SYSTEM CHARACTERISTICS OF THE PROFESSIONAL TRAINING OF FUTURE SPECIALISTS OF THE ENGINEERING TROOPS

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Abstract. *The specifics of the educational process of military educational institutions (combination of military and civilian specialties in one educational program; the need to acquire a volume of knowledge that enables a graduate to solve military-professional tasks without experience of performing official duties) necessitates changes to the military-professional training of cadets, in particular, future specialists of engineering troops. The main purpose of article is to outline the basic system characteristics of the professional training of future engineering troops. During the work on the article, the following methods were used: theoretical analysis of scientific literature on the research problem for the selection and understanding of didactic material; critical analysis of concepts, theories and methods in order to determine ways to solve the problem under study. The generated changes should be implemented systematically and cover the entire process of military professional training of military engineers; to take into account the key requirements for the training of future specialists of the engineering troops (correspondence of the content of the engineering training to the nature of the service and combat activities of the troops and the tasks being performed, to the features of the areas of future actions; the study of scientific achievements, the experience of engineering support for the operations of the troops during martial law in various conditions and their introduction into the practice of engineering training; effective use and development of educational material base). The system characteristics of the training of future specialists of engineering troops are, in particular, compliance by military educational institutions and special training centers with a set of requirements of educational and professional standards. These standards reflect the vision of the state, society and the Ministry of Defense of the integral personality of future specialists of engineering troops. The system levers of improving the military professional training of military engineers include the improvement of the quality of military training of mobilized and servicemen, as a certain balanced compliance with the needs of the state, the Armed Forces of Ukraine (AFU), the higher military school. Realization of the potential of information technologies is an important factor in the innovation of training of military engineers. The use of information technologies usually involves a change in the actual logic of the educational (training) process, the vector of which is already directed not from theory to practice, but from gaining new experience to its theoretical awareness. At the same time, increasing the efficiency of training military specialists is made possible by intensifying the process of understanding, assimilation, and creative application of knowledge when solving practical tasks. Intensification of the process of professional training of future specialists of the engineering forces in the conditions of an electronic informational educational environment is implemented by: ensuring the necessary access to sources of information that expands the boundaries of the worldview of listeners and cadets; creation of conditions and opportunities for quick and effective search, processing, analysis, and saving of the necessary information.*

Keywords*: military professional training, military education, system characteristics, cadets, future specialists of engineering troops, innovations, information technologies, electronic educational environment.*

JEL Classification: I 21, I 23, I 29

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Introduction. The impact of scientific and technological progress on the educational process has made it necessary not only to replace outdated views with new ones, but also to introduce new learning technologies, as the amount of educational information increases, and the study period gradually shortens. This is especially relevant in the conditions of a full-scale war, when the training of military personnel takes, at most, three months. That is why it is very important to develop innovative training systems that intensify the activities of teachers and cadets and make it possible to obtain the maximum amount of military engineering knowledge, abilities and skills in the shortest period of study. The development of innovations and their implementation should reflect systematic work on updating the military-professional training of personnel for the Armed Forces, including future specialists of engineering troops.

Practice shows that in military education and training institutions well-known, traditional methods and forms of training are used. However, the modern digital world and society, which is rapidly developing towards computerization and virtualization, requires new approaches to learning. The effectiveness of the training of future specialists of the engineering troops largely depends on the balanced systematic use of traditional methods and innovative interactive forms of training, as well as on the use of multimedia, computer and audiovisual technologies.

Literature Review. The scientific works of S. Diakov [1] are devoted to the issue of identifying the peculiarities of the organization of special training of engineering troops, taking into account the experience of the anti-terrorist operation. In the author's research work of V. Martsenkivskyi, Ye. Kamalov and M. Klontsak, we find instructions for evaluating the effectiveness of the functioning of military training units in the officer training system [4]. The conclusions of O. Kapinus regarding the theory and methodology of the formation of the professional subjectivity of future officers of the Armed Forces of Ukraine expand the horizons of the research [2]. The work of O. Kolosovych, who systematized the psychological aspects of interaction in the military-professional environment [**Error! Reference source not found.**], is valuable.

M. Masliy's work summarizes the conceptual principles of professional training of future officers of missile and artillery weapons [5]. L. Nanivska identified the components, criteria, indicators and levels of formation of communicative readiness of future officers of engineering troops [6]. D. Okipnyak, S. Okipnyak and M. Zubal specified pedagogical aspects of training future demining specialists taking into account today's requirements [7]. At the same time, the issue of systematization of modernization changes in the training of military engineers in military education is now more than ever at the forefront of scientific research, so it does not lose its relevance.

Aims. The main purpose of article is to outline the basic system characteristics of the professional training of future engineering troops.

Methodology. During the work on the article, the following methods were used: theoretical analysis of scientific literature on the research problem for the selection and understanding of didactic material; critical analysis of concepts, theories and methods in order to determine ways to solve the problem under study.

Results. The pedagogical system of training future specialists of the engineering troops for professional activity under martial law is based on a set of methodological approaches and principles, interrelated forms, methods, technologies and means of training, which makes it possible to achieve the goal – the formation of future engineering military specialist's readiness for professional activity. The starting point of the study of the methodological foundations of the training of future specialists of the engineering forces for professional activity in the conditions of martial law is a systematic approach, which refers to general scientific approaches [9].

A *systematic approach* in the study of pedagogical phenomena and processes ensures high efficiency, which are by their nature complex multi-component systems with many external and internal connections. According to V. Rakhmanov and L. Tymchuk, the peculiarities of the systematic approach in the training of future military specialists are the possibility to establish all system-oriented elements of the professional training of military specialists, to develop an algorithm for theoretical research of this process and practical actions for its improvement [8]. The systematic approach allows us to consider the training of future specialists of the engineering forces for professional activity under martial law as a system connected with the process of professional training of military specialists, the system of military education in general, the defense system of Ukraine and the military engineering system.

The connection of the training of future specialists of the engineering troops for professional activities in the conditions of martial law with these systems is carried out on the basis of a set of requirements of educational and professional standards, which reflect the vision of the state, society and the Ministry of Defense of the integral personality of the future specialists of the engineering troops who possess a certain list of competencies for carrying out the functions of service and combat activity.

In the conditions of a full-scale Russian-Ukrainian war, the *quality of military training of mobilized and military personnel* as a certain balanced compliance with the needs of the state, the Armed Forces of Ukraine (AFU), the higher military school is an urgent problem and requires a constant comparison of intermediate results with initial positions and applied methodology, clarification and correction of the goal and methodology of development. Also, in the conditions of martial law, new trends arise in the development of means and methods of armed struggle, which are largely based on modern technologies and equipment. This necessitates the development of such a system of military specialists training, which would not only keep up with the life of the troops, but also, taking into account the perspective, ensure their proper professional mobility.

The system of military education forms the personnel potential of the AFU, which plays a leading role in training, professional retraining and upgrading the qualifications of military personnel, reproduction of pedagogical and scientific personnel. At the same time, the military education system has specific features: relative closedness, hierarchy, corporate environment; departmental character; the main source of replenishment of the officer corps; close connection with the state policy in the field of national defense; involvement of cadets in the basic values associated with traditions, norms, prohibitions that are produced in the state-military society.

The content and development of the higher military education system depends on the state of the entire education system of Ukraine and on the military doctrine, which determines the goals and objectives of the defense of the country in wartime and the protection of its borders. The key goal of regulating the activity of military educational institutions is to bring the content and quality of training of future military specialists, in particular, specialists of the engineering troops, into compliance with new requirements, ensuring guaranteed and stable staffing of the AFU with competent military personnel.

The specifics of the educational process of military educational institutions (combination of military and civilian specialties in one educational program; the need to acquire a volume of knowledge that enables a graduate to solve military-professional tasks without experience of performing official duties) necessitates changes to the military-professional training of cadets, in particular, future specialists of engineering troops.

The main requirements for the training of future specialists of the engineering troops are the correspondence of the content of the engineering training with the nature of the service and combat activities of the troops and the tasks being performed, with the features of the areas of future operations; study of scientific achievements, experience of engineering support for the actions of troops during martial law in various conditions and their implementation in the practice of engineering training; effective use and development of educational material base.

In general, military education is a set of interconnected and interdependent subsystems: knowledge subsystem, knowledge acquisition subsystem, and knowledge control subsystem [3]. The quality of the military-professional training of the graduates of the educational institution is determined by their ability to apply the acquired knowledge, skills and abilities to adequately perform combat tasks in the conditions of martial law. The qualities of engineering troops specialists that meet these requirements are formed during the training of cadets in educational and training centers and are then improved during military combat activities. Tactical special training plays a significant role in this process [9]. That is, another systemic characteristic of the training of future military engineers is its *gradation and continuity.*

The system of military-professional (tactical-special) training provides for military training of highly qualified specialists who possess thorough knowledge, abilities and skills for the organization and execution of combat tasks in the conditions of a full-scale Russian-Ukrainian war. In the training of engineering troops, it is necessary to take into account, the requirements of modern combat and the peculiarities of conducting combat operations in modern warfare [3]. Man was and remains the decisive force in the war. The training and education of cadets / military personnel is correlated in significance to the technical equipment of the troops with modern weapons and combat equipment. In order to develop an optimal, dynamic system of military-professional training of future specialists of the engineering forces, it is necessary to create a model of a graduate adequate to the outlined requirements, the requirements of the Russian-Ukrainian war and the scientific and technical revolution, and the development of military education in general.

The list of system characteristics of training of future military engineers includes the use of modern information technologies. The use of information technologies usually involves a change in the actual logic of the educational (training) process, the vector of which is already directed not from theory to practice, but from gaining new experience to its theoretical awareness. At the same time, increasing the effectiveness of training of military specialists is made possible by intensifying the process of understanding, assimilation, and creative application of knowledge when solving practical tasks [8]. For this purpose, cadets must be involved in the process of obtaining and direct application of knowledge, and it is also necessary to create conditions for the application of acquired knowledge, abilities and skills in various quasi-professional situations.

A significant result of the implementation of information systems in the educational (training) process should be the changed content and meaning of the traditional concept of "educational environment". In modern interpretations, the term "educational environment" is considered as a system of influences and conditions of personality formation, as well as opportunities for its development contained in the social and spatial-subject environment [9]. Changes in the content of the educational environment led to the emergence of a new field in the educational environment of military educational institutions, based on the application of information and communication technologies - the electronic information educational environment.

According to the requirements, the electronic information educational environment should ensure the development of educational programs in full, regardless of the location of the cadets, as well as the automation of the processes of daily activities of a modern military educational institution.

The intensification of the process of professional training of future specialists of the engineering forces in the conditions of the electronic informational educational environment is implemented by:

- providing the necessary access to sources of information that expands the boundaries of the worldview of listeners and cadets;
- creation of conditions and opportunities for quick and effective search, processing, analysis, and saving of the necessary information;
- making balanced and reasoned decisions during the performance of educational tasks and future professional activities of graduates.

However, the current stage of informatization is characterized by the presence of contradictions (challenges) that require additional analysis and relevant recommendations, management decisions and practical actions by the military administration and military educational institutions.

One of these contradictions is the incompatibility of the two phenomena. The first phenomenon is the dissatisfaction of modern cadets with the state of the digital infrastructure of military educational institutions. It must be stated that modern cadets have formed a direct request for the transition from traditional forms of building the educational process to digital and hybrid (mixed) models using digital technologies [6]. The second phenomenon is the insufficient level of development of the electronic informational educational environment of military educational institutions. Electronic

information and educational resources, technologies and means of military educational institutions are often not connected by a single telecommunications network, mostly represented by local fragments of the environment, which do not provide cadets with wide access to the necessary sources of information. This significantly reduces the intensification of the training of military specialists.

At the same time, the advantages of using information technologies in order to improve the modernization of the educational environment for the training of future specialists in engineering specialties are the following:

1) presentation of educational material using information technologies is carried out in forms that ensure individualization of education, orientation of the educational and training process on the cadet;

2) the intensity of the educational process is significantly increased by reducing the time for mastering a large amount of educational information, activating the activities of all cadets, revealing the internal potential of each of them for independent additional classes;

3) the use of the Moodle management system and various programs for quality control of the training of engineering troops contributes to the improvement of the organization and implementation of control and evaluation procedures of the educational and training process.

Discussion. The modern stage of informatization in the training of future engineering troops is characterized by the intensive development of information systems in order to ensure the availability of the necessary sources of information to cadets. By combining the information and technological base, electronic resources and technical means into a single electronic information and educational environment, the main task of informatization is solved – the intensification of all types of activities of military educational institutions.

With the development of information and communication technologies, the traditional educational environment is complemented by modern types of educational interactions, which form the basis of a new form of organization of educational activities of military educational institutions – e-learning. Information and communication technologies significantly change the methods and forms of the educational (training) process, give teachers and instructors the opportunity to constantly teach future military specialists, including engineer troops. Modern information systems should be integrated into the traditional system of military education for the benefit of fulfilling the main task – high-quality and effective training of future engineering troops capable of acting professionally under combat conditions.

Conclusion. The system of professional training of future specialists of the engineering troops in the actual conditions of the martial law requires consideration of its individual structural components from the point of view of functional load and ensuring the expected didactic result. The future specialists of the engineering troops are entrusted with important tasks to ensure the territorial integrity and independence of our state. On the other hand, the training of future specialists of the engineering troops takes place in limited time opportunities, and increased readiness for the immediate execution of combat tasks in the "here and now" situation. The challenges

dictate requirements for the maximum approximation of training conditions to a real combat situation, which can be achieved by creating a quasi-professional and contextual educational environment within the limits of using integrated information environments, computer and field forms of training. We see the prospects for further scientific research in the coverage of the key trends in updating the professional training of future specialists of the engineering troops in the conditions of martial law.

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