



Applying Information Technologies at Higher Military Education Institutions of Ukraine in the Current Context: Pedagogical and Psychological Aspects*

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Abstract: This article explores pedagogical and psychological aspects of applying information and communication technologies in higher military education institutions of Ukraine in the current circumstances. The priority directions for developing distance education through information technologies, including MOODLE platform, have been shown. The research identified positive results of applying IT in education under quarantine restrictions: an increase in the technological efficiency of distance education due to modern software and hardware, a higher level of accessibility and openness of education, and further individualization of instruction. On the other hand, it revealed the disadvantages as well: course materials stored in databases lack well-organized structure and do not reflect the level of cadets' pre-existing knowledge; there is no constant feedback from the instructor; due to the incapability of the Internet resources to cope with traffic load increased in the pandemic, technical failures are common while learning remotely; cadets are not fully prepared to work independently; increase in teaching load on educators, owing to the urgent need to design new distance learning courses; difficulties in the development of high-quality course materials for distance education; applying information technology often prevents from considering the mental state and psychology of students and, therefore, properly employ an individual approach to teaching. In general, the conclusion is drawn that applying information technology in the current situation

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enabled the preservation of the basic parameters of the educational process and provided effective tools for the interaction of participants in the educational process.

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Aplicación de las tecnologías de la información en las instituciones de enseñanza militar superior de ucrania en el contexto actual: aspectos pedagógicos y psicológicos

Resumen: Este artículo explora los aspectos pedagógicos y psicológicos de la aplicación de las tecnologías de la información y la comunicación en las instituciones de educación militar superior de Ucrania en las circunstancias actuales. Se han mostrado las direcciones prioritarias para desarrollar la educación a distancia a través de las tecnologías de la información, incluyendo la plataforma MOODLE. La investigación identificó los resultados positivos de la aplicación de las tecnologías de la información en la educación bajo restricciones de cuarentena: un aumento de la eficiencia tecnológica de la educación a distancia debido al moderno software y hardware, un mayor nivel de accesibilidad y apertura de la educación, y una mayor individualización de la instrucción. Por otro lado, reveló también las desventajas: los materiales del curso almacenados en bases de datos carecen de una estructura bien organizada y no reflejan el nivel de conocimientos preexistentes de los cadetes; no hay una retroalimentación constante por parte del instructor; debido a la incapacidad de los recursos de Internet para hacer frente a la carga de tráfico que aumenta en la pandemia, son frecuentes los fallos técnicos durante el aprendizaje a distancia; los cadetes no están totalmente preparados para trabajar de forma independiente; aumento de la carga docente de los educadores, debido a la urgente necesidad de diseñar nuevos cursos de educación a distancia; dificultades en el desarrollo de materiales de curso de alta calidad para la educación a distancia; La aplicación de la tecnología de la información a menudo impide tener en cuenta el estado mental y la psicología de los alumnos y, por lo tanto, emplear adecuadamente un enfoque individual de la enseñanza. En general, se llega a la conclusión de que la aplicación de las tecnologías de la información en la situación actual permitió preservar los parámetros básicos del proceso educativo y proporcionó herramientas eficaces para la interacción de los participantes en el proceso educativo.

Palabras clave: pandemia; enseñanza a distancia; tecnologías de la información; institución de enseñanza militar superior; plataforma MOODLE

Introduction

Under current conditions, the problem of effective organization of the educational process has become particularly relevant. The experience of educational activity during the current quarantine period has revealed the urgent necessity for further research and rethinking of the given issue in terms of the psychological and pedagogical peculiarities to develop new effective methods of instruction which are more appropriate to the context. One can state that the pandemic has contributed to the intense development and use of information and communication technologies (ICT) in education within the educational space of Ukraine on the whole and in higher military education institutions in particular.

However, not all cadets (students) and instructors appeared to be ready for immediate use of information and communication technologies in terms of their efficient application and the pedagogical and psychological transformation of the entire educational process. While before the pandemic, distance learning using ICT played a secondary part in the corona-crisis context. It has become dominant, which requires the renewal of outdated stereotypes of the educational process, psychological perception, and correction of teaching methods.

In general, the use of information and communication technology in teaching disciplines facilitates the individualization of the professional growing-up process of prospective officers, stimulates the development of skills essential for the independent search for knowledge, forms information literacy and cognitive culture of cadets, encourages them to have a more responsible attitude towards independent acquisition of new knowledge.

In the current context, applying information technology has effectively preserved the principal characteristics of the teaching and educational process at higher education institutions in Ukraine. However, recent history has convincingly demonstrated that coronavirus and other threats to human biosecurity might recur periodically over time, which requires the improvement of

forms of online learning through ICT and treating them not as secondary but as extremely important.

“Analysis of studies and publications”

The wide range of issues related to applying information technologies at institutions of higher education in Ukraine, including the military ones, is reflected in the scientific works of Ukrainian scientists, including A. Getman, V. Karasiuk (Getman, Karasiuk, 2020), L. Unguryan, N. Chernets’ka, I. Naumenko (Unhuryan, Chernets’ka, Naumenko, 2013), V. Yunchyk (Yunchyk, 2013), B. Demyda, S. Sahaydak, I. Kopyl (Demyda, Sahaydak, Kopyl, 2011), A. Veremchuk (Veremchuk, 2013), O. Blazhuk, N. Ostrovs’ka (Blazhuk, Ostrovs’ka, 2014), M. Nazar (Nazar, 2013), F. Maynayevev (Maynayevev, 2015), N. Samoliuk, M. Shvets (Samoliuk, Shvets, 2013), I. Karpa (Karpa, 2016), and others.

V. Andrushchenko, Y. Artabayev, O. Oksiyuk (Andrushchenko, Artabayev, Oksiyuk, 2009), O. Shevchenko, O. Sazonov (Shevchenko, Sazonov, 2003), V. Stasyuk (Stasyuk, 2013), V. Ulich (Ulich, 2013), V. Hudym, V. Shunevych (Hudym, Shunevych, 2012), N. Mas (Mas, 2014), etc. study peculiarities of the use of information and communication technologies in distance education of cadets at the higher military education institutions in Ukraine.

V. Bykov (Bykov, 2010) and T. Antonova (Antonova, 2013) in their studies raise issues of increasing computer literacy of teachers, the shift in learning paradigm in the context of distance education, as well as instructors’ capability to implement information and communication technologies in terms of their moral, psychological and instructional technique readiness.

It is necessary to note that the pedagogical and psychological peculiarities of applying information technologies in cadets (students) training became the subject for analysis in scientific works by foreign scientists.

In particular, N. Rodríguez Santos Loureiro and L. Barreiros dos Santos explored the challenges and opportunities of applying information and communication technologies in professional military education in Portugal. They concluded that, on the whole, both cadets and trainers show

a tendency to use information and communication technology in the educational process. Furthermore, the above experts argue that replacing conventional classes with distance learning under certain conditions is possible, provided that an individual approach will be maintained while discussing thematic assignments (Rodrigues Santos Loureiro, Barreiros dos Santo, 2020).

For their part, A. Dreyer, N. Dodd, and W. Dalton analyze the effectiveness of information technology for game-based learning by the example of the South African Military Academy students. Researchers state that applying games in the framework of the educational process is a positive supplement to conventional teaching practices, reinforcing the learning process and making it more interactive and emotionally enjoyable. To confirm the above thesis, the experts conducted an exploratory experiment among the experimental groups of cadets. The experiment aimed to check participants' knowledge of JavaScript with the help of experimental design. The results of the experimental groups turned out to be significantly better than those of the control group (Dreyer, Dodd, Dalton, 2019).

I. Chekhova, J. Berankova, and D. Zerzanova showed good prospects of applying distance education methods to effectively implement the military terminology course (Chekhova, Berankova, and Zerzanova, 2014). In contrast, the researchers J. Cao and I. Shen analyzed the problem of professional training of technical personnel for military equipment with the use of the SYSTEM of distance learning (Cao & Shen, 2011). The authors of the work «Technology of information and communication in psychological operations in official students of the army technical school» identified the role of information and communication technologies in training military specialists for psychological operations (Saavedra Alcides, Tolentino Emerita Victoria, 2018).

A range of experts analyzes the peculiarities of applying information and communication technologies in the educational process at military education institutions. It shows the interrelation between acquired skills and further professional activity using ICT. In particular, the study by J.

Miller and J. Tucker reports the outcomes of applying information and communication technologies in military leaders training to form critical thinking and intercultural competence as a basis for decision-making under high psychological pressure (Miller & Tucker, 2015). Z. Koretski analyzes changes to the Military and Technology Faculty curricula at the University of Defence in Brno (Czech Republic). The given changes were caused by practical needs, including the participation of the Air Services in foreign missions, especially in the Baltic States and Sinai. A significant role in these innovations is assigned to the information and communication learning technologies, which is also due to applying new versions of information systems in the army of the Czech Republic. This study emphasizes the pivotal role of information and communication technologies for military students to master the air navigation module and apply the acquired knowledge to practice in radio engineering, air traffic control, aviation engineering servicing, air navigation technical, and operational safety (Korecki, 2018).

Due to the necessity of intensifying distance education during the pandemic, latterly scientific papers on the peculiarities of applying virtual learning technologies in military education institutions have been published. For example, experts from Colombia studied problems existing in the military education of small unit commanders and proposed solving them by introducing virtual technologies. Furthermore, to objectively evaluate the needs of military personnel, they conducted a survey that allowed them to single out tools available for training commanders of small units using virtual technology (Rodriguez, Camilo, Dussan, Leonardo, *et al.*, 2021).

Some authors consider applying information technologies in education within the scope of issues related to information and value security of the state (in particular when a pandemic virtually paralyzes the conventional educational process). They emphasize that the educational process represents a means of preserving national values and reproducing the culture of a particular nation (Danilyan, Dzeban, Kalynovskyi, Kovalenko, Melnyakova, 2020).

Researchers A. Getman, O. Danilyan, O. Dziban, Y. Kalinovsky, and others draw attention to the excess of low-quality information, which is observed at this point in the information-oriented society development and is one of many problems of information security. Developing an appropriate level of information culture in a person, which prevents stressful situations while dealing with information and information technologies, is also within the scope of the problem. It is the learning process through which a person masters the proper procedures to deal with information and the means of its processing (Getman, Danilyan, Dziban, Kalinovsky, Hetman, 2020).

However, the analysis of the scholarly literature surrounding the subject in question has proved that the attention paid to the pedagogical and psychological features of applying information and communication technologies in higher education needs to be revised. The problem is coming to the fore due to the pandemic when ICT prevails as a teaching aid. The research aims to study the possible advantages and disadvantages of using ICT in Ukrainian universities in the current circumstances; the authors will also review the experience of foreign countries for comparison. Furthermore, formulating suggestions to overcome the negative pedagogical and psychological consequences of the use of ICT in the military educational institutions of Ukraine is also among the aims of the given paper.

Materials and Methods

The methodology framework used in the research is a set of general scientific, philosophical, and specific methods, which combination should lead to the maximum heuristic effect. While applying the method of analysis and synthesis, we have singled out the pedagogical and psychological peculiarities of using information and communication technologies in training military students in higher education institutions in the current context. The simulation method allowed us to find out the prospects for the further practical implementation of information technology in the educational process, which is to determine the

preconditions and requirements for their effective implementation in distance education regularly and in sectoral use. Inductive and deductive methods have proven helpful in generalizing empiric material and testing scientific theories and hypotheses by comparing them with the practices of educational institutions in Ukraine. The dialectical method has been used to identify the peculiarities of developing information and communication technologies in Ukrainian universities. Specific methods like pedagogical observation and experiment are also significant for our research. Using these applied methods, we offered the Ivan Kozhedub Kharkiv National University of Air Force cadets to use the MOODLE platform to study the course “History of Ukraine and Ukrainian culture.” We made conclusions about its effectiveness within the classroom (face-to-face) and during distance (computer-mediated) learning. The pedagogical observation conducted based on Ivan Kozhedub Kharkiv National University of Air Forces allowed drawing the comparison between the results of the use of ICT (MOODLE platform) obtained in 2017 and those obtained in 2020 under the pandemic.

Results and Discussion

Applying information and communication technologies can be considered a present-day requirement. The up-to-date ICT-based teaching methods and study modes facilitate the intensification of the educational process, providing considerable opportunities for subjects and objects of the learning process. Information educational technologies have become the principal tool for communication and transmission of knowledge. At the same time, a range of pedagogical and psychological problems have been encountered recently regarding the readiness of teaching staff and cadets (students) to use ICT in teaching at any given time and with high quality. Such problems can include the appropriate computer literacy rate of all participants in the educational process as well as the mindset to improve it, reasonable time allocation during classes and in extracurricular time, establishing efficient communication between lecturers

and students, developing new teaching methods in a pandemic, efficient monitoring for students' learning performance, creating psychologically comfortable classroom environment while teaching online, etc.

Reflecting on the above problems, V. Bykov proves that applying information and communication technologies causes radical changes in the roles and functions of educators and learners in the educational process, facilitates the implementation of a student-centered or individual approach to the educational process, and, as he notes, it is just what the education currently needs. The educational model of this kind, he claims, presupposes that an educator becomes a co-creator of modern educational technology, without instructing and preaching, instead of being a mere knowledge transmitter. Therefore, the scholar believes that informatization and computerization of the sphere of education is one of the challenging and crucial tasks of the state (Bykov, 2010).

It can be claimed that the Ukrainian state needs to pay more attention to the development of information and communication technologies in education, which became evident during the pandemic when there appeared a need to use them regularly. Thus, domestic educational institutions have encountered such problems as outdated software, tools incapable of coping with a large amount of information, and many cadets (students). Furthermore, during the quarantine restrictions, the operation of the higher education institutions in Ukraine, in particular the military ones, was negatively affected by the lack of information and computer technology professionals able to serve a large number of users, undeveloped algorithm for updating the electronic educational and methodical materials, gaps in legislation, etc.

It is worth mentioning that the above flaws in educational activities experts had discovered a few years before the crisis caused by the spread of coronavirus. In particular, T. Antonova, analyzing the situation with the use of ICT in education, draws attention to the following pedagogical, psychological, and other contradictions:

1) the need to quickly obtain scientific and methodological information and the inertia of its

processing and transmission within the educational institution;

- 2) the desire of educators and their inability to manage research and methodical work using information technology;
- 3) unpreparedness of teachers and the urgent need to use information technology in their work;
- 4) increasing requirements for the educator's professional activity standards and a lack of necessary skills to create a modern educational environment;
- 5) teaching staff must possess a high level of information competence for teaching practice and low efficiency of professional development in this direction (Antonova, 2013).

Hence, the pandemic entailed adjustments in the educational process, and existing pedagogical and psychological problems have become particularly acute. Scientists believe that teachers and learners could have been more ready for the transformation that has taken place in the field of education. To date, the problems which educational process participants encounter are of both technical and psychological nature. Regarding technical support, there needed to be more equipment that students used in the learning process. Moreover, the need for more stable Internet traffic made exchanging information between participants in the learning process easier. The difficulties in the psychological sphere can be mainly reduced because the learners' role and degree of responsibility significantly increased under the new circumstances, which caused their negative attitude toward the learning process. Teachers of the older age group appeared almost not ready to master new methods of information technology-based training. The learning process primarily involved self-preparation of students, during which they were offered to read lecture materials, carry out self-assessments, and complete assignments working independently (without an instructor). At the same time, there was a minimum of teacher-student interaction (Borodavko, Silkin, Shakhmatov & Chelysheva, 2020).

Pedagogical and psychological problems of adaptation to the new training format in the

conditions of quarantine restrictions also affected military educational institutions. In particular, educators from Uzbekistan note that, despite some difficulties, they arranged online teaching on the ZOOM platform, provided instruction as to the use of the platform, and conducted the training. In the beginning, there were difficulties with connection and low-quality sound; not all cadets had webcams. However, by the start of their training, all cadets had mastered the skills necessary to work with the ZOOM platform. Entry assessment of cadets' knowledge in the form of testing was carried out on the first day of the academic year through the messenger channel, publishing the results by the end of the day. In the first half of the day, according to the schedule, study materials for practical training, lectures, presentations, and later video lecture recordings were posted with the help of messenger apps. In order to get feedback from the cadets, the ZOOM platform was used: on the day assigned for the lectures, they arranged video conferences with the teacher, and "live communication" between teachers and cadets was carried out via this platform as well (Lutfullaev, Lutfullaev, Kobilova, Nematov, 2020, p. 68).

The above experts concluded that the ZOOM platform is optimal for the online training of cadets in terms of the following parameters:

- real-time discussion;
- interactive whiteboard;
- possibility to present materials (shared viewing);
- chat rooms where one can write messages and transfer files;
- monitoring of attendance (using the function "participants");
- monitoring of the teacher's work (invitation for a representative from the administration to attend a conference);
- session archiving (with the help of a conference record).

It can be stated that information and communication technologies as the basis for distance education have become an effective means of creating a teaching and educational process in both civilian

and military education institutions under the circumstances caused by the pandemic.

Distance education allowed learners, cadets, and students to maintain the process of acquiring new knowledge, facilitating the increase of their responsibility for learning outcomes. In addition, the skills that cadets (students) acquire during distance learning can be used for long-term self-education and personal self-improvement after the quarantine restrictions.

For a holistic understanding of the benefits of distance education in the current context, let us focus on its characteristics:

1. Flexibility: Students can study at their own pace, which is optimal for them to master the subject.
2. Modularity: each course (module) reveals the essence of a particular subject area, which enables the designing of a curriculum that meets individual or group needs out of a set of independent courses-modules.
3. Parallelism: training can be carried out simultaneously with engaging in a professional activity or studying at another educational institution.
4. Asynchronous character: the learning process, carried out using distance technology, takes place on a schedule convenient for instructors and students.
5. Cost efficiency: relatively low cost of training due to the unification of the content of training programs, distance learning technologies allow the involvement of many students, etc.
6. A new role of the instructor who manages academic groups, mainly as a coordinator supporting students in their professional self-determination.
7. Special forms for education quality control: interviews, practical assignments, coursework, projects, externship, and computer-based intelligent testing systems are applied as forms of control in distance education.
8. Special-purpose teaching technologies and aids: technology employed in teaching is based on specific content and should meet its presentation requirements. The material to be

learned is stored in special courses and modules intended for distance education in compliance with the existing educational standards in the country.

9. Reliance on modern means of communicating educational information: the central component of the distance education system is telecommunication facilities aimed at providing educational processes with the necessary teaching and methodological materials, direct communication between the instructor and students, and between students themselves; they are used for information exchange within the distance education system, access to international information networks, the inclusion of foreign users in the distance education system (Korbut, 2016, pp. 61-62).

Accordingly, the technological and communication basis of distance education is information learning technologies, which are intensively used in the military education system of Ukraine in normal conditions and are being more widely implemented during a pandemic.

Internet technology enables effective interaction between cadets and instructors during study hours and extracurricular time, creating the basis for self-study. For this purpose, multimedia e-learning systems allow cadets and instructors to effectively move along their learning trajectory and work online in real-time. These systems are characterized by a high level of interactivity with teaching materials containing many individual and group tasks. One type of these activities is project-based learning technologies, which, in integration with information and communication technologies, make up telecommunication projects. Nowadays, a widespread technology of project-based e-learning is Web Quest. The use of Web Quest technology is of particular importance today due to the new socio-economic and epidemiological conditions, which determine the need for:

- formation of skills necessary to adapt to life in a constantly changing world, in particular under the influence of globalization;

- mastering the skills necessary for independent and autonomous living;
- the ability to independently acquire knowledge and know how it can be used in various situations (Koziar, 2014, p. 9).

It should be noted that several reasons determine the increasing use of information technology in military educational institutions of Ukraine. Firstly, they are conflict-generating factors caused by the military-political situation in Ukraine, which determines cadets' planned and unscheduled full-time special tactical training exercises for different periods. Secondly, the pandemic has significantly impacted the training process; cadets have increased the number of online classes and the amount of self-study work done. Thirdly, the re-equipment of the Ukrainian army, the emergence of high-tech armaments, and new control and communication systems also require adequate awareness and knowledge in the sphere of information and communication technologies for future service in the Ukrainian Armed Forces.

Direct integration of combat activity into the educational process is becoming the peculiarity of future military specialists' training. The cadets master experience of CFO (the operation of the combined force in eastern Ukraine) and are trained for combat operations by carrying out combat missions during exercises. A future officer, regardless of what higher military education establishment they graduated from, should be a high-level commander and, therefore, capable of using automated systems of troop and weapon control, electronic warfare systems, knowing rules of conduct of combined arms warfare, military units' tactics, and procedures for using the principal kinds of weapon. Periodic training exercises at the training area enable them to acquire such skills as an organization of marches, ambush, and counter-ambush tactics, the conduct of counterattacks, combat engineering, organization of service on checkpoints, medical treatment, night operations, etc. Such training helps to develop resistance to stressful situations, the ability to make decisions, and learn to act effectively under the conditions of modern warfare.

Under the influence of the factors mentioned above and due to the spreading pandemic, distance education with the use of information and communication technologies is becoming a framework for an effective educational process at the military education institutions in Ukraine. Hence, military education institutions, under the given circumstances, should pay more attention to information and technical support of all forms of education, be concerned with software modernization, to provide opportunities for retraining and professional development of educators to equip them with the skills necessary to employ the latest information technologies. Furthermore, the experience gained by our country has shown that the development of information technology and distance education is beneficial not only for the training of cadets but also for the retraining of current officers, reserve officers program training for the students of civil higher education institutions, and training of foreign military personnel.

Currently, cadets and lecturers demonstrate different pedagogical and psychological readiness to use innovative information technologies for distance learning. The lecturers, especially the senior generation, manifest passivity in thinking and expectations of returning to standard classroom teaching soon. Cadets, for their part, only sometimes have enough skills, self-discipline, and technical equipment to complete their assignments correctly within the distance learning framework.

Overall, developing and implementing a distance learning course using information technology presupposes that specific prerequisites and algorithms are followed. Taking into consideration the specificity of the academic discipline, its different topics, and specific modules, the requirements for methodological support may include the scope of theoretical material assigned for self-study, illustrations, maps, videos, algorithms and patterns of completing practical exercises, reporting forms and deadlines, means of communication with the distance learning supervisor (teacher), etc. Thus, the designer of a distance learning course should provide the following:

- the user of the course should realize the specified objectives to be achieved as a result of studying each module of the distance learning course;
- a list of theoretical issues that will be provided for studying;
- the educational content (laws, technical specifications, algorithms, etc.) which will be in focus while presenting the new theme to the students (cadets);
- the form of presentation of the educational information of a specific content (video, audio, graphic, textual);
- a list of teaching aids that will be used (electronic and printed textbooks, methodical recommendations, videos, etc.);
- a list of questions to be put to course users after the initial acquaintance with study materials and the form of their representation (textual, with the use of illustrations, tests, etc.);
- comments on theoretical issues of the module contained in the educational and scientific literature (list of issues, sources of information retrieval regarding the issues, the form of note-taking of new material in the workbook, terms of studying, means for self-check and assessment, etc.);
- questions and tasks to work over the study materials (the form of their submission, availability of patterns and algorithms of tasks performance, reporting requirements, etc.);
- exercises (availability of comments and recommendations on their completion, videos with examples of correct or incorrect completion, requirements as to the number of exercises and the completion time);
- creative assignments (defining the essence and purpose, formulating tasks, requirements for intermediate and final work results, reporting deadlines, etc.) (Salkutsana, 2017, pp. 42-43).

The requirements mentioned above should create clear rules for the interaction between learners and educators while studying using information technology, which will provide psychological comfort and maximize the efficiency

of all the participants in the educational process. This thesis is supported by the positive experience of using the MOODLE platform by the teaching staff of Ivan Kozhedub Kharkiv National University of Air Force (Ukraine) from 2017 onward. Since the beginning of the pandemic, MOODLE has become one of the leading technology platforms used for distance learning at a given educational institution.

The distance learning course of the academic discipline “History of Ukraine and Ukrainian Culture” can be mentioned as an example of applying information technologies in education at this military education institution. Due to the peculiarities of this educational institution, since 2017, the platform has been used as a complementary tool for classroom training. Therefore, in 2020 this platform became the pivot of the distance learning and education process. Furthermore, since the distance learning course embraces the bulk of multimedia materials (documentary films, online excursions, audio fragments, presentations) used in class to study “History of Ukraine and Ukrainian Culture,” it has become far more interesting for cadets.

The platform in question supports the cadets’ independent work. Each receives an individual creative assignment (preparation of multimedia materials about their native cities), completes it conveniently, and sends it to a teacher for review. The course also includes supplementary self-study materials for cadets (extended presentations on the topics, further reading, current research, and documentary films). Forms of knowledge assessment involve testing, which, at the teacher’s discretion, the cadets can take both in writing and via the platform. The SYSTEM automatically registers the results if testing is carried out through the platform. All teaching aids available on the platform were developed considering modern ways of presenting information, which increase the degree of its perception and acquisition. Training tools available on the platform are divided into two groups: multimedia (text, presentations, photos, video clips, and audio fragments) and hypermedia, which are the most promising forms of combining heterogeneous information, a nonlinear form of

arrangement of the material (hypertext, hypertext links), which makes it possible to use a considerable amount of reference information and different learning paths. It is worth noting that among the assignments designed for cadets’ independent work, there are both traditional tasks, that is, those which are to be carried out according to a particular algorithm, and innovative ones whose completion is based on cadets’ personal experience and requires their creative approach. Conventional assignments should be completed according to the instructions specified in the task: to fill in a comparative table, study primary sources according to the plan, and compile a chronological table on the appointed topic. Creative assignments offered to the cadets may include, for example, creating a presentation on the history of their native cities using multimedia. The completed assignment is sent to the teacher for checking and then is to be defended before the audience (Kalynovskyi, Pavlichenko, Serhieieva, 2018, pp. 74-75).

During the Corona Crisis, the cadets defend their assignments both offline and online depending on the amount of the audience (current Ukrainian legislation allows classroom learning with no more than 20 participants).

The survey (using oral interviews) of master’s cadets at the Ivan Kozhedub Kharkiv National University of Air Force (100 persons) about training under quarantine restrictions can be cited as an example. The given survey has shown that not all cadets have a positive attitude towards the blended (distance and classroom) mode of study and the prevalence of information and communication technologies (ICT) in the educational process: one-third of the respondents (almost 30 persons) claim that face-to-face training is more effective and they do not feel comfortable enough to acquire and demonstrate knowledge under new conditions using ICT; half of the surveyed cadets (nearly 50) mentioned that the blended (distance and classroom) mode of the study had no considerable, in particular negative, effect on their learning and that applying ICT even facilitated high-quality training; other respondents (about 20 persons) emphasized that, in case of better preparation, both modes of study have a positive effect

on new knowledge acquisition. At the same time, all the students stressed the importance of introducing information and communication technologies into the teaching process¹.

The authors of this article took an active part in the discussion of the issues related to the given problem at the XVII International Scientific Conference at Ivan Kozhedub Kharkiv National University of the Air Force (April 14-15, 2021) (Kalynovs'kyi, 2021, p. 665).

Overall, experts believe that the MOODLE SYSTEM makes it possible for a teacher to design courses with a different structure and of various levels of complexity. For this purpose, the SYSTEM provides many modules allowing the placement of lecture materials in the form of a book, a text page, web pages, files of various formats, and folders. It is convenient for such types of work as a chat, forum, or Web seminar. At the same time, a wide

range of tools for knowledge assessment enables the efficient organization of various types of tests for participants in a course during the distance stage. The platform permits students to master learning material directly on the subject's web page, download necessary files to their computers, and study conveniently without

going online. The platform provides learners with opportunities of free access to a large number of learning resources and materials, as well as supports communication interaction of participants in the educational process both in synchronous mode, using a chat, and in asynchronous one using a forum, e-mail, workbook, etc. (one does not need synchronous network access). The SYSTEM supports all file format sharing – both teacher-learner and learner-learner. A significant feature of MOODLE is that the SYSTEM creates and stores a portfolio of every student: all assignments they completed, marks, teacher's comments, and all forum posts. (Blazhuk, Ostrovs'ka, 2014, p. 29).

Training cadets at the higher military education institutions of the Ministry of Defense of

Ukraine in the current circumstances require new distance learning courses of academic disciplines to ensure continuous and high-quality education of prospective military specialists will be developed and implemented. The distance learning course must be designed in conformity with the teaching package of the discipline for full-time studying; it should include a set of particular components necessary for cadets to master a comprehensive set of skills and competencies in the given academic discipline.

Thereupon, V. Stasyuk notes: “The ultimate goal of a military education, which is based on the principles of humanism and humanitarization, should become not merely education of a specialist, but, first of all, that of a socially active conscious personality. Hence, the main ways to achieve this goal are the application of modern technologies and scientific achievements to the educational process, elimination of unification in education and authoritarian teaching, training of the new generation of teaching staff, the foundation of testing centers for testing innovations in education and educational modules, overcoming alienation between a military educator and a trainee (military student), pedagogical optimism, and pedagogical ethics” (Stasyuk, 2013, p. 158).

For his part, V. Ulich has formulated the basic requirements for the simulation of military specialists' training process at Taras Shevchenko Kyiv National University concerning humanistic, innovative, and technical aspects. Firstly, the educational process should be carried out in conformity with the nature and content of the future professional activities of a cadet (student). Secondly, education must be personality-centered. It is desirable to radically improve diagnostic techniques and consider a person's individual psychological qualities; to give opportunities for creativity while teaching and learning; to encourage and provide widespread support for the cadets' (students') independent mental activity; to extend individualization of teaching techniques. In addition, the creative research activity of the cadets (students) is supposed to be a characteristic feature of modern education. The educational process must be focused not on the increase in the amount

¹ The survey was conducted from February 2020 to September 2021 by the sociological group of the Department of Pedagogy and Psychology at Ivan Kozhedub Kharkiv National University of Air Force

of information but on the formation of productive thinking, development of the mental performance of a future specialist' personality, intuition, methods of logical analysis and comprehensive information processing, and creative use. Furthermore, the educational process must prevent the negative social consequences of an individual's one-sided technocratic development. What is meant here is the humanization and humanitarization of education. Lastly, teaching must be based on integrative, SYSTEM, and activity approaches and pertinent scholarly traditions. (Ulich, 2013, p. 92).

Thus, developing distance education technologies based on ICTs during a pandemic, we should not place emphasis only on the innovation component of prospective military specialists' training. However, knowledge, personality, and humanistic elements are also crucial. At the same time, one can state that introduction of distance education in modern Ukraine is associated with particular technical, organizational and financial, psychological, and other problems.

M. Nazar, for example, has identified some problems in the use of distance education through the Internet, which include: "psychological barriers that subjects of the psychological and pedagogical process have while working on a computer; the need to master a special culture of work and communication in the World Wide Web; revealing the peculiarities of the processes of perception by an individual while using a computer and taking them into consideration when planning classes (the so-called "overload effect" as it is described in the literature); taking into account, when arranging classes, possible gender differences in terms of applying new information technologies" (Nazar, 2013, p. 127).

Notwithstanding the above shortcomings and problems of distance education development in our country, this mode of study has a high potential and a considerable innovative component while training both military and civil specialists. However, as the current situation of quarantine restrictions in education has shown, the capability of information and communication technologies is underused, which means that for various reasons, the possibilities of distance education still

need to be fully realized by educators and cadets (students).

As F. Maynayeve believes, the determination of the triple goal of implementing information communication technologies to the process of the students (cadets) training and the main requirements for learning material selection enables to formulate primary advantages of using information communication technologies as compared with conventional teaching methods, namely: visualization of information to be learned about the object; concentration of attention; intensification of studying social sciences and humanities; algorithmization facilitating algorithmic thinking development and ability to express thoughts clearly and concisely; increase in motivation and cognitive activity of students due to the variety of modes and methods of training; extension of information flows while using the Internet; considerable saving of working time, etc. (Maynayeve, 2015, p. 484).

In support of the conclusion above, we will refer to the data obtained as a result of the experiment conducted by the Ukrainian lecturers, including Associate Professor H. Serhieieva, who is also one of the authors of this article. The pedagogical experiment lasted 35 weeks (1 lesson (90 minutes) per week) in the 2018/19 academic year. The participants of the experiment in question were first-year law students of The Institute of Prosecution and Criminal Justice and The Institute of Staff Training for Bodies of Justice of Ukraine at Yaroslav Mudryi National Law University (Kharkiv, Ukraine) and of the Law Faculty at G.S. Skovoroda Kharkiv National Pedagogical University. The participants were split into two groups (the experimental group and the control group) of 120 students each. The experiment was designed to study the impact of cloud computing, as one of the teaching technology being actively implemented in education, on professional foreign language teaching of university students, namely their professional vocabulary development. During the experiment, the students studied English in the usual mode with textbooks, mastering all language aspects and all kinds of communicative activity in English, namely reading, writing, listening, and speaking while using professional legal vocabulary.

However, the experimental group students were also given additional legal vocabulary assignments designed by the authors with the help of Quizlet Service, access for the experimental group: <https://quizlet.com/365483135/module-1-modern-legal-systems-flashcards/>. The researchers used testing to check the level of vocabulary knowledge before and after the experiment. The fluent use of professional legal vocabulary, terminology, and context served as a criterion for assessment. The pre-test, aimed to check the initial level, lasted 90 minutes and included such tasks as “Match,” “Fill in the gaps,” “Choose the right option,” etc., as well as tasks aimed at understanding short legal texts both authentic and adapted to check vocabulary. A standard (in Ukraine) 12-point scale was used to check vocabulary level, where points mean the following: 1-3 points are unsatisfactory, 4-6 points are satisfactory, 7-9 points are good, and 10-12 points are excellent. Thus, the results of the pre-test performed at the beginning of the experiment were later on compared with the results of the final test, which allowed authors to evaluate the effectiveness of applying the Quizlet service for vocabulary development (Holubnycha, Kostikova, Kravchenko, Simonok, Serheieva, 2019, pp. 55-69).

The authors analyzing the summarized results of the experiment noted that all students (cadets) in the experimental group improved their results; in particular, most students reached the good level (7-9 points) and excellent level (10-12 points) while the number of students with the satisfactory level (4-6 points) decreased significantly. In the authors’ opinion, such results were achieved due to the practical application of the cloud service (the Quizlet service), which facilitates an individual approach to learning and increases students’ interest in the subject, as well as their better academic performance (Holubnycha, Kostikova, Kravchenko, Simonok, Serheieva, 2019, pp. 55-69).

Taking into account the limitations caused by the pandemic, modern scholars consider the following to be the main advantages of distance education and the specificities of applying ICT:

1) distance education is a technology-based education using modern software and hardware

which contributes to increasing the efficiency of e-learning;

- 2) accessibility and openness of education, which means the possibility to arrange learning and teaching from any spot on the Earth where there is a computer and access to the Internet;
- 3) individual nature of education since distance learning is more flexible. A cadet (student) has the opportunity to set the pace of learning, can return to particular topics and sections for more in-depth study more than once, and choose the intensity and duration of individual studies (Bukeikhanov, Gvozdikova, Butrimova, 2020, p. 63).

Along with the above advantages, the following aspects might be attributed to the disadvantages of distance education:

- 1) the nature of the study materials. The learning materials should take into account the varied educational background of students and their different distance-learning experiences;
- 2) lack of communication with the teacher;
- 3) technical failures during distance learning due to the inability of Internet resources to cope with heavy traffic load caused by the pandemic;
- 4) one of the pivotal issues of distance learning remains the problem of confirming the identity of the user during training and testing;
- 5) the need for a diversity of individual psychological factors. Distance learning requires strong self-discipline since, in the given case, the result directly depends on the learner’s independence and self-discipline;
- 6) distance learning course design is highly labor-intensive;
- 7) insufficient computer literacy of students, lack of experience in distance learning;
- 8) insufficient development of information and communication infrastructure. Dealing with the problem of developing high-quality teaching and methodological support for distance education requires an integrated approach on the part of a programmer-instructional designer / an e-content developer/ a software development methodologist/ and a specialist in the

field of Internet technologies, computer-based communications, as well as professionals in the field of modern pedagogical and psychological theories, and the modern pedagogical technologies;

- 9) the problem of staff training. The introduction of distance learning imposes additional requirements for staff training, including the differentiation/specialization of teaching/learning/training/education. The given approach considers students' psychological state and characteristics and requires the development of a communication culture in the networks (Bukeikhanov, Gvozdkova, Butrimova, 2020, p. 64).

To overcome the negative aspects of applying ICT in the educational process at higher military education institutions in Ukraine, we believe it is necessary to take some steps. These measures might include, for example, improving the material base and installing new software, establishing permanent courses for teachers to master ICT. In addition, the training program for cadets should provide (or increase the amount of) hours for studying and applying modern ICT; departments and faculties should develop (update) information and analytical, educational, and methodological bases for each discipline.

Conclusions

Thus, applying information technologies in Ukrainian universities in the current context involves various pedagogical and psychological aspects. It is worth noting that counts of the quarantine restrictions, higher education establishments in Ukraine had to move to online teaching either in whole or in part. During the first weeks of quarantine, the situation led to the spread of so-called "passive learning," when cadets (students) spent more time self-study according to the teachers' instructions. After gradually adapting to the distance learning mode, lectures and tutorials resumed almost in full. In general, the challenging and stressful situation that cadets (students), teachers, and the administration of educational institutions encountered entailed the urgent need for

readjusting teaching methods, correcting course scheduling and teaching materials, coping with technical problems, and accelerated training to use new software. Hence, since, owing to completing individual assignments, the study workload for cadets (students) has increased, there emerged a necessity for more sound and thorough regulation of their independent work and more self-management, namely, self-planning and self-monitoring. The instructors, however, also encounter a range of problems related to organizing and conducting classes, including identification of cadets (students) during assessment measures, organization of individual teaching online, raising awareness of the technical capabilities provided by various programs currently available for educational purposes, for example, ZOOM, Team, etc., as well as the development of a large number of tests for various assessment measures, etc.

In the 21st century, the forms of education have undergone significant changes due to applying information technology, distance learning platforms, and new public demands. Considerable adjustments to the educational process have been made during the pandemic. Undoubtedly, it has changed the communication format between educators and cadets (students). Telegram channels, Viber groups, Telegram groups, etc., have become the principal means of interaction between subjects and objects in the educational process. It is worth noting that under the current circumstances, online lecturing requires specific psychological and technical readiness since it has become far more difficult for the lecturer to "feel" the audience and maintain psychological contact. Similarly, there are also requirements for online seminars (in some cases with reduced time), such as setting/placing more strict time limits allocated for cadets' answers, developing new methods for their knowledge assessment, etc. At the same time, applying information learning technology in Ukrainian higher educational establishments, in particular, the MOOD platform, promoted the individualization of training, contributed to the development of the most acceptable rules and regulations for interaction between educators and cadets, stimulated the design of new educational and methodological

packages and acquisition of new knowledge of ICT by all participants of the educational process.

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