

УДК 378.14:355/359(477)

DOI <https://doi.org/10.32782/pcsd-2025-2-17>

Volodymyr RODIKOV

Candidate of Pedagogic Sciences, Colonel, Chief of the 143rd Joint Training Center “PODILLYA” of the Support Forces of the Armed Forces of Ukraine, 50 Hrushevskiy ave., Kamianets-Podilskyi, Khmelnytsky region, Ukraine, 32302

ORCID: 0009-0006-8683-359X

To cite this article: Rodikov, V. (2024). Spetsyfyka osvithnoho seredovyshecha fakhovoi pidhotovky serzhantskoho i riadovoho skladu inzhenernykh viisk Zbroinykh Syl Ukrainy [Specifics of the Educational Environment for the Professional Training of Sergeant and Enlisted Personnel of the Engineering Troops of the Armed Forces of Ukraine]. *Problems of Chemistry and Sustainable Development*, 2, 130–135, doi: <https://doi.org/10.32782/pcsd-2025-2-17>

SPECIFICS OF THE EDUCATIONAL ENVIRONMENT FOR THE PROFESSIONAL TRAINING OF SERGEANT AND ENLISTED PERSONNEL OF THE ENGINEERING TROOPS OF THE ARMED FORCES OF UKRAINE

The article examines the educational environment of military education institutions (training centres) that provide professional training for sergeant and enlisted personnel of the engineering troops of the Armed Forces of Ukraine, as an important factor in the comprehensive development of cadets' personalities. It has been established that the effectiveness and efficiency of personal, professional, and service-combat development of sergeant and enlisted personnel of the engineering troops directly depends on the developmental potential of the educational environment of training centres and on the nature of the interaction between the cadet as an active subject and all components of this environment.

The educational environment of training centres (units), in the context of the professional training of sergeant and enlisted personnel of the engineering troops, is considered as a pedagogically organised system of conditions, influences and opportunities that operates within the space of the training centre (unit) and is implemented through specially designed pedagogical technologies that ensure the full integration of cadets into all types of military-professional activity.

The studied educational environment is structured as a set of microsystems – certain material and immaterial subsystems of the internal educational environment of the training centres. Within the structure of military education institutions (training centres) that provide professional training for sergeant and enlisted personnel of the engineering troops of the Armed Forces of Ukraine, the following microsystems have been identified: didactic, practice-oriented, digital, health-preserving, social, and educational. Each of these microsystems is based on a structural framework comprising spatial-object (“space of things”), activity-related (“space of actions”), and subject-social (“space of relations”) components of the educational environment.

Key words: educational environment, professional training, sergeant and enlisted personnel, engineering troops, cadets, microsystem.

Володимир РОДІКОВ

кандидат педагогічних наук, полковник, начальник 143 Об'єднаного навчально-тренувального центру «ПОДІЛЛЯ» Сил підтримки Збройних Сил України, просп. Грушевського, 50, м. Кам'янець-Подільський, Хмельницька область, Україна, 32302

ORCID: 0009-0006-8683-359X

Бібліографічний опис статті: Родіков, В. (2025). Специфіка освітнього середовища фахової підготовки сержантського і рядового складу інженерних військ Збройних Сил України. *Проблеми хімії та сталого розвитку*, 2, 130–135, doi: <https://doi.org/10.32782/pcsd-2025-2-17>

СПЕЦИФІКА ОСВІТНЬОГО СЕРЕДОВИЩА ФАХОВОЇ ПІДГОТОВКИ СЕРЖАНТСЬКОГО І РЯДОВОГО СКЛАДУ ІНЖЕНЕРНИХ ВІЙСЬК ЗБРОЙНИХ СИЛ УКРАЇНИ

У статті розглянуто освітнє середовище закладів військової освіти (навчально-тренувальних центрів), які здійснюють фахову підготовку сержантського і рядового складу інженерних військ Збройних Сил України як важливий чинник всебічного розвитку особистості курсантів. Встановлено, що результативність та ефективність особистісного, професійного, службово-бойового становлення сержантського і рядового складу інженерних військ безпосередньо залежить від розвиваючого потенціалу освітнього середовища навчально-тренувальних центрів та від специфіки взаємодії курсанта як активного суб'єкта з усіма компонентами цього середовища. Освітнє середовище навчально-тренувальних центрів (частин) в контексті фахової підготовки сержантського і рядового складу інженерних військ розглянуто як педагогічно організовану систему умов, впливів і можливостей, що функціонує в просторі навчально-тренувального центру (частини), реалізується за допомогою спеціально створених педагогічних технологій, які забезпечують повноцінну інтеграцію курсантів в усі види військово-професійної діяльності. Досліджуване освітнє середовище структуровано як сукупність мікросередовищ – певної матеріальної і нематеріальної підсистеми внутрішнього освітнього середовища навчально-тренувальних центрів. У структурі закладів військової освіти (навчально-тренувальних центрів), які здійснюють фахову підготовку сержантського і рядового складу інженерних військ Збройних Сил України виокремлено такі мікросередовища: дидактичне, практико-зорієнтоване, цифрове, здоров'язбережувальне, соціальне, виховне. Кожне з мікросередовищ базується на структурному каркасі у вигляді просторово-предметного («простір речей»), діяльнісного («простір дій») і суб'єктно-соціального («простір відносин») компонентів освітнього середовища.

Ключові слова: освітнє середовище, фахова підготовка, сержантський і рядовий склад, інженерні війська, курсанти, мікросередовище.

Relevance of the problem. In the context of the Russian-Ukrainian war, which results in enormous losses not only of material resources but also of qualified human resources, the urgent need has arisen for the constant maintenance of high combat readiness of military units and subdivisions of the Armed Forces of Ukraine, as well as the rapid restoration of their combat capability following hostilities (Korol, Lutsyshyn, Korol, 2024, p. 183). This, above all, requires the organisation of high-quality individual and collective training and the provision of a high level of professionalism among engineering troops specialists. The performance of combat missions in the current conditions of full-scale Russian-Ukrainian war sets higher requirements for their level of professional readiness. It is necessary, within a short time frame, to ensure the transition from the reproduction of acquired knowledge to its active assimilation, aimed at the development of tactical thinking and creative abilities, the formation of skills for competent comprehensive assessment of the situation, and the making of optimal, well-grounded decisions.

The professional training of cadets – sergeant and enlisted personnel (SEP) of the engineering troops – is a crucial component of the educational process. Under current conditions, there is a need to implement new approaches aimed at optimising and improving the professional level

of cadets. A significant improvement in the quality of professional training of SEP in engineering troops for professional activities is possible under conditions of practical training that are as close as possible to real service-combat situations, which is especially important for engineering specialists whose profession involves life-threatening risks.

The improvement of the educational process in military education is implemented with regard to trends in the development of modern military education, including its growing mass character, continuity, and the introduction of new learning technologies. Interest in research in the field of military education, based on the interpretation of the educational environment, underpins changes in society and the orientation of education towards a competence-based approach (Honcharenko & Mykhailova, 2016). The educational environment has a fundamental impact on the development of a competent personality, enabling the cadet to realise their place in the military-professional sphere (Ostapchuk, 2022). Therefore, it is very important to identify the potential of military educational institutions and the educational environment as a means of forming the social, professional, and personal qualities of SEP in engineering troops.

Analysis of recent research and publications. The relevance of researching the impact of the educational environment in military education institutions on the quality of training for military

specialists is confirmed by the growing number of studies dedicated to this topic. Scholars have examined the theory and practice of forming and improving the educational environment in higher military aviation education institutions (O. Marchenko, 2018; T. Plachynda, 2019); the specifics of the informational-educational environment of higher military education institutions (L. Panchenko, 2010; I. Shumkov, 2024); global theory and practice of shaping the educational environment in higher education institutions with specific learning conditions (O. Fedorenko & O. Marchenko, 2023), among others. Ukrainian researchers have also paid attention to foreign experience in organising the educational environment in military education institutions (I. Honcharenko, 2016; Yu. Mykhailova, 2016; R. Misheniuk, 2022), among others.

However, within the outlined research, issues concerning the renewal and structuring of the educational environment of training centres in the context of professional training for sergeant and enlisted personnel (SEP) of engineering troops remain insufficiently addressed. In addition, the role of the educational environment in modernising the training of future engineering troops specialists under martial law – characterised by time constraints for preparing personnel to quickly and effectively complete combat missions – also requires further investigation.

The aim of the article is to examine the specifics of the organisation and potential of the educational environment of military training centres in the professional training of sergeant and enlisted personnel of the engineering troops of the Armed Forces of Ukraine.

Research methods include theoretical analysis of scientific literature on the subject to select and interpret didactic material; and critical-analytical analysis of concepts, theories, and methodologies to identify ways of addressing the research problem.

Presentation of the main material. Like any other environment, the educational environment in its generalised form is a set of various conditions and subjects, united by a commonality, which can either promote or hinder personal development. In pedagogical theory and practice, the term “environment” is widely used – e.g. “educational institution environment”, “learning environment” (O. Marchenko, 2018; L. Panchenko, 2010; I. Shumkov, 2024, et al.). In Ukrainian pedagogical

science, the concept of “educational environment” has been actively studied since the 1990s.

As T. Plachynda rightly notes, the educational environment is a system of structural (goals, instructor-teaching staff, pedagogically interpreted information, systems of educational, professional, or other activity, means of pedagogical communication, criteria for quality assessment and indicators of development of this system, etc.) and functional (projective, gnoseological, constructive, prognostic, organisational, communicative, evaluative) components (Plachynda, 2019, p. 124).

According to L. Tsapovska, a competence-based educational environment should be viewed as an educational institution’s environment comprising a set of components: internal orientation of the institution, specific values, ideas, tasks; the moral-psychological climate of the institution; educational technologies used in the process; psychological characteristics of educational subjects; tools chosen by the institution to address general cultural tasks; differentiated perceptions of students by teachers; the socio-psychological structure of the teaching staff; the psychological component of the knowledge transfer process (Tsapovska, 2020, p. 126). Thus, the competence-based educational environment is a stable polystructural system of direct and indirect educational influences through which psychological-pedagogical principles, methods, tools, goals, objectives, and forms are implemented within the educational institution.

The main capabilities of the educational environment in the professional training of sergeant and enlisted personnel (SEP) in the engineering troops include: use of all types of information resources and services; secure access to verified content for solving educational tasks; methodological support and guidance for designing and planning various educational activities; support for both criteria-based and formative assessment; all forms of information work, as well as the organisation and support of remote interaction between all participants in the educational process.

The educational environment of military education institutions (training centres) is characterised by its *isolation and closure*. Every military unit, including training centres, is located within a fenced-off area with restricted entry and exit. Cadets are not allowed to use smartphones or the internet during classes. Limited internet access is compensated for by the existence of the

institution's electronic educational environment, which contains all necessary learning materials. During classes and independent work, controlled internet access is provided in designated classrooms and information (computer) labs.

Thus, the specificity of military education institutions (training centres) represents a unique and complex characteristic that defines the structure, content, and dynamics of statutory and professional demands and relationships among all participants in the training process. This allows for adopting the definition of the educational environment of military education institutions as proposed by O. Fedorenko and O. Marchenko: "...a complex of socio-pedagogical conditions, staffing, material and technical resources, educational-methodical support, rules, traditions, value orientations, corporate norms, the state of the moral-psychological climate, and relationships that directly or indirectly affect the personal development of cadets and their integration into military corporate culture through the fulfilment of duties, upbringing, and self-development" (Fedorenko & Marchenko, 2023).

In its broadest sense, the educational environment of training centres (units) in the context of the professional training of SEP in the engineering troops includes didactic materials, programmes, methodologies, teaching and instructional staff. It also encompasses digital and virtual components (such as various types of simulators) as well as military-professional components. During their education in military institutions, cadets undergo training not only in their specialisation but also through all stages of military and military-special training, gaining the knowledge, skills, and abilities required for military service, particularly in sergeant positions. Cadets carry out active military service, initially under conscription and subsequently under contract (Misheniuk, 2022, p. 193). This imposes a certain level of responsibility on servicemen and the necessity to perform their military duties as determined by Ukrainian law and departmental legislative acts.

The educational environment for the professional training of SEP in the engineering troops of the Armed Forces of Ukraine is viewed as a set of microsystems – material and non-material subsystems of the internal educational environment of training centres (units). Within the structure of military education institutions that provide professional training for SEP of the

engineering troops of the Armed Forces of Ukraine, the following microsystems are identified: didactic, practice-oriented, digital, health-preserving, social, and educational.

Each of these microsystems within the training centre is based on a structural framework consisting of: a spatial-object component ("space of things"), an activity-based component ("space of actions"), and a subject-social component ("space of relationships") (see Table 1). In their interconnection, all microsystems and components of the educational environment for SEP training are aimed at developing in cadets the knowledge, skills, and abilities necessary for military service in designated positions.

Thus, the educational environment of military education institutions (training centres) that provide professional training for sergeant and enlisted personnel (SEP) of the engineering troops of the Armed Forces of Ukraine is a multidimensional, complexly structured phenomenon – a set of specific microsystems (didactic, practice-oriented, digital, educational, health-preserving, and social). Each microsystem of the training centre is based on a structural framework composed of spatial-object ("space of things"), activity-based ("space of actions"), and subject-social ("space of relationships") components.

Conclusions. The planning of professional training for SEP in the engineering troops of the Armed Forces of Ukraine within the educational environment of training centres, considering the specifics of their activities, is carried out exclusively in accordance with regulatory documents, statutes, and instructions, which do not allow changes to the content. Taking into account the specifics of the educational environment of military education institutions (training centres) makes it possible to effectively structure the professional training process for SEP of engineering specialties in the Armed Forces of Ukraine.

At the same time, the influence of the regulated military educational environment can be both negative and positive. On the one hand, the closed nature of training centres may hinder the implementation of information technologies and innovative methodologies. On the other hand, the stability of the military educational environment within training centres contributes to the effectiveness of the organised and predictable process of professional training for SEP in the engineering troops.

Table 1

Structural Components of the Educational Environment in Military Education Institutions Providing Professional Training for Sergeant and Enlisted Personnel of the Engineering Troops of the Armed Forces of Ukraine

| Types of microenvironments | The structure of the microenvironment | | |
|----------------------------|---|--|---|
| | Spatial and subject component | Activity component | Subject and social component |
| didactic | Lecture halls, classrooms, computer labs, laboratories, classrooms for interactive classes, scientific library, educational equipment | Traditional and problem-based lectures, seminars, discussions, roundtables, business games, communication training, and training projects | Relationships in systems: 'teacher-group of cadets', 'teacher-cadet', 'cadet-cadet', 'group of cadets-cadet' |
| practice-oriented | Educational and scientific laboratories, training rooms, training boxes, virtual reality classes, training grounds | Training sessions at training grounds, work of problem groups, applied projects, military engineering and professional training | Relationships in systems: 'lecturer/trainer-group of cadets', 'lecturer-trainer-cadet', 'cadet-cadet' |
| digital | Computer labs, multimedia classrooms, automated learning systems, Moodle system, virtual reality classes, specialised software and hardware | Distance learning, online testing; independent work with electronic learning materials, creation of digital learning environments | Relationships in systems: 'digital teacher-group of cadets', 'digital trainer-digital cadet', 'digital teacher-digital trainer-digital cadet' |
| health-promoting | Physical training grounds, training and sports complex, obstacle courses, sports town, medical and sanitary unit | Special physical training, sports events, meeting combat training standards in training and combat activities, preventive medical examinations | Relationships in systems: 'trainer-cadet', 'trainer-group of cadets' |
| social | Moral support centres, patriotic education centres, cultural and leisure support | Volunteer social, cultural, leisure, informational and sporting events | Relationships in systems: 'tutor-group of cadets', 'commander-group of cadets', 'members of the public-volunteer cadets' |
| educational | Moral and psychological support centre, sports and legal associations | Various educational events, concerts, work of various associations and communities in various fields | Relationships in the systems: 'supervisor-group of cadets', 'teacher-cadet', 'cadet-cadet' |

BIBLIOGRAPHY:

1. Гончаренко І. Б., Михайлова Ю. О. Досвід підготовки кадрів для сектору безпеки та оборони провідних країн світу та шляхи його впровадження в Україні. *Вісник Харківського національного університету внутрішніх справ*. 2016. Вип. 3. С. 214–222.
2. Король Я. І., Луцишин А. М., Король Л. Я. Методичні основи проведення командно-штабних навчань (тренувань) під час підготовки майбутніх офіцерів логістики. *Інноваційна педагогіка*. 2024. Вип. 67(1). С. 183–187.
3. Марченко О. Г. Освітнє середовище у вищих військових навчальних закладах авіаційного профілю: теорія і практика формування та вдосконалення: монографія. Харків : ХНПУ імені Г. С. Сковороди, 2018. 412 с.
4. Мішенюк Р. М. Педагогічні технології у загальновійськовій підготовці майбутніх офіцерів-прикордонників: реалії та перспективи. *Теорія і методика професійної освіти*. 2022. Вип. 45. С. 192–195.
5. Остапчук В. М. Вибір професії військовослужбовця сучасною молоддю: усвідомлене рішення чи випадковість? *Суспільство. Держава. Армія. Збірник наукових праць (Гуманітарні та соціально-економічні науки)*. 2022. Вип. 26. С. 4–7.
6. Панченко Л. Ф. Інформаційно-освітнє середовище сучасного університету: монографія. Луганськ : Вид-во ДЗ «ЛНУ імені Тараса Шевченка», 2010. 280 с.
7. Плачинда Т. С. Особливості організації освітнього середовища ЗВО авіаційного профілю. *Педагогічні науки: теорія, історія, інноваційні технології*. 2019. Вип. 6 (90). С. 124.
8. Федоренко О. І., Марченко О. Г. Світова теорія та практика формування освітнього середовища в закладах вищої освіти зі специфічними умовами навчання. DOI: <https://doi.org/10.30525/978-9934-26-327-9-15>
9. Цапівська Л. С. Компетентнісна освітня парадигма як цільова, спрямованість освіти в Україні. *Освіта і наука*. 2020. Вип. 2 (29). С. 125–129.

10. Шумков І. Організаційно-педагогічні умови формування фахової компетентності майбутніх офіцерів військової розвідки в умовах інформаційно-освітнього середовища ВВНЗ. *Актуальні питання гуманітарних наук*. 2024. Вип. 71 (3). С. 315–319.

REFERENCES:

1. Honcharenko, I. B., & Mykhailova, Yu. O. (2016). Dosvid pidhotovky kadriv dlia sektoru bezpeky ta oborony providnykh krain svitu ta shliakhy yoho vprovadzhennia v Ukraini [Evidence of personnel training for the security and defense sector of the leading edges of the world and its development in Ukraine]. *Visnyk Kharkivskoho natsionalnoho universytetu vnutrishnikh sprav – Bulletin of Kharkiv National University of Internal Affairs*, 3, 214–222 [in Ukrainian].
2. Korol, Ya. I., Lutsyshyn, A. M., & Korol, L. Ya. (2024). Metodychni osnovy provedennia komandno-shtabnykh navchan (trenuvan) pid chas pidhotovky maibutnikh ofitseriv lohistyky [Methodical bases of command and staff exercises (trainings) in the training of future logistics officers]. *Innovatsiina pedahohika – Innovative pedagogy*, 67(1), 183–187 [in Ukrainian].
3. Marchenko, O. H. (2018). *Osvitnie seredovyshche u vyshchykh viiskovykh navchalnykh zakladakh aviatsiinoho profilu: teoriia i praktyka formuvannia ta vdoskonalennia* [Educational environment in higher military educational institutions of aviation profile: theory and practice of formation and improvement]. [Monohrafiia]. Kharkiv : KhNPU imeni H. S. Skovorody, 412 [in Ukrainian].
4. Misheniuk, R. M. (2022). Pedahohichni tekhnolohii u zahalnoviiskovii pidhotovtsi maibutnikh ofitseriv-trykordonnykh: realii ta perspektyvy [Pedagogical technologies in the general military training of future border guard officers: realities and prospects]. *Teoriia i metodyka profesiinoi osvity – Theory and Methodology of Professional Education*, 45, 192–195 [in Ukrainian].
5. Ostapchuk, V. M. (2022). Vybir profesii viiskovosluzhbovtisia suchasnoi moloddiu: usvidomlene rishennia chy vypadkovist [Choosing a military profession by modern youth: a conscious decision or an accident]? *Suspilstvo. Derzhava. Armiia. Zbirnyk naukovykh prats (Humanitarni ta sotsialno-ekonomichni nauky) – Society. State. Army. Collection of scientific works (Humanities and socio-economic sciences)*, 26, 4–7 [in Ukrainian].
6. Panchenko, L. F. (2010). *Informatsiino-osvitnie seredovyshche suchasnoho universytetu* [Information and educational environment of the modern university]. [Monohrafiia]. Luhansk : Vyd-vo DZ “LNU imeni Tarasa Shevchenka”, 280 [in Ukrainian].
7. Plachynda, T. S. (2019). Osoblyvosti orhanizatsii osvitnoho seredovyshcha ZVO aviatsiinoho profilu [Features of the organization of the educational environment of aviation universities]. *Pedahohichni nauky: teoriia, istoriia, innovatsiini tekhnolohii – Pedagogical Sciences: Theory, History, Innovative Technologies*, 6 (90), 124 [in Ukrainian].
8. Fedorenko, O. I., & Marchenko, O. H. (2023). Svitova teoriia ta praktyka formuvannia osvitnoho seredovyshcha v zakladakh vyshchoi osvity zi spetsyfnymy umovamy navchannia [World theory and practice of forming an educational environment in higher education institutions with specific learning conditions]. DOI: <https://doi.org/10.30525/978-9934-26-327-9-15> [in Ukrainian].
9. Tsapovska, L. S. (2020). Kompetentnisna osvitnia paradyhma yak tsilova. spriamovanist osvity v Ukraini [Competence-based educational paradigm as a target orientation of education in Ukraine]. *Osvita i nauka – Education and Science*, 2(29), 125–129 [in Ukrainian].
10. Shumkov, I. (2024). Orhanizatsiino-pedahohichni umovy formuvannia fakhovoi kompetentnosti maibutnikh ofitseriv viiskovoi rozvidky v umovakh informatsiino-osvitnoho seredovyshcha VVNZ [Organizational and Pedagogical Conditions for the Formation of Professional Competence of Future Military Intelligence Officers in the Information and Educational Environment of a Military Intelligence University]. *Aktualni pytannia humanitarnykh nauk – Topical Issues of Humanities*, 71 (3), 315–319 [in Ukrainian].