NAUKI O BEZPIECZEŃSTWIE / SECURITY STUDIES

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DISTANCE LEARNING SYSTEM OF THE PROFESSIONAL MILITARY EDUCATION INSTITUTION: PROBLEMATIC ISSUES OF FORMATION

Informatization of education is one of the high-priority directions of the educational system modernization, which includes the development of the educational information space and the distance learning system implementation into the educational process. The need for digital (distance) technologies effective usage in the educational process was specified in the Ukraine Higher Education Development Strategy for 2022–2032[1]. Nevertheless, the problem at issue of the distance learning system formation for the professional military education institutions remains an insufficiently investigated scientific task.

Problem statement. The development of military education in Ukraine involves the military specialists training of all military management levels and branches with creative thinking, with a high-grade professional integrity, which are capable of effective personnel and operational technical armament management under the extreme conditions of modern-day fighting. This, in its turn, requires the computer technologies usage to provide the distance learning

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[1] *Strategy for the development of higher education in Ukraine for 2022–2032*, https://mon.gov.ua/storage/app/media/news/2022/04/15/VO.plan.2022-2032/Stratehiya.rozv.VO-23.02.22.pdf.

in military education process, which opens up for the rising officer a wide range of modern approaches and technologies for knowledge, skills and abilities acquiring[2,3].

The observing of available approaches to the higher educational institutions distance learning systems formation displayed their implementation ways were not perfect and required to standardize the process of their formation in order to ensure the educational process effectiveness. The main reason of beforementioned fact was the irrational formation of professional military education institutions distance learning systems. For the most part, educational institutions deployed the distance learning systems that were not integrated into the other institutions systems. The infrastructure of these systems was located in the educational institution. Such approach led to several negative consequences, in particular: significant financial costs for the single system deployment, the need for highly qualified technical personnel to ensure the single system functioning, the impossibility of access to the single system information resources by users from different systems, the need to ensure cyber security and save the data of each single system.

In order to solve the mentioned problems, there was deployed the Central Repository for Distance Learning System Resources of the Ukrainian Armed Forces (hereinafter referred to as CRR DLS), which significantly helps to determinate the tasks of the distance learning system deploying for the specific professional military education institution and for the military training subunit in the professional educational institution (hereinafter referred to as PME institution and MTS PE institution).

Recent research and publications analysis. The thorough analysis of the current status of the distance learning and the distance learning technologies usage in higher education institutions of Ukraine and of the world have been conducted, the technological solutions that contribute to improving the results of the distance learning technologies implementation have been identified by the scientists[4].

The analysis of global trends in the distance learning systems development showed that it was paid the great attention to the distance learning technologies implementation in the foreign countries' armies. The main goal was to create an integrated system of armed forces distance learning, which could allow to implement the distance learning technologies in each PME institution, to provide centralized technical support for functioning, and would also allow each user from various educational and scientific institutions to have access

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[2] J.J. Vogel-Walcutt, S. Schatz, *Modernizing Learning: Building the Future Learning Ecosystem: Advanced Distributed Learning Initiative and More than 85 Contributors*, United States Government Printing Press 2019.

[3] *The NATO Advanced Distributed Learning Handbook – ADL Initiative*, https://adlnet.gov/assets/uploads/nato-adl-handbook-7-31-2019.pdf.

[4] S.O. Sysoieva, K.P. Osadcha, *Status, technologies and prospects of distance education in higher education of Ukraine*, "Information Technologies and Learning Tools" 70(2019), no. 2, p. 271, https://doi.org/10.33407/itlt.v70i2.2907.

to the integrated informational system's resources. The update development of the distance learning system under the military conflicts and suppositional epidemics conditions, was important for the effective implementation of the educational process in professional military education institutions[5]. No less important aspect of the effective distance learning technologies implementation in the PME institution and MTS PE institution was the availability of trained personnel for the remote information resources development, as well as the provision of advisory assistance to teachers and the appropriate basic educational and material means development[6]. The usage of distance learning technologies in the educational process contributed to the professional military specialists' lifeware development, the formation of the ability to acquire knowledge independently, to carry out the information analytics, various types of independent information processing, intensify and activate the learning process itself[7].

The aim of the article is to analyze the processes of a distance learning system formation of a professional military education institution and their problematic issues.

The main research material exposition

A distance learning system is an educational system in which the fundamental means of learning activities managing, and the training resources include software and hardware tools that functionalize on the basis of information and communication technologies, communication systems and networks, and are used in the educational process under the teacher guidance[8]. The distance learning system of the Ukrainian Armed Forces is a subsystem of the military educational system, which is a set of interacted for the purpose of organizing and implementing a distance educational process in a unified informational-and-educational environment of administrative personnel, distance learning subunits, students who study in distance or with the help of distance training technologies, and scientific and pedagogical workers[9].

In order to study the problematic issues of formation the distance learning system of a professional military education institution (hereinafter referred to as a DLS PME institution) it is necessary to understand that each PME institution needs to have the appropriate infrastructure, technical capabilities for the distance

[5] D. Al-Fraihat et al., *Evaluating E-Learning Systems Success: An Empirical Study*, "Computers in Human Behavior" 102(2020), pp. 67–86, https://doi.org/10.1016/j.chb.2019.08.004.

[6] Defence Education Enhancement Programme (DEEP), *Strategy for Distance Learning Support*, https://www.nato.int/natostaticfl2014/assets/pdf/2021/12/pdf/211209-deep-strategy-dist-learn.pdf.

[7] V. Borodavka, *Information technologies in the distance learning system during the training and retraining of military specialists*, "Collection of scientific works of the Kharkiv National University of the Air Force" 2020, no 2(64), pp. 7–11.

[8] J. Vogel-Walcutt, S. Schatz, *Modernizing Learning…* .

[9] „Distance Learning Concept in the Armed Forces of Ukraine: order of the Ministry of Defense of Ukraine" no 744, https://www.mil.gov.ua/content/mou_orders/mou_2020/nmou_744_21122015.pdf.

learning technologies implementation, in particular video conferencing services, or choose the appropriate cloud services, administrative distance learning staff, as well as needs it to have the opportunity to train teachers and students in the basics of working with distance learning technologies. As a matter of optimizing this process, it resumes work at providing a unified distance learning system in the Ukrainian Armed Forces. In addition, a permanent analysis of the latest training methods with the distance learning technologies usage and this experience exchange is carried out to increase the effectiveness of the all-levels military specialists training. The implementation, usage and development of the DLS PME institution requires the solution of a various tasks range, either of which could be attributed to a certain type of the distance learning system providing. Therefore, the DLS PME institution could be presented in the form of interconnected subsystems set (Fig. 1)[10].
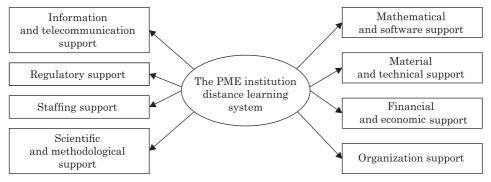

Fig. 1. The PME institution distance learning system (own source)

Let's consider each of the subsystems of the DLS PME institution in a row.

The subsystem of regulatory support is intended to implement the regulation of the educational process subjects' interrelation when the educational process organized in a distance form or with distance learning technologies usage in the PME institution. This subsystem provides an opportunity to regulate the relationships of the resources' owners and distance learning educational and methodological materials. With the help of this subsystem, it is possible to determine the access order to distance learning resources, including confidential information in the informational-and-educational environment of the institution, and the economic interest of the distance learning resources authors and to ensure the protection of copyrights and work standardization of the teaching personnel, administrative and technical staff. The result of the regulatory support subsystem activity of the DLS PME institution is the internal specification documents regulating the organization and implementation of the distance learning process in the PME institution.

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[10] *Organization and use of distance learning technologies in the Armed Forces of Ukraine: educational method manual*, 2017, http://adl.nuou.org.ua/wp-content/uploads/2017/12/ovt-distan-navch.pdf.

The subsystem of information and telecommunication support is the software and technical basis of the DLS PME institution and is intended to provide access to the informational-and-educational environment to all subjects of the distance learning process and to ensure their operational interaction. The subsystem provides access mode to information and person confidentiality in the distance learning process. The subsystem could include the usage of secure connection, firewalls, information flows separation, the usage of encryption technique and unauthorized access protection.

The subsystem of mathematical and software support provides tools for the distance learning resources development, for the distance learning process organization and implementation, the tools providing for the distance learning resources development and for the distance learning resources guaranteed preservation, as well as all organizational information.

The subsystem of material and technical support is a set of various means of computing technics and peripheral devices, united with the help of telecommunication equipment into the computer networks of the appropriate scale. The subsystem of material and technical support of distance learning includes video-conferencing systems and devices; video-, audio- and other equipment; the equipment, intended for the multimedia educational materials production; data backup systems and tools.

The subsystem of financial and economic support functions within the framework of the corresponding support of the military education system and is one of the main subsystems, whereas under the market conditions, finance is the basis of any economic system. The financial and economical subsystem is an interaction in the field of finance that arises during the financial and economic activities of the PME institution.

The subsystem of the distance learning organization support is intended to determine the directions and justify the ways of educational services, provided by the PME institution with distance learning technologies usage, distribution for all areas of military specialists training. The subsystem makes it possible to analyze the current situation using distance learning technologies, forecast its development, and plan its further activity regarding the implementation, usage, and development the distance learning in the PME institution. The subsystem ensures the development of suggestions for the PME institution administration regarding the distance learning development, the distance learning cooperation with domestic and foreign educational and scientific institutions; it also ensures the development and implementation of collaborative programs and projects, etc.

The subsystem of scientific and methodological support is designed for the distance learning resources methodology development; organization and implementation of the distance educational process; working out the criteria and recommendations for the selection or formulation the special mathematical and software support for distance learning, taking into account the current standards. With the help of this subsystem, it is possible to conduct exploratory and applied scientific investigations on the distance learning development

problems, to reproduce state scientific programs in the relevant field. It is possible to develop scientific, methodical, expert recommendations on the formation and development of all types of distance learning providing. The subsystem also affords an opportunity to form the conditions and methodology of certification the distance learning resources of the PME institution.

The subsystem of educational and methodical support is designed for implementation of the distance learning resources development measures based on modern pedagogical, information and communication technologies; career enhancement training; working out the methodological support for professional training verification, testing, certification of teachers; recommendations on the organization the domestic and foreign distance learning experience dissemination in the system of military specialists training.

The subsystem of staffing support is under the perception of the team with specialized skills that develops distance learning courses, namely, a manager who prepares, directs and manages distance learning projects, providing the communication between all participants involved in the projects; distributes responsibilities among all project participants. A pedagogical designer who ensures pedagogical correctness when moving educational material to the web environment; selects, combines and edits the educational material; determines the pedagogical strategy, types of activities and multimedia, project components; forms tests and assessment items. A multimedia designer prepares visual course layouts; selects or creates multimedia components that include graphics, images, animations, audio, video, etc. to effectively use the educational material and learning strategy created by the pedagogical designer. The software programmer is responsible for testing and integrating distance learning resources with the educational process management system. An expert in the subject field could be both from the PME institution and invited from outside. He is the most important and, at the same time, a temporary team member for the distance learning project development who provides knowledge and experience in a certain subject area, works with the pedagogical designer to develop the course content, to ensure the correctness and accuracy of its elements. Also, it is assumed that teachers could develop distance learning courses at the PME institution. In this case, the above-mentioned team would be involved in the development of complex interactive distance learning courses, as well as engage in the teachers training on the use of distance learning technologies. The process of staffing, within the framework of the subsystem, is under the perception of the organization of professional training and career enhancement training of all distance learning subjects categories.

When creating a distance learning system in the armed forces, it is necessary to provide for the presence of the main distance learning subunit, which would carry out general coordination of the implementation and usage the distance learning technologies in the armed forces. The distance learning subunit of the PME institution should carry out the constant coordination with the main unit of distance learning of the armed forces. The structure development of the DLS formation in the PME institution includes the following stages:

- determination the purpose and tasks of the DLS formation in the PME institution.
- definition the object and subject of the DLS formation in the PME institution.
- determination the sources of the DLS formation in the PME institution.
- working out the information acquisition methods.
- determination the structure and content of monitoring materials.
- determination the monitoring procedure.

It is also necessary to note the factors that have a negative impact on the DLS formation in the PME institution generally:

- lack of targeted investments in innovative processes.
- insufficient level of theoretical and scientific-methodical training of personnel.
- insufficient level of educational and material base of the PME institution.
- lack of work coordination in the PME institution during the approvement and implementation of the distance learning system.
- the absence of a regulatory framework that confirms the status of distance learning at the PME institution.
- insufficient implementation of managerial educational innovations in the work practice of educational activity management subunits and PME institution administration[11].

Another important aspect that should be taken into account when a modern DLS formation in the PME institution is the availability of an up-to-date hardware and software complex for distance learning, particularly: computer equipment for online classes conducting; a sufficient number of computers to ensure the independent work of students; availability of a video studio with appropriate equipment and software for modern video content creation, availability of specialized software with methodology for interactive distance learning resources developing. In order to ensure uninterrupted access to the distance learning resources, it is necessary to have broadband high-speed Internet access, both in classrooms and with teachers[12].

Considering the experience of distance learning under the conditions of armed aggression of the Russian Federation against Ukraine, the issue of deployment the technical resources of distance learning for the entire defense sector is of current interest. The most expedient and optimal solution to this problem is the deployment of distance learning resources of the PME institution on cloud services of the unified defense information environment. The implementation of cloud technologies for a unified information environment defense is provided by the Strategic Defense Bulletin of Ukraine[13]. At the initial stage of distance learning usage, teachers usually have difficulties when transition from the usual form of learning to distance learning form. Particularly:

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[11] *Use of distance learning technologies in the educational process: Guidelines NDUU*, Kyiv 2020.

[12] *Theory and Practice of Distance Learning in the Armed Forces of Ukraine*, Part 1: *Basics of Using Distance Learning Technologies in the Educational Process of Higher Military Educational Institutions and Military Educational Units of Higher Education Institutions*, NDUU, Kyiv 2021.

[13] „Strategic Defense Bulletin of Ukraine, put into effect by the Decree of the President of Ukraine" 2021, no 473, https://zakon.rada.gov.ua/laws/show/n0063525-21#Text.

- ability to use information technology.
- the complexity of distance courses developing.
- limitation in practical skills acquiring.
- limited opportunities to control the independence of task performance by those who are studying.
- the difficulty of transforming technical and practical classes into online format.
- the need to adapt testing procedures and practical application of newly acquired knowledge.
- adaptation the curriculum to distance learning.

Specialists of the distance learning subunits of the PME institution should train teachers in the basics of using and creating the distance learning resources. After completing the training, the teacher himself can act as a training manager for his colleagues. The next problematic issue is the organization of planning and monitoring the activities of scientific and scientific-pedagogical workers of the PME institution during the distance learning. For this purpose, it is necessary to develop regulatory documents in the PME institution, which will regulate the activity of teachers in the process of distance learning implementation.

In the process of the distance learning system formation in the PME institution, the problem of its methodical support arises. In order to solve this problem, the specialists of the main subunit of the armed forces distance learning, as well as the subunits of distance learning of the PME institution, should develop scientific and methodological manuals[14] [9, 10, 11, 13], that highlight the practical recommendations and methodology for organizing the implementation and usage of distance learning technologies in the PME institution.

Conclusions and prospects for further research

In the Ukrainian Armed Forces, the powerful resources have been created for the further distance learning implementation in the process of military specialists training, a permanent analysis of the latest training methods with the distance learning technologies usage and this experience exchange is carried out to increase the effectiveness of the all-levels military specialists training The main direction of further scientific research is the issue of creating a unified distance learning system in the Ukrainian Armed Forces, which should be deployed using cloud technologies of a unified defense information environment.

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[14] Ibidem, *Theory and practice of distance learning in the Armed Forces of Ukraine*, Part 2: *The electronic learning system of higher military educational institutions and military educational units of higher education institutions*, Chapter 5. *Methodological recommendations for the use of electronic learning technologies in higher military educational institutions and military educational units of higher education institutions*, NDUU, Kyiv 2021, access mode: https://nuou.org.ua/assets/documents/tp-dn-zsu.html.

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DISTANCE LEARNING SYSTEM OF THE PROFESSIONAL MILITARY EDUCATION INSTITUTION: PROBLEMATIC ISSUES OF FORMATION

SUMMARY

Modern trends in the education development require directing efforts to the development of distance learning in the Ukrainian Armed Forces as one of the effective tools for implementing the model of continuous training. The article is devoted to highlighting the problematic issues of formation the distance learning system of the professional military education institution. There are analyzed the main subsystems of the distance learning system of the professional military education institution, which determine the architecture of the system and its intended purpose. The analysis of the distance learning systems formation made it possible to determine the central objectives of certain types of the distance learning system providing and factors that negatively affect the distance learning system formation. An overview of the problematic issues of the distance learning system formation regarding a professional military education institution shows that it is necessary to approach the formation of a distance learning system differently, taking into account the existing limitations.

KEYWORDS: distance learning, professional military education institution, distance learning system