for the development of the state, a significant segment of the sample (42.3%) demonstrates an insufficient level of interest in the events of the historical past of Ukraine. This fact is worrying, since the formation of an active civic position and national identity is determined by deep knowledge and critical understanding of historically verified facts. The results of the all-Ukrainian survey show:

- 24.7% of the high school students are interested in the events of the historical past of our country and need to satisfy their research requests. This highlights the need to develop innovative formats for presenting information (in particular, through digital projects and immersive technologies) in classroom and extracurricular activities;
- 28.3% of the respondents are focused on current events and show emotional experience of current challenges (full-scale war, social changes);
- 47% of the high school students show only partial interest in the historical past.

The obtained data indicate the need for differentiation of pedagogical approaches. For effective military-patriotic education, teachers should use hybrid educational models that would combine current events of the present with deep historical content, involving digital tools to increase student motivation.

A comprehensive analysis of empirical data allows us to state the presence of certain risks in the field of patriotic education of high school students. In particular, 47.0% of the respondents show only limited (fragmentary) interest in the historical past of Ukraine, and 42.4% of those surveyed take an individualistic position, considering the study of historical heritage as an optional personal choice. Such indicators are a critical signal for the pedagogical community, as they demonstrate an insufficient level of awareness by young people of the cause-and-effect relationships between the historical past, current challenges of the present, and the prospective development of Ukrainian statehood. It is important to convey to high school students that being members of the class, community, and society they are also involved in and responsible for decisions made by society [28].

An urgent need is to intensify the cognitive activity of high school students by introducing interactive educational technologies into the process of studying humanitarian disciplines. Systematic understanding of educational material, development of skills in conducting historical parallels, and independent formulation of conclusions will contribute to the formation of a statesmanlike position of young people. Such an approach will ensure that future generations make responsible decisions aimed at strengthening national subjectivity.

When asked about the plans of high school students, the following data were obtained:

- the majority of the respondents (60.3%) demonstrate a high level of patriotic consciousness and civic responsibility, planning to connect their lives with the future of Ukraine;
 - 12.0% of the respondents are focused on self-realization outside the country, showing a desire to build a life trajectory in a foreign environment;
 - 27.7% of the respondents associate their final decision with the security situation in the country.
- The choice of this group of respondents is directly determined by the risks and impacts caused by military aggression against Ukraine.

The results of the study indicate the dominance of statist orientations among modern youth: the majority of the respondents associate their own life trajectory with Ukraine, demonstrating a willingness to actively participate in the processes of post-war reconstruction and direct their own potential to build the national economy and culture.

To verify the content of the "patriotism" concept and determine the levels of readiness for active civic action, the respondents were asked to differentiate the main forms of its manifestation. Empirical data indicate the dominance of the activity approach in the assessments of high school students. The vast majority of the students (79.9%) identify patriotism with direct service in the ranks of the Armed Forces of Ukraine and/or volunteer activity. In addition, a significant part of the sample notes the importance of socio-cultural markers: participation in state-oriented events (62.8%), as well as the visualization of national identity through the popularization of Ukrainian traditions and national clothing (50.6%). Thus, in the minds of modern schoolchildren, patriotism has transformed from an abstract category into an effective strategy of behavior, where priority is given to a practical contribution to the defense capability and development of the state.

An important aspect of the study was the analysis of the level of self-preparation of high school students for future military service and civil defense. The generalization of the study results allowed us to identify the following trends:

1. High level of motivation (40.3%): the respondents in this group demonstrate purposeful physical training, which includes regular sports, mastering self-defense skills and first aid.
2. Low intensity (34.5%) - a significant part of the students is limited to maintaining basic physical fitness (exercise, walks), which does not meet the requirements of preparation for extreme conditions.
3. Lack of physical training (25.2%) of the respondents who do not show activity in this area.

According to the results of the study, only 14% of the surveyed high school students regularly engage in sports and military training in clubs; 23.5% do it rarely, and 62.5% of the students do not attend such clubs.

These indicators demonstrate insufficient physical training of high school students who in the future must defend Ukraine and demonstrate strength, force, and endurance. The empirical data obtained determine the need to implement systematic measures to intensify the physical training of high school students as the future personnel reserve of the Defense Forces of Ukraine.

A separate aspect of the study was the level of involvement of schoolchildren in nationwide initiatives of a military-patriotic orientation, in particular the All-Ukrainian children's and youth military-patriotic game "Sokil" ("Jura"). The results of the study indicate that the intensity of the implementation of this direction of educational work remains representatively low, which requires the search for mechanisms for motivation and popularization of such events among high school students.

The empirical study revealed a critically low level of participation of high school students in the game "Sokil" ("Jura"). According to the data obtained, only 9.9% of the respondents took systematic part in such initiatives, 17.1% – participated episodically, while the vast majority of the respondents (73%) have never participated in this game.

The identified trend highlights the need to intensify pedagogical efforts in the direction of popularizing patriotic education. The priority task is to form the motivational readiness of young people for active self-realization through the use of the method of positive example. Focusing attention on the life paths of outstanding Ukrainian military and athletes, whose formation took place within the framework of such games, will contribute to the formation of ideals for imitation in students. In modern conditions, the educational process should be based on the transmission of patriotic actions of both adults and peers, which is critically important for the formation of value orientations of a growing personality.

Empirical data from the all-Ukrainian survey indicate a high level of involvement of high school students in practical patriotic activities. Thus, the vast majority of the respondents (70.3%) together with adults – parents, relatives, friends – donate to the Armed Forces of Ukraine.

In addition to direct material assistance, 39.7% of the respondents identify themselves as active subjects of the volunteer movement, participating in charity activities, fairs and art events. The indicator of social inertia remains minimal: only 17.5% of students demonstrate a neutral position regarding support for the Armed Forces of Ukraine. The identified trend indicates the prevalence of effective patriotism among students. This highlights the need for institutional support for student initiatives and strengthening motivation through the popularization of reference examples of civic solidarity.

The results of the survey of the respondents confirm the objective need to transform the forms and methods of military-patriotic education of high school students. The analysis of student requests indicates the priority of practice-oriented and technological approaches in teaching the academic discipline "Defense of Ukraine".

Among the most relevant forms of training, the high school students highlight:

1. Intensification of field training: 56.1% of the respondents consider short-term training in field conditions to be the most effective.
 2. Updating of home medical care: 52.1% of the respondents emphasize the importance of studying tactical medicine algorithms.
 3. Gamification and digitalization: more than half of the students (51.6%) advocate the introduction of military-patriotic games and quests, in particular in digital format.
-

4. Use of immersive technologies: 44.5% of the students emphasize the appropriateness of using augmented and virtual reality tools (VR/AR - helmets, glasses, etc.).

5. Technological design: 42.2% of the high school students are interested in implementing engineering and technical projects, in particular in designing UAVs.

These results determine the transition to a hybrid model of education, combining real military training with a high-tech educational solution.

Empirical data from the all-Ukrainian survey indicate that secondary education institutions systematically implement military-patriotic events. Thus, 20.6% of the respondents confirm that they are held weekly, and 35.8% – monthly.

However, despite the existing periodicity, 43.5% of the surveyed students express the need to increase the frequency and intensity of these activities. This indicates a pressing demand from young people to strengthen the patriotic component in the educational process.

Despite the regularity of educational events, the level of systematic participation of students remains low. Empirical data indicate that only 12.3% of the respondents take an active part in patriotic events. The vast majority of the sample – 63% – shows selective (situational) interest, joining activities only if personal desire and availability of free time coincide. At the same time, 24.7% of the respondents demonstrate a steady reorientation of interests to activities of a different thematic direction. Such differentiation indicates the need to modernize the content of educational work to increase its attractiveness and relevance to the needs of modern youth.

The current direction of further research is the verification of factors that determine the low motivational attractiveness of military-patriotic activities for schoolchildren. Hypothetically, the determinants of the insufficient level of high school students' involvement are: high cognitive load during the period of preparation for the NMT and the introductory company, as well as the inconsistency of traditional (reproductive) formats of educational work with the psychological needs and technological expectations of representatives of the modern digital generation.

A separate diagnostic block of the study was aimed at verifying the ideas of high school students about the educational potential of national art. The survey tools allowed us to determine the level of students' understanding of the uniqueness of artistic influence on the formation of patriotic consciousness, as well as the degree of their awareness and involvement in ethnocultural practices.

The results of the quantitative analysis showed the differentiation of the respondents' views:

- 44.7% of the students recognize the high effectiveness of Ukrainian art as a powerful tool for the formation of patriotic feelings;

- 46.6% of the surveyed high school students are inclined to the traditional model of perception, considering the disciplines of the humanitarian cycle, in particular the Ukrainian language, literature and history of Ukraine, as priorities in the educational aspect. The revealed trend indicates the need to strengthen the integration of the artistic component into the general system of patriotic education to actualize the emotional and value perception of national culture.

Empirical data show that for 8.7% of the respondents, the recreational function of art remains a priority, perceived purely as a means of organizing leisure. Despite the objective significance of restoring the role

of art, its ideological and educational potential is being actualized in modern conditions. Art appears as a powerful tool for forming civic consciousness and the emotional and value sphere of the individual, which is confirmed by a retrospective analysis of state-building processes.

Thus, teachers should focus on the axiological role of national culture in the educational process. It is necessary to use representative historical and modern examples that demonstrate the ability of art to consolidate society and act as a factor of national security in the information space.

Given the axiological significance of the artistic component in the system of military-patriotic education, a monitoring of high school students' awareness of Ukrainian cultural figures was conducted. The respondents were asked to identify 3-5 figures of Ukrainian art from different historical periods.

The results of the quantitative analysis demonstrated the sectoral asymmetry of knowledge:

1. Dominance of media content: the highest level was recorded in the field of musical art (58.3%) and cinema (35.1%), which correlates with the intensive consumption of digital mass products.

2. Lack of interest in classical forms: only 23.4% of the surveyed high school students identified representatives of fine and decorative and applied arts.

3. Cognitive gap: the critical indicator is 22.8% of the respondents who stated ignorance in the field of art.

The identified trend indicates the alienation of a significant part of young people from the national cultural code, which determines the need to modernize educational strategies by involving digital projects to popularize classical heritage.

For designing relevant forms of educational activities, it is fundamentally important to determine the dominant interests of high school students in the artistic segment. For this purpose, the respondents were asked to identify the most attractive artistic locations for them. The survey procedure provided for the possibility of multiple choice options, which allowed obtaining a valid idea of the polymodality of cultural requests of modern youth.

During the survey, key requests of students for formats of artistic activity were identified. A high level of interest in visual content was revealed: watching patriotic films and cartoons (70.1% of the respondents), as well as exhibition activities (exhibitions of fine arts) – 38.5% of the surveyed high school students.

The data obtained confirm the effectiveness of the indicated types of art as tools for the formation of the military-patriotic component of the personality. This determines the need to integrate these formats into the system of educational influences, especially given the growth in the quality and volume of the modern Ukrainian cultural product.

Motivational factors for high school students are research forms of work: patriotic quests and search expeditions (74.9%); meetings with artists and master classes (36.2%); competitive events (song/dance flash mobs) (28%). This indicates the dominance of the demand for praxeological and research activities among young people, which stimulates critical thinking, fact-finding, information analysis and generation of their own creative solutions.

The stated priority of visual and performative arts (cinema, music, choreography) determines the strategy for developing educational influences on high school students. Optimization of military-patriotic education should be based on the integration of modern high-quality Ukrainian content, the volume of which has significantly increased, which allows ensuring the relevance and emotional richness of the educational process.

Given the artistic experience laid down at the previous stages of school education, special attention was paid to identifying the level of creative self-realization of students. Using the question: "In which patriotic events would you be happy to participate?", potential vectors of activity of the respondents as subjects of creativity were determined. The respondents' answers show the forms of activity chosen by them that correspond to the artistic preferences of modern high school students. Empirical data indicate the priority of interactive and heuristic work formats in the structure of high school students' preferences. The highest level of motivation (74.9%) was recorded for patriotic quests and expeditionary and search activities. The following methods of direct interaction with bearers of cultural experience (master classes, meetings with artists – 36.2% of the respondents) and performance practices (flash mobs, competitions – 28% of surveyed high school students) have a significant stimulating effect.

The demand of students for research and analytical activities based on verification of facts and independent information intelligence has been noted.

The generalization of the research results allows us to state the dominance of the demand of high school students for interactive and praxeological forms of artistic activity. Quests and search expeditions have been identified as priority forms of realizing creative potential. This trend is due to the actualization of the need for intensive interpersonal interaction (as a compensatory mechanism after long periods of distance learning), as well as the desire for active self-presentation in the process of personal formation.

The analysis of the obtained results was carried out according to the following key vectors:

1. Worldview-semantic vector: the degree of understanding by high school students of historical continuity and the significance of past experience as a foundation for establishing the state independence of Ukraine.
2. Strategic-orientational vector: the focus of young people on designing the future within the national space and their willingness to directly engage in the processes of post-war reconstruction of the country.
3. Instrumental-semantic vector: the level of responsibility of educational methods in educational institutions to the requirements of the time and the expectations of "digital natives" who require modern communication formats.
4. Activity-result vector: the formation of an internal attitude to protect the Motherland, which is based on a responsible attitude to military service and critical self-control of one's functional and moral-volitional readiness.

1.3 METHODOLOGICAL PRINCIPLES FOR THE IMPLEMENTATION OF DIGITAL TOOLS FOR MILITARY-PATRIOTIC ORIENTATION

The methodological aspect of using digital tools of military-patriotic orientation involves a clear structuring of the educational process, determining the goals, principles, forms and methods of digital interaction with students. Modern digital technologies open up wide opportunities for the integration of physical and military-patriotic education. In particular, the use of virtual simulations, VR simulators and mobile applications allows you to create realistic scenarios and provide an individual approach to learning.

The latest digital tools allow you to: visualize complex concepts (for example, the structure of weapons, topography of the terrain); create imitation simulators for training in conditions close to combat; keep track of the results of physical and tactical training; monitor the progress of each student; promote the individualization of the educational process; form team skills in a virtual environment (through gamification, simulations, VR, etc.).

TYPES OF DIGITAL TECHNOLOGIES USED

1. *Online platforms and mobile applications.* We will provide a selection of Ukrainian-language digital platforms and resources that contribute to the integration of physical and military-patriotic education of high school students in the process of applied physical training.

National educational platforms and resources. "Kraina Mriy" (kraina-mriy.com) is an educational platform created in accordance with the model program of the integrated course "Defense of Ukraine" for grades 10-11. Contains theoretical and practical materials aimed at preparing high school students for the challenges of the modern world.

"Yablunia" (<https://jablunia.org/>) is an information platform for basic military training. It contains theoretical materials on the main topics of military affairs, as well as useful links and lists of training centers and courses (Chernihiv Lyceum of IMPT).

Prometheus (<https://prometheus.org.ua/>) is a Ukrainian free online education platform that offers courses in various areas, including national-patriotic education and civic education.

"Zrozumylo" (<https://loda.gov.ua/news/91378>) is an online educational platform that presented the course "United Ukraine: Formation of National Identity", aimed at the formation of Ukrainian national and civic identity, deepening knowledge of the modern history of Ukraine and the development of volunteer movements.

Resources for teachers and educators:

Catalog of advanced training courses in the field of "Defense of Ukraine" (<https://iteacher.com.ua/category/zahist-ukraini/>) is a platform that offers courses for teachers, in particular on the basics of civil defense, innovative methods of work in the classroom and the formation of courage, fortitude, and agility in students.

Vyhovatel (<https://vyhovatel.com.ua/category/11>) is a resource that offers distance learning courses for educators on the topic of patriotic education, including innovative methods in the lessons of "Defense of the Motherland", safety of the educational process and provision of first aid.

Additional resources and materials:

Institute for Modernization of Educational Content of the Ministry of Education of Ukraine (<https://imzo.gov.ua/>) – the site presents educational programs for the groups "Young Scouts", "Cossack-Knightly Gart", "Cossack-Knightly Education – "Jura"", "Sokil-Jura" and other materials that contribute to military-patriotic education.

The website "New Ukrainian School" (<https://nus.org.ua/2022/07/11/yak-organizuvaty-patriotychne-vyhovannya-30-idej-porad-i-resursiv/>) is an article that contains 30 ideas, tips and resources for organizing patriotic education, including the use of digital technologies and interactive teaching methods.

2. *VR and AR technologies in military-patriotic education.* Realistic simulation of combat situations using VR (virtual reality) and AR (augmented reality) helps GSEI students better understand military tactics, practice algorithms for actions in dangerous situations and adapt to extreme conditions: evacuation, response to shelling, camouflage, orientation at night, etc. In particular, the use of VR technologies during applied physical training classes allows the implementation of combat tactics models.

Virtual simulations allow you to simulate various situations related to military training and physical exertion. For example, the Virtual Battlespace platform (<https://bisimulations.com/products/vbs3>) provides the opportunity to create realistic combat scenarios for training. The use of such simulations contributes to the development of tactical thinking and decision-making skills in conditions close to real ones.

VR simulators provide immersion of students in a virtual environment where they can practice various skills without risk to health. For example, the Parachute Training Simulator (<https://www.virteasy.com/parachute-training-simulator>) allows you to simulate parachute jumps, which is an important element of military training.

Examples of effective use of VR in military training:

- **Virtual Battlespace 3 (VBS3)** (<https://bisimulations.com/tools/vbs3/>) is used to simulate realistic combat scenarios. "Virtual Battlespace" is a virtual reality simulator from Bohemia Interactive Simulations. It is used for training the US Army and the armed forces of NATO member states;

- **Warrior VR Training** (<https://andrewstewartgames.com/2020/01/09/warrior-training/>) is a tactical military operations simulator that allows you to practice combat, survival, and team interaction skills;

- **AR Military Training** (<https://yordstudio.com/how-ai-and-xr-are-redefining-military-training/>) is an integration of augmented reality for training military skills, tactical thinking, and terrain orientation;

- **Parachute Training Simulator by Virteasy** (<https://parasim.com/>) – a simulator that imitates parachute jumps, important for training for real conditions. A well-thought-out jump or emergency exit, PARASIM® is a safe, cost-effective way for paratroopers to hone their skills and plan their mission before taking to the air.

The use of these technologies in the GSEI helps to physically develop students, preparing them for complex tasks in real life.

3. *Digital simulators and mobile applications.* Modern technologies allow the use of computer simulators for military-patriotic education and physical training. Such programs can simulate real combat conditions, natural environments or sports training.

Here are some of the most popular digital resources:

- **Squad** (squadgame.com) – a tactical military simulator that develops strategic thinking and team interaction;

- **C25K (Couch to 5K)** (c25kfree.com) – a mobile application for training for races, which helps to improve endurance and physical condition;

- **Combat Fitness Test** (usmcfittestest.com) – a military physical fitness test, which assesses endurance, speed and strength.

The use of digital tools in training contributes to better assimilation of the material and increases the level of involvement of students in ensuring the unity of physical and military-patriotic education in the process of applied physical training.

Mobile applications also play an important role in the modern educational process. The application "Couch to 5K" (<https://www.c25kfree.com/>) helps users gradually prepare for a 5-kilometer run, which contributes to the development of endurance and physical fitness.

Another example is "Squadron" (<https://www.squadronapp.com/>), which provides information about military history and equipment that can be used within the framework of military-patriotic education.

These resources can be useful for teachers, educators and organizers of the educational process who seek to effectively combine physical and military-patriotic education in the conditions of the modern educational system of Ukraine.

CONTENT, APPROACHES, FORMS AND METHODS OF USING DIGITAL TOOLS IN EDUCATIONAL WORK

The implementation of the task of revealing the theoretical and methodological foundations of the technology of unity of physical and military-patriotic education of students requires reliance on modern pedagogical, psychological and socio-cultural guidelines that are formed in response to the challenges of national security, the needs of the education system and the demands of society. Scientific sources indicate the relevance of a comprehensive approach to educating youth, based on the integration of physical improvement and the formation of patriotic consciousness.

E. Boroday emphasizes [29] that effective military-patriotic education should be carried out in conditions of purposeful activity, covering both physical and moral-psychological training of students. The author classifies the methods of military-patriotic education, drawing attention to their active, effective nature, which is naturally combined with the means of physical education – drills, competitions, sports and military games, etc.

We detail the concept of "digital gamification" as the application of game mechanics and design elements (scores, levels, badges, leaderboards) in a digital, non-game context (most often in education, marketing, training) in order to increase motivation, user involvement, make the process more interesting and achieve specific learning goals.

The modern pedagogical vision of the issue of gamification is revealed in the works of C. Pereyaslavskaya and O. Spigina [30], as well as O. Sagan [31], who emphasize the need to implement innovative educational approaches, in particular gamification, to increase the efficiency of the educational process. The ideas of integrating technologies through gaming activities are deepened by K. Dichev and D. Dicheva [32], who argue that gamification forms positive motivation, supports emotional involvement and creates conditions for practical mastery of knowledge and skills. At the same time, P. Ivanyuk and A. Bondar [33] indicate that gamification in the field of physical education activates the cognitive and physical activity of students, contributes to the development of their endurance, strength, and command. This potential, according to G. Zhyzdyuk [24], is especially relevant in military education, where gamified methods allow modeling combat situations, training attention, endurance, language competence, etc.

For his part, E. Antonov [35] in his research emphasizes the need to combine gamification with the activity principles of training specialists, which coincides with the key provisions of the technology of unity

of physical and military-patriotic education - orientation on the development of applied skills, the ability to act in conditions of uncertainty and stress, readiness for self-defense and interaction. Conceptually important is also the position of the team of authors led by L. Kozubtsova [36], who prove the effectiveness of computer game environments in the training of security specialists. Their approaches can be adapted to the system of general secondary, extracurricular, vocational (vocational and technical), professional pre-higher and higher education for the formation of basic military training and digital literacy of education seekers.

Summarizing the above, it can be stated that the theoretical and methodological principles of the technology of unity of physical and military-patriotic education are based on interdisciplinary scientific foundations, combine the principles of activity, axiological and personality-oriented approaches. Integration of gamified forms of learning allows transforming the educational process into a dynamic, motivating and effective environment that contributes to the formation of national self-awareness, physical readiness to defend the Motherland and civic maturity of education seekers.

The analysis of modern scientific approaches to determining the essence of gamification as an innovative educational tool indicates its multidimensional nature, covering psychological, didactic, technological and socio-cultural aspects. Domestic research allows us to identify several key scientific approaches to interpreting the phenomenon of gamification in education.

1. *The psychological and pedagogical approach* emphasizes the potential of gamification as a means of motivation for learning and activation of cognitive activity. Thus, E. Antonov [35] substantiates that the use of gamified tasks stimulates interest in the educational material of subjects, increases self-esteem, develops the ability to self-control and creates a positive emotional background. A similar opinion is also expressed by P. Ivanyuk and A. Bondar [33], emphasizing the effectiveness of gamification in the field of physical culture and sports, where it contributes to the development of perseverance, endurance and team spirit.

2. *The technological approach* involves the integration of digital platforms with mobile applications and the use of learning management systems. L. Kozubtsova et al. [36] confirm that the use of a computer game in military training makes it possible to simulate real situations, develop critical thinking skills, decision-making and endurance, and stress resistance. The scientific work of O. Kovalenko and E. Palamarchuk [37] represents a grouping of gamification models, their implementation through the use of online educational platforms, digital simulators, mobile applications and LMS systems.

3. *The didactic approach* involves such an organization of educational and cognitive activities of education seekers, which includes gamification as its important tool. O. Sagan [31], in particular, calls gamification a modern educational trend with a combination of plot and role-playing tasks, quest elements and program learning outcomes. I. Sokol [38] considers webquests as a game strategy for forming the creative personality of education seekers. L. Konstankevych and co-authors [39] confirm the didactic effectiveness of gamification due to its ability to structure the material through "game levels", setting goals, feedback and an assessment system.

4. *The sociocultural approach* sees the essence of gamification in the implementation of socialization and cultural adaptation of education seekers. In the studies of S. Pereyaslavskaya and O. Smagina [30], gamification is considered a means of integrating students into the modern information space and forming

value orientations. We (S. Tolochko [41]) noted the role of gamification as a factor in increasing social activity of education seekers, forming a sense of obligation, independence under the conditions of student-centered learning.

5. *The integrative approach* involves the synthesis of gamification and other innovative educational technologies – project learning, competency-based approach, digital pedagogy. Our previous works (S. Tolochko [40, 42–44]) affirm the role of gamification as an additional means of activating learning, an element of innovative educational design, a factor in the formation of key competencies: digital, communicative, critical thinking, social, creative.

Scientific approaches to the interpretation of gamification as an educational tool form a complex system, where each aspect – motivational, didactic, technological or cultural – plays a significant role. In the context of the digital transformation of education, gamification appears not as a temporary trend, but as a strategic direction for improving the educational process, capable of harmonizing the individual needs of the learner with the goals of the educational program and the challenges of modern society.

Gamification practices have significant potential in the formation of physical fitness, patriotic consciousness and socially active position of learners, as they provide an emotionally rich, motivating and engaging educational environment. The introduction of game elements into physical education and military-patriotic education stimulates the active participation of young people in training processes, forms endurance, discipline, team interaction, and also contributes to the consolidation of value orientations related to civic duty, responsibility, and national identity. Gamification, in particular, enhances motivation for physical education classes [33], increases the effectiveness of training defense specialists based on computerized simulations [36]. As a result, gamified learning becomes a tool of comprehensive education that harmonizes physical activity, patriotic thinking, and social responsibility.

Among the effective forms, methods and means of gamification that contribute to the integration of physical and military-patriotic components of education, it is worth highlighting role-playing games, team competitions, quests, training with elements of simulations, as well as the use of digital platforms and mobile applications adapted to educational goals.

Role-playing games simulate situations of combat coordination, decision-making in crisis conditions and leadership, which contributes to the formation of patriotic self-awareness and strengthening physical qualities. Team sports and military quests integrate knowledge from pre-conscription training and physical culture, forming skills of orientation, endurance, and quick response. The effectiveness of gamification increases due to the implementation of LMS systems with built-in game mechanics (badges, levels, ratings), which stimulates competitiveness and responsibility [37]. Webquests [38] are also innovative, developing critical thinking, research skills and contributing to the acquisition of patriotic knowledge in conjunction with practical physical actions. The combination of traditional and digital game formats creates an effective model of integrative education, capable of ensuring the comprehensive development of youth.

We will develop a methodology for using military games from the Google Play store in the process of integrating physical and military-patriotic education of students. The specified methodology is focused on combining formal and informal learning in order to form team interaction skills, strategic thinking, motivation for service in the Armed Forces of Ukraine, as well as maintaining interest in physical activity.

CHARACTERISTICS OF GAMES USED TO ENSURE THE UNITY OF PHYSICAL AND MILITARY-PATRIOTIC EDUCATION OF HIGH SCHOOL STUDENTS

In the modern digital space, military-oriented games placed on the Google Play platform occupy a leading place in the formation of key skills of team interaction, stress resistance, quick reaction, spatial thinking and elements of strategic planning in students.

Foreign games, such as "PUBG MOBILE", "Standoff 2", "World of Tanks Blitz™", "Call of Duty: Mobile, World at Arms" and "Arena Breakout", have a high level of interactivity, graphic implementation and technological complexity, which makes them attractive for educational use for the purpose of implementing military-patriotic education. One of the key features is realistic simulation of combat situations. Thus, "PUBG MOBILE" and "Call of Duty: Mobile" offer dynamic real-time battles involving a large number of players, which helps develop the skills of acting in a team, making decisions under stress and increased workload. The ability to communicate in real time using voice and text chat, which simulates real combat coordination conditions, also deserves special attention. "World of Tanks Blitz™" is a unique game that combines elements of military history with modern technical solutions. The choice of more than 400 units of equipment from different countries allows players to get acquainted with real examples of military equipment and study their tactical advantages. This contributes to military training, broadens the horizons in the field of technical history.

The game "World at Arms" is distinguished by the fact that it combines the genres of strategy and simulation, which allows you to develop analytical thinking, planning and management skills. The campaign, consisting of over 75 missions, allows you to gradually immerse yourself in a complex system of decision-making, army building, and resource management, which can be effectively integrated into courses on the basics of national security, geopolitics, or civics. "Standoff 2" and "Arena Breakout" demonstrate a different format of military gaming – with a strong focus on tactical mobility, quick reaction, and individual combat skills. They teach students to adapt to changing conditions, use different locations, and scenarios, which increases situational awareness and readiness to act in conditions of uncertainty.

The significance of the analyzed foreign games lies in the presence of multimodal modes for modifying classes during the educational process, which includes both individual training and team competitions. Personalization of game content, in particular, weapon customization, clothing selection, and equipment selection, helps to reveal the creativity and self-determination of students, which increases their motivation to participate in the educational process. In addition, military-themed games provide interactive cooperation, socialization of students, implementation of civic position, and formation of military-patriotic values of a modern young citizen.

Unlike foreign games, Ukrainian games for physical and military-patriotic education of students are characterized by the rapid development of technological and content components, are a combination of modern military challenges and national needs. The elements of training are integrated with the upbringing of patriotism and active leisure, forming a multidimensional personality of the player. This ensures the systematic formation of strategic thinking, responsibility, endurance in students, contributes to the growth of military literacy – and most importantly – awareness of the causes of modern military realities and the Ukrainian struggle for independence. For example, the game "Battle for Ukraine" allows the player to play

the role of commander-in-chief to sharpen interest in modern history, form an emotional and value-based attitude to the events of the war. Its significance is in stimulating analytical thinking, action planning, and teamwork, which are necessary in the military and civilian present.

While participating in action games (*"Tactical OPS"*, *"Battle Prime"*, *"Tank Force"*, *"MaskGun"* and *"Sky Warriors"*), students interact intensively and dynamically, experiencing maximum immersion in real military operations, which are made possible by high-quality graphics and realistic sound. This involves modeling modern combat conditions, using weapons and equipment available to the Armed Forces of Ukraine, typical of Ukrainian military realities of the location. This is such a "close" history, events that have recently been covered in the media, encourage students to study military topics, develop skills in collaboration, critical thinking and quick decision-making.

In the conditions of digitalization of all spheres of life and activity of modern Ukrainian society, inclusiveness and accessibility in the organization of educational and cognitive activities in educational institutions are becoming more relevant. Free or offline game mode (*"Military Games about Ukraine"*, *"Tank Force"*) ensures the involvement of a wide range of users, including students from rural areas. The implementation of gamification elements is significant: achievements, character customization, multi-level passing of game stages, which in turn increases motivation and interest in the educational process even after school hours. Thus, Ukrainian games in the field of physical and military-patriotic education have significant potential for the formation of stable moral, psychological and cognitive qualities of young people. They effectively combine educational and entertainment functions, making patriotic education an interactive, relevant and emotionally rich process.

A comparative analysis of Ukrainian and foreign games on physical and military-patriotic education of students reveals both common features and significant differences in content, technological and cultural-value aspects. This analysis allows for a deeper understanding of the potential of gaming technologies in shaping the personality of young people, their civic consciousness, physical fitness, and ability to act in crisis situations.

1. *Value-based and ideological content.* Ukrainian games (for example, *"Battle for Ukraine"*, *"Military Game UA"*, *"Tank Battle for Kyiv"*) have a clearly expressed patriotic and national-educational component. They are focused on understanding the events of modern war, the heroism of the Armed Forces of Ukraine, civil resistance, and the volunteer movement. Through game scenarios, such qualities as love for the Motherland, readiness for self-sacrifice, and responsibility are formed. Foreign games (*"Call of Duty"*, *"America's Army"*, *"Arma 3"*, *"Squad"*) often have neutral or globalist ideas, where attention is focused on tactical skill, simulation of combat operations, and development of reflexes. The patriotic component is less pronounced or has a nationalistic coloration (for example, service in the US Army is openly glorified in the game *"America's Army"* – an official development of the Pentagon).

2. *Educational and methodological load.* Ukrainian games are increasingly being developed with educational potential in mind – they are aimed not only at entertainment, but also at acquiring knowledge (in history, topography, tactics), developing logic, memory, and willpower. For example, the game *"In Defense of Ukraine"* combines elements of a quiz, strategy, and a first aid simulator. Foreign games have a more developed simulation system, which allows them to reproduce combat scenarios with high accuracy.

They are often used in military educational institutions (for example, "Virtual Battle Space" in NATO armies). However, the educational component in most commercial products is weakly expressed or is secondary.

3. *Technical implementation and accessibility.* Foreign games usually prevail in terms of the quality of graphics, animation, network code, and support for VR/AR technologies. They are created by large studios with multi-million budgets. They have detailed physics, weapons, and cartography, and artificial intelligence modules are close to combat conditions. Ukrainian games, although often inferior technically (due to limited funding and resources), demonstrate the dynamics of development. They are actively integrated into the educational process (for example, through instructional and methodological platforms or mobile applications), have a Ukrainian-language interface, and are adapted to the domestic mentality and military realities.

4. *Game mechanics and social interaction.* Ukrainian games tend to story-based and simulation-educational forms. Not only victory is important in them, but also cooperation, the development of moral responsibility, and the analysis of complex situations (in particular, on the battlefield, during the evacuation of the wounded, in the process of engineering mining). Foreign games often focus on the competitive aspect, individual skill, and online battles. Mechanics may include PvP, PvE, cooperatives, and open maps. Social interaction is more developed in terms of gaming communities, but less tied to real civic education.

5. *Physical education as a component.* In the Ukrainian context, physical education through games is often implemented in offline formats - these are military-sports quests, laser tag, "Jura", "Plast", games with elements of field competitions. They combine motor activity with national symbols, song, form, ritual. Foreign games in digital format are more often aimed at motor coordination of virtual space, rather than real physical activity. At the same time, in the USA, Canada, Israel, AR games with military quests in parks and cities are actively developing, which stimulate motor activity and interaction.

Therefore, Ukrainian games on physical and military-patriotic education are gradually moving from the stage of intuitive enthusiasm to a purposeful pedagogical system. They are more focused on national identity, civic maturity and adapted to domestic educational practice. Foreign games have advantages in technical implementation, multiplayer flexibility, and simulation complexity, but are less suitable for targeted patriotic education in the Ukrainian context without additional localization.

CONCLUSIONS

The concept of "military-patriotic education" has been analyzed, which combines such terms as "education", "patriotism", "patriotic education". *Military-patriotic education* is a continuous, purposeful process of forming patriotism and readiness to defend one's country, effective love for one's Motherland, people, readiness for self-sacrifice and feat in the name of one's Motherland, for fulfilling one's military-patriotic duty, steadfastness, courage, etc.

The following are attributed to the key methodological approaches of national-patriotic education: systemic – consideration of education as a holistic set of interconnected influences and components, which ensures their integrative quality; axiological – formation of value orientations that help education seekers

to orient themselves on patriotic, civic, military and universal values; personally oriented – taking into account the individual characteristics, needs, motives and potential of each applicant; activity – development of educational, physical, psychological, social and moral-spiritual readiness for military service and active involvement in practical military-patriotic activities.

An analysis of the results of monitoring the effectiveness of military-patriotic education of high school students of secondary education institutions has been carried out, which confirmed the feasibility of using combined strategies in educational work. The key emphasis is on combining military training with interactive methods of self-expression of young people. Effective implementation of strategies for military-patriotic education of schoolchildren at the current stage requires integration and close interagency cooperation between state institutions, local governments and representatives of civil society (stakeholders). Synchronization of managerial and pedagogical efforts within the framework of a holistic state strategy is a basic determinant of strengthening national security and intensification of Ukraine's defense capability.

Digital technologies have been analyzed as an effective tool for integrating physical and military-patriotic education of high school students, especially in the conditions of the modern security situation. Their use allows making the educational process more attractive, ensuring the formation of vital skills, in particular those that are critical for survival, mobilization readiness and service in the Armed Forces of Ukraine. The effectiveness of such practices depends on the methodological literacy of teachers, technical support and targeted integration of digital elements into the real experience of education seekers.

It has been confirmed that the gamification introduction in the implementation of the technology of unity of students' physical and military-patriotic education contributes to increasing motivation, activating the educational process and forming sustainable value orientations of young people. Game methods integrated into physical and patriotic training ensure comprehensive development of the personality, contribute to the formation of physical endurance, discipline, responsibility and readiness to defend the Motherland. Therefore, gamification as a pedagogical technology turns out to be an effective tool for integrating physical and military-patriotic education of students, as it allows you to create a motivationally rich, dynamic and emotionally involved educational environment that simultaneously forms motor activity, national consciousness, readiness to defend the Motherland and socially significant competencies through game interaction, modeling of real situations and team cooperation.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

USE OF ARTIFICIAL INTELLIGENCE TOOLS

The authors confirm that they did not use artificial intelligence technologies in creating the submitted work.

FINANCING

The study was performed without financial support.

DATA AVAILABILITY

Manuscript has no associated data.

AUTHORS' CONTRIBUTIONS

Liubov Kanishevska: conceptualisation; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualisation; writing – original draft; writing – review & editing.

Svitlana Tolochko: conceptualisation; data curation; formal analysis; funding acquisition; investigation; methodology; project administration; resources; software; supervision; validation; visualisation; writing – original draft; writing – review & editing.

Oksana Vasiuk: formal analysis; data collection; validation; project administration.

Olena Matviienko: formal analysis; data collection; validation; project administration.

Nataliia Kharchenko: formal analysis; data collection; validation; project administration.

Viktoriia Lutsenko: formal analysis; data collection; validation; project administration.

REFERENCES

1. Shevchenko, V. V. (2000). *Psykhologichni osoblyvosti viiskovo-patriotynohoho vykhovannia uchniv starshoho pidlitkovoho ta yunatskoho viku*. [PhD dissertation].
2. Prots, R. O. (2015). *Etnopedahohichni zasady viiskovo-patriotynohoho vykhovannia molodi zasobamy fizychnoi kultury i sportu* [Extended abstract of PhD thesis].
3. Kovba, M. V. (2024). *Viiskovo-patriotyczne vykhovannia starshoklasnykiv v systemi osvity Ukrainy (persha chvert XXI stolittia)*. [PhD dissertation]. Available at: <https://uacademic.info/ua/document/0825U000673>
4. Shynkarenko, V. (2023). Military patriotic education of high school students in general secondary education institutions. *Acta Paedagogica Volyniensis*, 5, 40–44. <https://doi.org/10.32782/apv/2022.5.7>
5. Tsipan, T. (2022). Military and patriotic education of schoolchildren in extracurricular educational work of secondary school. *Innovation in Upbringing*, 1 (16), 223–232. <https://doi.org/10.35619/iiv.vlii16.498>

6. Rahozina, V. V. (2023). Viiskovo-patriotychne vykhovannia uchniv i uchnivskoi molodi: orhanizatsiia vseukrainskoho opytuvannia. Zrostaucha osobystist u smyslotsinnisnykh obrysakh. Ivano-Frankivsk: NAIR, 222-226. Available at: <https://lib.iitta.gov.ua/id/eprint/739274/1/Zbirnyk-23.11.2023.pdf>
7. Zhurba, K. (2025). Military-patriotic education of senior grade students in war conditions. *Pedagogical Science and Education of the XXI Century*, 5, 17-28. <https://doi.org/10.35619/pse.vi5.141>
8. Skirda, T. (2025). Military-Patriotic Education Under Martial Law: Challenges for Ukrainian Education. *Theoretical and Methodical Problems of Children and Youth Education*, 29 (2), 89-96. <https://doi.org/10.32405/2308-3778-2025-29-2-89-96>
9. Ostapenko, O. I., Tymchyk, M. V.; Zubalii, M. D. (Ed.) (2019). *Formy i metody formuvannia v uchniv hotovnosti do zakhystu Vitchyzny*. Kropyvnytskyi: Imeks-LTD, 72. Available at: <https://lib.iitta.gov.ua/id/eprint/717997/1/%D0%9C%D0%95%D0%A2%D0%9E%D0%94%D0%98%D0%A7%D0%9D%D0%86%20%D0%A0%D0%95%D0%9A%D0%9E%D0%9C%D0%95%D0%9D%D0%94%D0%90%D0%A6%D0%86%D0%87.pdf>
10. Dikhtiarenko, Z. M.; Shapovalov, B. B. (Ed.) (2019). *Metodychnyi instrumentarii formuvannia ustارشoklasnykh hotovnosti do zakhystu Vitchyzny*. Kropyvnytskyi: Imeks-LTD, 143. Available at: <https://lib.iitta.gov.ua/id/eprint/718459/1/%D0%9C%D0%B5%D1%82%D0%BE%D0%B4%D0%B8%D1%87%D0%BD%D0%B8%D0%B9%20%D1%96%D0%BD%D1%81%D1%82%D1%80%D1%83%D0%BC%D0%B5%D0%BD%D1%82%D0%B0%D1%80%D1%96%D0%B9.pdf>
11. Ostapenko, O. I., Tymchyk, M. V., Zubalii, M. D., Zhurba, K. O., Binetskyi, D. O., Kasich, N. P. et al. (2022). *Viiskovo-patriotychne vykhovannia uchniv v umovakh ideino-svitohladnoi konfrontatsii*. Kropyvnytskyi: Imeks-LTD, 165. Available at: https://lib.iitta.gov.ua/id/eprint/732074/1/%D0%9E%D1%81%D1%82%D0%B0%D0%BF%D0%B5%D0%BD%D0%BA%D0%BE_%D0%9E.I._%D0%9D%D0%B0%D0%B2%D1%87._%D0%BC%D0%B5%D1%82%D0%BE%D0%B4._%D0%BF%D0%BE%D1%81._2022.pdf
12. Kanishevska, L., Zhurba, K., Tolochko, S., Ragozina, V., Tymchyk, M., Kasich, N. (2025). *Organizational and Pedagogical Conditions and Technologies for Ensuring the Unity of Physical and Military-Patriotic Education of Students in General Secondary Education Institutions: Educational and Methodological Manual*. Ivano-Frankivsk: NAIR, 108. <https://doi.org/10.32405/978-617-8011-04-8-2024-108>
13. Bekh, I. D., Malynoshkevskyi, R. V. (Ed.) (2023). *Viiskovo-patriotychne vykhovannia ditei ta uchnivskoi molodi v systemi osvity Ukrainy: stratehichni napriamy*. Ivano-Frankivsk: NAIR, 32. Available at: <https://lib.iitta.gov.ua/id/eprint/736802/1/%D0%A1%D1%82%D1%80%D0%B0%D1%82%D0%B5%D0%B3%D1%96%D1%87%D0%BD%D1%96%20%D0%BD%D0%B0%D0%BF%D1%80%D1%8F%D0%BC%D0%B8.pdf>
14. Pro osnovy natsionalnoho sprotyvu (2023). Zakon Ukrainy No. 1702-IX. 31.03.2023. Available at: <https://precedent.ua/1702-20/20230331>
15. Pro osnovni zasady derzhavnoi polityky u sferi utverdzhennia ukrainskoi natsionalnoi ta hromadianskoi identychnosti (2022). Zakon Ukrainy No. 2834-IX. 13.12.2022. Available at: <https://zakon.rada.gov.ua/laws/show/2834-20#Text>
16. Pro rishennia Rady natsionalnoi bezpeky i oborony Ukrainy vid 25 bereznia 2021 roku "Pro Stratehiu voiennoi bezpeky Ukrainy" (2021). Ukaz Prezydenta Ukrainy No. 121/2021. 25.03.2021. Available at: <https://zakon.rada.gov.ua/laws/card/121/2021>

17. Pro Kontseptsiiu dopryzovnoi pidhotovky i viiskovo-patriotynohoho vykhovannia molodi (2002). Ukaz Prezydenta Ukrainy No. 948/2002. 25.10.2002. Available at: <https://zakon.rada.gov.ua/laws/show/948/2002#top>
18. Kontseptsiiia natsionalno-patriotynohoho vykhovannia v systemi osvity Ukrainy (2022). Nakaz Ministerstva osvity i nauky Ukrainy No. 527. 06.06.2022. Available at: <https://zakon.rada.gov.ua/rada/show/v0527729-22#Text>
19. Kanishevska, L., Zhurba, K., Tolochko, S., Ragozina, V., Tymchyk, M., Kasich, N.; Kanishevska, L. (Ed.) (2025). Methodological Tools for Ensuring the Unity of Physical and Military-Patriotic Education of Students in General Secondary Education Institutions. IvanoFrankivsk: NAIR. <https://doi.org/10.32405/978-617-8768-10-2-2025-102>
20. Lazorenko, S. (2023). Military patriotic education as a component part of the defense capacity policy of the country. Olympic and Paralympic Sports, 1, 21-25. <https://doi.org/10.32782/olimpsspu/2023.1.5>
21. Onyshchuk, P. V. (1996). Pedahohichni zasady tekhnolohii formuvannia patriotychnykh rys v uchnivshkil-himnazii, litseiv. [PhD dissertation].
22. Shevchenko, V. V. (2000). Psykholohichni osoblyvosti viiskovo-patriotynohoho vykhovannia uchniv starshoho pidlitkovoho ta yunatskoho viku. [PhD dissertation].
23. Ostapenko, O., Tymchyk, M. (2021). Viiskovo-patriotychne vykhovannia starshoklasnykv v umovakh ideino-svitohliadnoi konfrontatsii. Teoretyko-metodychni problemy vykhovannia ditei ta uchnivskoi molodi, 25 (2), 62–73. Available at: http://nbuv.gov.ua/UJRN/Tmpvd_2021_25%282%29__7
24. Zhurba, K. (2025). Military-patriotic education of senior grade students in war conditions. Pedagogical Science and Education of the XXI Century, 5, 17–28. <https://doi.org/10.35619/pse.vi5.141>
25. Borodai, E. M. (2021). Dydaktychni umovy realizatsii viiskovo-prykladnykh umin i navychok uchniv u navchalnomu seredovyshchi starshoi shkoly. [PhD dissertation]. Available at: <https://npnu.edu.ua/wp-content/uploads/2021/04/dis-borodaj-080421-na-sajt.pdf>
26. Bryzhatyi, Y. (2016). Viiskovo-patriotychne vykhovannia maibutnikh ofitseriv Zbroinykh Syl Ukrainy. Zbirnyk naukovykh prats Natsionalnoi akademii Derzhavnoi prykordonnoi sluzhby Ukrainy. Serii: Pedahohichni nauky, 1, 5–18. Available at: http://nbuv.gov.ua/UJRN/znpnadpcpn_2016_1_3
27. Bekh, I., Kanishevska, L., Malynoshevskiy, R. (2023). Strategy of military-patriotic education of children and youth in the education system of Ukraine: realities and guidelines. Herald of the National Academy of Educational Sciences of Ukraine, 5 (2), 1-7. <https://doi.org/10.37472/v.naes.2023.5202>
28. Kanishevska, L., Ragozina, V. (2024). The state of military-patriotic education of high school students of general secondary education institutions: results of a nationwide survey. Ivano-Frankivsk: "NAIR", 40. <https://doi.org/10.32405/978-617-8011-86-4-2024-40>
29. Borodai, E. (2020). Classification of methods of military-patriotic education of senior grade students in the process of pre-call preparation. the Sources of Pedagogical Skills, 26, 26–29. <https://doi.org/10.33989/2075-146x.2020.26.227427>
30. Perejaslavsk, S., Smahina, O. (2019). Gamification as the current trend of national education. Open Educational E-Environment of Modern University, 250–260. <https://doi.org/10.28925/2414-0325.2019s24>

31. Sagan, O. (2022). Gamification as a modern educational trend. Collection of Research Papers Pedagogical Sciences, 100, 12-18. <https://doi.org/10.32999/ksu2413-1865/2022-100-2>
32. Dichev, C., Dicheva, D. (2017). Gamifying education: what is known, what is believed and what remains uncertain: a critical review. International Journal of Educational Technology in Higher Education, 14 (1). <https://doi.org/10.1186/s41239-017-0042-5>
33. Ivanyuk, P. O., Bondar, A. S. (2024). Gamification as an effective motivation tool in the field of physical education and sports. Scientific Journal of National Pedagogical Dragomanov University Series 15 Scientific and Pedagogical Problems of Physical Culture (Physical Culture and Sports), 7 (180), 59-64. [https://doi.org/10.31392/udu-nc.series15.2024.7\(180\).12](https://doi.org/10.31392/udu-nc.series15.2024.7(180).12)
34. Zhyzdziuk, H. (2025). Gamification in Military Education as a Tool for Developing Foreign Language Communication Competence. Pedahohichna akademiia. <https://doi.org/10.5281/zenodo.14998781>
35. Antonov, Y. V.; Dubaseniuk, O. A. (Ed.) (2024). Heimifikatsiia yak zasib motyvatsii osvithnoho protsesu. Diialnisni zasady pidhotovky maibutnikh kompetentnykh fakhivtsiv v umovakh suchasnykh vyklykiv. Zhytomyr: Vyd-vo ZhDU im. I. Franka, 229-258. Available at: <https://eprints.zu.edu.ua/39737/>
36. Kozubtsova, L., Kozubtsov, I., Lishchina, V., Shtanenko, S. (2022). Concept of a training complex for training military information and cybersecurity specialists based on a computer game (gamification). Cybersecurity: Education, Science, Technique, 2 (18), 49-60. <https://doi.org/10.28925/2663-4023.2022.18.4960>
37. Kovalenko, O. O., Palamarchuk, Y. A. (2023). Modeli heimifikatsii v systemakh upravlinnia navchanniam. Vinnytsia: VNTU, 85. Available at: <https://ir.lib.vntu.edu.ua/handle/123456789/36758>
38. Sokol, I. M. (2013). Veb-kvest yak innovatsiinyi metod formuvannia tvorchoi osobystosti. Osvita ta rozvytok obdarovanoi osobystosti, 2, 28-30. Available at: http://nbuv.gov.ua/UJRN/Otros_2013_2_8
39. Konstankevych, L., Radkevych, M., Lekhitskiy, T. (2022). Gamification as an innovative approach in the educational process. New pedagogical thought, 3(111), 47-51. <https://doi.org/10.37026/2520-6427-2022-111-3-47-51>
40. Tolochko, S. (2020). Teacher-innovator as an organizer of educational activity in the conditions of student-centered teaching. Academic Notes Series Pedagogical Science, 1 (189), 79-84. <https://doi.org/10.36550/2415-7988-2020-1-189-79-84>
41. Tolochko, S. V. (2023a). Theoretical and methodological analysis of gamification as a modern educational phenomenon. Prospects and innovations of science, 1 (19), 369-383. [https://doi.org/10.52058/2786-4952-2023-1\(19\)-369-383](https://doi.org/10.52058/2786-4952-2023-1(19)-369-383)
42. Tolochko, S. V. (2023). Innovative technologies of formation of education applicants' competence: from gamification to project activity. Bulletin of Science and Education, 4 (10), 710-725. [https://doi.org/10.52058/2786-6165-2023-4\(10\)-710-725](https://doi.org/10.52058/2786-6165-2023-4(10)-710-725)
43. Tolochko, S. V., Matsenko, L. M. (2025). Project technologies in ensuring the unity of physical and military-patriotic education of students. Innovate Pedagogy, 2 (83), 190-195. <https://doi.org/10.32782/2663-6085/2025/83.2.37>
44. Tolochko, S. V., Matsenko, L. M. (2025). Gamification in implementing the technology of unity of physical and military-patriotic education of students. Pedagogical Sciences: Theory and Practice, 2, 165-175. <https://doi.org/10.26661/2786-5622-2025-2-22>