МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ

УКРАЇНСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ ЗАЛІЗНИЧНОГО ТРАНСПОРТУ

НАВЧАЛЬНО-МЕТОДИЧНИЙ ВІДДІЛ

РЕАЛІЗАЦІЯ ЦІЛЕЙ СТАЛОГО РОЗВИТКУ В ОСВІТНІХ ПРОГРАМАХ УКРАЇНСЬКОГО ДЕРЖАВНОГО УНІВЕРСИТЕТУ ЗАЛІЗНИЧНОГО ТРАНСПОРТУ: ВІД КОНЦЕПЦІЇ ДО ПРАКТИКИ

ТЕЗИ НАУКОВО-МЕТОДИЧНОЇ КОНФЕРЕНЦІЇ УНІВЕРСИТЕТУ

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INNOVATIONS IN MILITARY EDUCATION: FROM DIGITAL SOLUTIONS TO NEW EDUCATIONAL APPROACHES

The contemporary conditions in which Ukraine's military education system operates are characterized by significant security challenges, resource shortages, persistent threats, and the rapid evolution of warfare. Consequently, there is an increasing need to train military specialists who are capable of acting technologically, adaptively, and effectively. Innovations in military education are no longer optional — they have become essential tools for the survival and development of the defense system. Current reforms focus on the digitalization of the educational process, the modernization of academic program content, and the introduction of innovative pedagogical methodologies that ensure the development of practical competencies under real wartime conditions.

The innovative development of military education is driven by several key factors. First and foremost, it is shaped by the transformation of the nature of armed conflict: the growing role of unmanned systems, digital command-and-control platforms, electronic warfare tools, cyber threats, data analytics, and artificial intelligence. These technological changes create new demands for specialists: a military professional must simultaneously act as an equipment operator, information analyst, tactician, and user of digital systems.

The second important factor is the limitation of resources. The material and technical base of many training centers has been affected by military actions, part of the infrastructure requires modernization, and the number of cadets and trainees is increasing. In such conditions, innovations help to compensate for resource shortages and maintain the quality of training.

The third factor is the need for rapid adaptation of educational programs to real combat experience. Warfare evolves extremely quickly, and therefore, the content of training cannot remain static. Innovative approaches enable the prompt integration of

new tactical solutions, equipment, and operational algorithms into the training process.

Thus, innovations are not only technological advancements but a comprehensive set of changes that transform military education into a system capable of preparing specialists for the realities of modern warfare.

Digitalization has become the most dynamic and visible direction in the modernization of military education. It encompasses a wide range of solutions from remote learning platforms to high-tech simulation systems.

The use of online platforms and digital resources has enabled the continuity of learning even under conditions of martial law. Digital systems support: access to educational materials from any location; flexible formats for knowledge assessment; the possibility of individual learning pace; interaction between instructors and learners without geographical constraints.

This is particularly important for training military personnel who may be deployed, on rotation, or performing operational tasks.

One of the most powerful innovation tools is the combination of VR/AR technologies and computer-based simulators. Their application allows: modeling complex combat situations; practicing actions in a safe environment; reducing the consumption of ammunition and material resources; training stress resilience and decision-making speed.

Simulation-based training, which has become standard in many countries, is especially valuable in Ukraine due to resource limitations and high risks to personnel.

Analytical tools integrated into digital platforms enable the tracking of each learner’s progress, the development of individual training trajectories, the identification of knowledge gaps, and the prompt adjustment of the program. This makes the learning process more adaptive and effective. A critical challenge in military education is ensuring maximal practical relevance while minimizing resource consumption. Innovative technologies allow for effective practice in areas such as command-and-control systems, unmanned platforms, communications equipment, electronic warfare, and artillery systems. The use of intelligent training systems also

automates part of the preparation, ensures the repetition of complex scenarios, and enables simultaneous training of a large number of personnel. This approach reduces the strain on material resources while improving the effectiveness of practical training.

It is also necessary to pay attention to the fact that modern military educational programs must be flexible and quickly adapt to changes in combat operations. The introduction of innovations requires updating both the structure of the programs and their content.

Among the key competencies that should be integrated into training programs, the following should be highlighted: proficiency with digital command-and-control systems, skills in operating unmanned and sensor platforms, fundamentals of cybersecurity and counter-information operations, data-driven planning and analysis, and decision-making under uncertainty and information overload.

These competencies form the foundation of the professional profile of a 21st-century military specialist.

Updating the content of courses must be based on real combat experience, incorporating new tactical solutions, methods of applying modern technologies in operations, lessons learned from actual missions, and the synthesis of Ukrainian and international military experience.

This enhances the practical value of training and ensures its relevance to contemporary warfare.

Technological innovations must be complemented by pedagogical innovations to enhance the quality of learning. Modern teaching methods emphasize active learner participation, working with real-world case studies, and fostering critical thinking.

Among the most effective approaches are:

- **problem-Based Learning (PBL):** learners work on real or realistic tasks, analyze situations, propose solutions, and justify decisions.

- **Case-Study and Military Analytical Scenarios:** analyzing specific combat situations integrates practical experience into the curriculum and develops teamwork and situational awareness.
- **mission-Driven Training:** learning is organized around completing specific missions, helping learners understand cause-and-effect relationships and operational planning.
- **adaptive Learning:** digital tools allow each learner to progress at their own pace, receiving personalized guidance and tasks.

These approaches enhance engagement, promote responsibility for learning outcomes, and deepen understanding — crucial factors in military training.

Conclusion

Innovations in military education comprehensively enhance the quality of the learning process, affecting all components — content, methods, infrastructure, and evaluation systems. They enhance the practical relevance of training, facilitate personalized educational trajectories, ensure objective assessment, facilitate rapid program updates, and foster modern professional competencies.

The combination of digital technologies, simulation-based solutions, and innovative pedagogical methods creates a flexible, resilient, and effective educational environment. This enables military educational institutions to adapt to the challenges of contemporary warfare and prepare highly qualified specialists capable of performing effectively in complex and dynamic conditions.

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Сталий розвиток – це не лише соціально-економічна стратегія, а і правова категорія, що потребує належної імплементації у правову систему держави та