Revista Românească pentru Educație Multidimensională
ISSN: 2066-7329 | e-ISSN: 2067-9270
Covered in: Web of Science (WOS); EBSCO; ERIH+; Google Scholar; Index Copernicus; Ideas RePeC; Econpapers; Socionet; CEEOL; Ulrich ProQuest; Cabell, Journalseek; Scipio; Philpapers; SHERPA/RoMEO repositories; KVK; WorldCat; CrossRef; CrossCheck

2021, Volume 13, Issue 3, pages: 401-428 | https://doi.org/10.18662/rrem/13.3/459

Identification of Significant Components of Logistics Readiness of Future Officers of Army Support Units (Forces)

Ievgeniia IVANCHENKO[1],
Oleh MASLIY[2],
Viacheslav DERIUHIN[3],
Viktor OLEKHNOVYCH[4],
Serhii Yaniuk[5]

[1] Doctor of Pedagogical Sciences, Professor, Professor of Department of Fundamental Sciences, Military Academy (Odesa), Odesa, Ukraine, ye.ivanchenko@vaodesa.mil.gov.ua, orcid.org/0000-0003-3071-0938
[2] Doctor of Pedagogical Sciences, Senior Scientific Researcher, Deputy Chief of the Academy for Educational Work – Head of the Educational Department, Military Academy (Odesa), Odesa, Ukraine, momva76@yahoo.com, orcid.org/0000-0003-2809-2763
[3] Instructor of Department of Food and Clothing Supplies, Military Academy (Odesa), Odesa, Ukraine, deruginslavik@gmail.com, orcid.org/0000-0002-9894-950X
[4] Chief of Department of Food and Clothing Supplies, Military Academy (Odesa), Odesa, Ukraine, ovd-odessa@ukr.net, orcid.org/0000-0001-6114-8154
[5] Candidate of Public Administration Sciences, Chief of Department of Fuels and Lubricants Supplies, Military Academy (Odesa), Odesa, Ukraine, ssergej71@ukr.net, orcid.org/0000-0003-1746-1359

Abstract: Logistics readiness is an essential characteristic of future officers of army support units (forces) as it is required for planning and organization of people movement, vehicles, equipment and ammunition supplies to the battlefield and military formation deployment in the shortest term. The purpose of the article is to explain the structure of logistics readiness of future officers of army support units (forces) and to identify its significant components considering general logistics sustainability of future logistics officers. According to the research, logistics sustainability is the consequent complex of basic qualities and abilities that are professionally important for military logistics activities. Also, we have explained the implementation of organizational and pedagogical conditions for the formation of integral competence of future officers of army support units (forces).

To achieve the purpose, the following methods were used: theoretical methods including general scientific and partially scientific methods, intersubject research, deduction and induction, generalization, comparative analysis, integral methods, bibliographical sources analysis, pedagogical forecast and planning methods, classification, formalization, and theoretical interpretation) and empirical methods (discussions, direct and indirect observation, pedagogical monitoring, self-observation, interviewing, method of expert estimations, self-assessment, pedagogical experiment, etc.). The study involved 120 cadets of the Military Academy (Odesa) and 36 experts (officers of logistics units of Operational Command «South» and instructors of the Academy) to estimate the professionally important qualities and abilities for future logistics officers. It was found that logistics readiness is the basis for integral competence of future officers of army support units (forces) and it is formed in the process of studying at the higher military educational establishment.

Keywords: *logistics readiness, logistics sustainability, future officers of army support units (forces), qualities and abilities, integral competence.*

How to cite: Ivanchenko, I., Masliy, O., Deriuhin, V., Olekhnovych, V., & Yaniuk, S. (2021). Identification of Significant Components of Logistics Readiness of Future Officers of Army Support Units (Forces). *Revista Romaneasca pentru Educatie Multidimensionala, 13*(3), 401-428. https://doi.org/10.18662/rrem/13.3/459

1. Introduction

Currently, when Ukrainian Armed Forces are being reformed, socio-economic system faces profound changes within the mechanism of military logistics support. In the market economy, the proven financial and economic policy is oriented towards the performance of significant state functions, including protection of the sovereignty. This increased the need for improvement of logistics support of army units (forces) for greater mobility and response speed of the Armed Forces as a positive reaction to immediate changes of the world situation and a basis for the successful conduct of local and global combat operations. This, obviously, actualizes the problem of training of future officers of army support units (forces) who are to guarantee supplies of vehicles, ammunition, medicines, rations to the battlefield and to provide high mobility of military units for rapid deployment in the shortest term using modern software and relevant data received by strategic intelligence units whose responsibility is to monitor enemy's logistics operations.

The curriculum of army support units (forces) bachelors, future officers of tactical level, is aimed towards training of experts in the field 25 «Military sciences, national security, state border security» with better access to employment; organization of theoretical and practical preparation of highly qualified, well-developed, and competitive military experts that could acquire basic professional knowledge to perform professional tasks and duties in accordance with the speciality 254 «Army support units (forces)», and competence to perform service activities. Professional training within the frames of this curriculum aims to form integral competence among future officers of army support units (forces) that means the capacity to solve complex special tasks and practical problems while carrying out professional duties. Such training will give a possibility to create favourable conditions for personnel to act in different situations. And the process of training itself involves using the theories and practices of military and technical sciences and it is characterized by complexity and uncertain circumstances.

Integral competence is developed as a unity of competencies divided into three blocks: general competencies (GC), professional competencies according to speciality (PC), and military professional competencies (MPC) most of which (82 %) are determined through an ability to do something (manage, plan, communicate, etc.). Understandably, the formation of these competencies is realized through a number of personal qualities which we

suggest combining to form «logistics readiness of future officer of army support units (forces)». Logistics readiness, in our view, can be a ground for the formation of integral competence of graduates in the speciality 254 «Army support units (forces)» by means of development of professionally important qualities. Logistics readiness army units (forces) have a significant meaning under current foreign policy conditions for the Joint Forces Operation in the east of Ukraine and strengthening international military and political cooperation within operations ORBITAL, DEEP, UNIFIER on providing military and technical assistance to Ukraine from international partners and approximation of Ukrainian Armed Forces activities to NATO standards.

Thus, in this study, we are to release the recent findings about the determination of the category of logistics readiness of future officer of army support units (forces) and to distinguish professionally important qualities of personality qualities future officer of army support units (forces) that form its significant components.

2. Literature review

To achieve this objective, we think it is necessary to determine the similarities and differences of categories «quality» and «ability».

According to psychological and pedagogical dictionaries, the category «ability» is described as a psychological state when an individual is ready to perform physical or mental acts successfully (Colman, 2008) and as a possibility to carry out certain activities (Wiater-Branco, 2008). But these definitions vary and have multi-level validity that essentially means category «ability» is an integrated psychological state of an individual or it refers to individual's qualities that allow him/her to perform certain activities effectively and correctly.

The category «quality» is more widespread as it concerns objects and subjects. In philosophy, the category «quality» means an inner determination of an object representing the specificity that differs it from others; another characteristic or trait (Miller et al., 2012). Concerning the quality of future expert personality, it is described as a holistic combination of elements of personality inner structure, and it determines the content of socially significant and professionally important characteristics (Semenova, 2006). Also, quality is determined as an objective and comprehensive characteristic of objects manifesting when its elements are combined (Roberts et al., 2007). These definitions prove that the categories «quality» and «ability» have some similar features.

According to the analysis of scientific literature (Chu et al., 2016, Kurliand et al., 2005, Martin et al., 2017, Yahupov, 2007), we have found that the category «quality» refers to a subject or individual receiving personal orientation and to a person's readiness, capacity and aptitude to a certain activity. In this case, quality is an integral characteristic whose basic components are its characteristics manifestations. Thus, the category «ability» can be interpreted as person-oriented and it is differentiated by its manifestations quality of a subject.

We shall now examine the categories «readiness» and «logistics readiness». Readiness means a desire to do something (Bondarenko, 2020, Krasova & Olkhovy, 2013, Miller et al., 2012, Mul, 2016, Pavliuk, 2019, Semenova, 2006) and it can be described based on three positions. They include:

- philosophical (readiness refers to state of consciousness);
- pedagogical (readiness means integral characteristic of personality and it deals with a selective orientation towards pedagogical activity relying on relevant needs and motives for performance);
- psychological (readiness is orientated towards specific activity performance; ability to carry out certain acts; combination of relevant attitudes, views, motives, feelings, volitions, and intellectual qualities; orientation towards appropriate and purposeful acts).

The structure of readiness is dynamic and it is affected by a number of changes when: psychic processes, states, experience of personality are improving; sense of duty, responsibility, professional independence are increasing; social, spiritual and moral maturity are changing; the role of self-education is being realized in the process of professional development; professional independence is being formed (Diachenko & Kandybovich, 1976).

We agree with J. Fletcher (2004) that readiness is a complex of abilities and skills. D. Etter, R. Foster, and T. Steele (2000) considered readiness as a preparation (including skills, knowledge, abilities, motivations, and personal dispositions) of an individual to establish and sustain competent performance. C. May and R. Campbell (1981) described readiness as holistic formation characterizing emotional and cognitive mobilization of an expert at the moment when he/she begins doing professional tasks. E. Beller (1970) defines readiness as a manifestation of individual attitudes, views, motives, views, qualities, knowledge, volitional and intellectual characteristics. Also, readiness possesses intellectual openness, professional interest, ability to study and operate professionally, thinking accuracy, and relevant skills (DiBenedetto & Myers, 2016).

L. Potapkina (2015) says that readiness is an aim-oriented result of training, personal and motivational self-affirmation, ability to overcome difficulties, education and self-education, desire to reach success. It is a complicated psychological and pedagogical formation, an active state of personality. Accordingly, readiness regulates an expert's professional activities. Thus, it is closely connected with the integral unity of necessary personal and professional qualities. To define the logistics readiness of future officers of army support units (forces), it is important to consider the content and specificity of future expert's readiness.

Let us proceed to the analysis of native and foreign findings about future experts' readiness to professional activities. According to the literature (Balchugov, 2015; Fletcher, 2004; Harmash, 2017; Hurtovenko, 2014; Kyrychenko, 2017; Kobylyanska, 2018; Ohiienko, 2014; Potapkina, 2015; Raffensperger & Schrage, 1997, Stamatov, 2018, Yakovlev & Bogdan, 2011), readiness to professional activity is a combination of professional knowledge, skills and significant psychological characteristics oriented towards successful professional activity, self-actualization and self-improvement.

Problems of formation of readiness of future officers to professional activities were the research topic of many scientists. T. Pavliuk (2019) described professional readiness of future officers, O. Bondarenko (2020) outlined the content and structure of readiness of future officers of the Armed Forces of Ukraine to carry out educational activity, A. Balendr (2010) studied the formation of readiness to resolve conflicts, V. Krasova and O. Olkhovy (2013) investigated professional and physical readiness for future officers of the Air Force. S. Mul (2016), L. Matokhniuk (2006) described psychological readiness of officers of law-enforcement and military formations to professional activity. S. Balchugov (2015) studied the formation of cadets' readiness to the research activity, S. Stamatov (2018) explained the peculiarities of officers' combat readiness, Yu. Demianiuk (2014) investigated the formation of readiness of future border guard officers to organizational activity, Yu. Medvid (2018), N. Penkova (2015), O. Starchuk (2011) outlined the structure of future officers' readiness to combat activities, O. Torichnyi and N. Bhinder (2019) specified organizational methods of formation of military and special competence of future officers. V. Ulich (2007) studied future officers' management readiness, S. Ishchenko (2014) and Yu. Korniichuk (2011) analyzed the process of formation of future officers' readiness to educational work with personnel. O. Zahrebelnyi (2019) paid special attention towards future officers' readiness to professional self-actualization by means of information and communication technologies. Some

researchers (Syvokhop, 2010; Hnydiuk & Didenko, 2015) described physical readiness of future officers.

To define future logistics officers' readiness, we shall explain the meaning of the words «logistics» and «military logistics». The findings show that these terms are used as an economic category (Khvyshchun, 2012, Fomichenko & Barkova, 2020) as well as a military and economic phenomenon (Brzeziński, 2000, Chornopyska et al., 2015, Sapiha, 2009, Servatiuk & Uhrynovych, 2013, Sokolovskyi & Naumenko, 2018). Also, it is a part of defence medical support (Bilous et al., 2016, Trokhymchuk et al., 2007). Some studies are devoted to implementation of international logistics standards (Reziapov, 2012; Sokhatskyi, 2016; Williams, 2018). We have found that theoretically logistics is a direction of management, new strategic concept. Practically, logistics concerns a combination of means and methods of process flows management enabling to solve tasks of comprehensive integration of industrial, financial, and economic activities efficiently and competently. Competence of logistics subjects is a significant factor of effectiveness in any spheres. In our research, we consider military logistics as a set of means and methods necessary for the people movement, vehicles, equipment, and ammunition supplies to the battlefield. Also, it includes planning and organization of events concerning the preparation and performance of the related processes.

The analysis of pedagogical literature showed that many native and foreign researchers studied the formation of professional readiness of future logistics officers (Harmash, 2017; Levchuk, 2020; Marchenko, 2001; Nichev & Petrova, 2015; Ponomarenko, 2006; Sharonov & Babenkov, 1998; Stuns & Heaslip, 2019; Terziev & Nichev, 2017). Also, some findings concern methods and principles of training of future logistics officers and designing of educational programs in the field of logistics at the higher military educational establishments (Kaplun, 2010; Kravchuk, 2019; VornDick, 2014).

3. Materials and Methods

Many findings are devoted to the analysis of methods applied within pedagogical research (Curtin & Hall, 2018; Honcharenko, 2010; Johnson & Christensen, 2000; Nind & Lewthwaite, 2018; Poláková, 2016; Ponomarenko et al., 2016; Skyba, 2016). During the research, two groups of methods were applied. They are the following: theoretical methods including general scientific methods, partially scientific methods, intersubject research methods, deductive and inductive methods, generalization of best

pedagogical practices, comparative analysis, combination of integral methods, analysis of bibliographical sources, pedagogical forecast and planning methods, classification, formalization and theoretical interpretation methods; and empirical methods such as discussions, direct and indirect observation, pedagogical monitoring, self-observation, interviewing, testing, method of expert estimations, self-assessment, pedagogical experiment).

The pedagogical experiment is described as a special method of pedagogical research when new conditions are created to influence actively upon a pedagogical phenomena (Harrison et al., 2006; Horakova & Houska, 2014; Johnson & Christensen, 2000; Kurysh, 2020; Skyba, 2016; Yeremeev & Kuzminov, 2013). This method is a specially designed educational process that includes new elements to achieve actual goals under different circumstances. Other findings (Kurysh, 2020; Yeremeev & Kuzminov, 2013) show that the pedagogical experiment combines methods to confirm the hypothesis speculated by researchers. Pedagogical experiment within the framework of our research was based upon a number of empirical methods like discussions, direct and indirect observation, pedagogical monitoring, questionnaire, testing, etc. Each of these methods contributed to the accumulation of specific factual material. As a result, there was a transfer from observation to an in-depth examination of pedagogical phenomenon.

Further, we will be able to develop practical recommendations and implement innovations within the educational process. Besides, the pedagogical experiment helps to verify the level of innovation efficiency. The pedagogical experiment was conducted among 120 second-year cadets and 63 cadets of third-year studying on speciality «Army support units (forces)» at the Military Academy (Odesa) in 2017-2018, 2018-2019 academic years. The total number of involved cadets was 183 people.

Methods of expert estimations are one of the main methods used within pedagogical research. It is the method of scientific and technical forecasting based on the assumption that experts estimations make for the design of an adequate model of future development of forecasting object (Bazaliiska, 2017; Bilous, 2015; Fedorova, 2017; Novosad et al., 2009; Panchenko, 2011; Rush & Roy, 2001). Input information is presented as it had been estimated by leading professionals in the given field. 36 experts were involved in the experiment including officers of logistics units of Operational Command «South» and instructors of the Military Academy (Odesa) who work in the field of military logistics.

4. Results of Research

Logistics readiness of future officers of army support units (forces) is thus recognized as an integral quality of personality that has the following characteristics:

- ability to plan and organize continuous units (forces) support with military vehicles, equipment, ammunition, medicines, and other survival facilities and also high mobility of armed forces for rapid deployment in any position in the shortest term;
- skills to use modern software, strategic intelligence data on enemy's logistics operations.

Logistics readiness enables to organize and carry out logistics services of the Armed Forces of Ukraine in different unexpected combat situations with minimal errors for a long period of time. It is the basis for the formation of integral competence of future officers of army support units (forces) provided by the Professional Standard approved by the Ministry of Education and Science of Ukraine.

To reveal the structure of logistics readiness of future officers of army support units (forces) we analyzed attestation criteria activity of officers from the point of view of main scientific and practical logistics principles, particularly principles of complexity, system, integration, and integral results framework. It was done on the basis of logistics approach to educational process organization as a precondition for integral competence of future officers of army support units (forces) through logistics readiness formation.

At the faculty of training of material and technical support experts (Military Academy (Odesa)) we conducted the research to outline professionally important qualities of future officers of army support units (forces) that are called basic logistics abilities constituting the foundation of logistics readiness. The abovementioned abilities were separated from the abilities meeting attestation criteria of servicemen activities (Ministry of Defence of Ukraine, 2018) and qualities determined on the basis of theoretical studies, on the results of interviewing of the scientific and teaching staff of the faculty as well as cadets of graduating classes. Simultaneously we carried out experts' assessment of the significance of these abilities to evaluate cadets' logistics readiness and, therefore, their future professional service. The experts included the leading professionals of logistics units of Operational Command «South».

Scientific and teaching staff participating in the experiment were selected among the instructors involved in the realization of educational programme 254 «Army support units (forces)». The total number of instructors was 31 people. Concerning cadets (183 people) we must admit that many of them have practical experience obtained at the logistics units, particularly during Joint Forces Operation in the east of Ukraine. This enables us to consider their views and attitudes to the formation of logistics readiness and a combination of professionally important qualities. Regarding that, the Logistics Command of Armed Forces of Ukraine is a contracting authority for graduates of the described educational programme, and the Command determines the list of requirements to future lostistics officers, we involved 5 officers of logistics units of Operational Command «South» in the research. They were required to evaluate qualities necessary for future officers of army support units (forces) and define their significance on the basis of offered criteria. Totally there were 219 people involved in the research.

We have designed the questionnaire forms to describe the qualities and abilities of future officers of army support units (forces) which are professionally crucial for the military and economic sphere. The experts were required to distinguish 12 out of 51 criteria of activities and manifestation of qualities of future officers of army support units (forces) (table 1). These 12 points were considered to correspond with their personal understanding of the importance of logistics sphere. Also, the experts defined the significance of these characteristics. Those qualities and abilities which they considered to be the most important for the sphere of military and economic logistics were estimated at 100 %. Other chosen qualities and abilities were required to estimate in comparison with the most significant ones with an interval of 5 %.

Table 1. The list of possible professional, personal, and moral characteristics of future officers of army support units (forces)

No	Characteristics of future officers of army support units (forces)
	I. Leadership style and framework
1.	practical skills and abilities (quality of obligations performance in accordance with occupation)
2.	level by speciality
3.	implementation quality of plans of operational-tactical (tactical), military-professional, special, and other types of training
4.	knowledge of statutes of the Armed Forces of Ukraine

5.	ability to teach and educate subordinates, ability to use knowledge in practice
6.	management skills
7.	ability to organize and carry out the tasks efficiently, to take the initiative, be capable to respond quickly to changing and difficult circumstances
8.	foreign languages knowledge
	II. Assessment of unit or activity direction in the officer's area of responsibility
9.	combat readiness
10.	military discipline
11.	acquisition of new equipment
12.	individual training level
13.	technical and material conditions
	III. Working style
14.	compliance with the law
15.	humanity
16.	creativity
17.	independence and initiative
18.	entrepreneurship
19.	ability to highlight the major points
20.	discipline
21.	honesty
22.	active participation
23.	orderliness
24.	persistence
	IV. Mental abilities
25.	ability to take slightly different approaches
26.	ability to learn, self-education, and self-development
27.	ability to prevent or adapt to an exceptional or changing situation
28.	self-evaluation and self-control
29.	creative thinking
30.	ability to act in an emergency
31.	thinking of non-standard variants to solve professional tasks if existing decisions or acts have no effect
	V. Motivation to military service and professional self-improvement
32.	orientation towards military and professional activities
33.	ability to professional self-improvement
	VI. Authority within the team, leadership skills
34.	usage of relevant approaches to encourage the team
35.	creation and maintenance of the trust-based environment
36.	team management using own positive example
37.	ability to form a positive moral and psychological environment in the team

	(platoon)
38.	morale maintenance
39.	usage of open and sincere communication methods
40.	ability to manage
41.	respect for others
	VII. Communication skills
42.	response to criticism
43.	building a constructive professional relationship
44.	critical thinking and ability to critically evaluate own actions and errors
45.	interpersonal skills
	VIII. Working efficiency and ability to recover quickly
46.	workability
47.	stress management
48.	strong will
49.	ability to recover quickly
	IX. Physical preparedness and state of health
50.	level of physical preparedness
51.	state of health

Expert opinions were finalized by three parts. They were the following: 1) criteria numbers in accordance with attestation card corresponding with the qualities and abilities that are professionally important for the military and economic sphere; 2) criteria numbers in accordance with attestation card that you consider partially important for the development of logistics skills and abilities; 3) abilities to military and economic logistics that are not listed in the attestation card but they are important for future officers of army support units (forces). The abovementioned criteria were evaluated based on appropriate criterion significance.

Some criteria of logistics qualities and abilities were not listed in officers' attestation card, but we mentioned them in our questionnaire forms. According to the experts, they include entrepreneurship and management ability. But, at the same time, we concluded that the selected qualities and abilities could be considered relevant or those that are of crucial importance for solving the particular task – formation of integral competence of future officers of army support units (forces) in the particular place – at the higher military educational establishment, and under the particular circumstances – in the period of military reforms, creation of new logistics system and transition of the Armed Forces of Ukraine to contracted troops. Moreover, we assume that the basis for the formation of integral competence of future officers of army support units (forces) is their logistics

readiness. Also, we claim that officers' evaluation procedure according to the defined criteria of their activities is being currently based on the subjective judgements of military commanders. Obviously, it is a serious weakness of the procedure. As a result, the evaluation procedure needs improving through the use of more objective testing methods.

Described relevant logistics qualities and abilities are essential components of logistics readiness of future officers of army support units (forces). The components were outlined on the basis of tasks performed by officers of army support units (forces) in peacetime and during combat operations. This distinguishes essential components of logistics readiness of logistics officers of the Armed Forces significantly from other law-enforcement agencies. The structure of logistics readiness of future officers of army support units (forces) includes four blocks of components, which are presented in fig. 1.

We point out that the possession of a separate quality and ability does not actually mean the presence of logistics readiness in future officers and the performance of successful logistics activities. Only if combined and interrelated they create the basis for logistics readiness and they are presented as an efficient method of organizational and pedagogical conditions realization for the activities described. The combination of the qualities and abilities that are professionally important for future officers of army support units (forces), their effective interrelation in the process of formation and development require special pedagogical efforts, new approaches to training and major changes within the professional activity of military instructors.

Logistics readiness of future officers of army support units (forces)

Moral and ethical qualities and abilities	**Professional qualities and abilities**	**Core competencies**	**Individual and psychological qualities and abilities**
- humanity - honesty - strong will	- ability to professional self-development - professional knowledge,	- management skills - entrepreneurship - ability to build constructive professional	- creative thinking - leadership skills - persistence - active participation

	skills, and abilities - ability to learn, self-education, and self-development - ability to act in unexpected situations - level of physical preparedness - workability	relations - ability to form a positive moral and psychological environment in the team (platoon) - independence and initiative	- communication skills - stress management - self-evaluation and self-control

Fig. 1. Structure of logistics readiness of future officers of army support units (forces) on the basis of their professional duties

Quantitative assessment of logistics readiness of future officers of army support units (forces) can be calculated in accordance with the following formula:

$$LR = \sum_{i=1}^{N} S_i \cdot A_i \quad (1)$$

where *N* – number of personal qualities and abilities that are professionally important for military and economic logistics and that are outlined in accordance with estimations of the expert group consisting of leading logistics professionals;

A – average evaluation level of formation of each ability (quality) received by means of complementary methods that are adequate to the object, subject, aim and tasks of the research, in particular: external subjective methods (expert estimation) and objective methods (testing). The usage of two groups of methods lead, obviously, to the increased possibility and accuracy of findings;

S – average expert coefficient of the significance of each ability of quality demonstrating its influence upon general logistics sustainability of future logistics officer;

i – individual ability or quality, comprising logistics readiness of future officers of army support units (forces).

Consequently, logistics sustainability characterizes a future officer's

aptitude to the management of material and information process flows but also general psychological state when he is ready to successful, productive activity in the sphere of military logistics. And logistics sustainability is manifested through formation of certain qualities, abilities, and characteristics corresponding with attestation criteria of his/her activity during the educational process at the higher military educational establishment. At the same time aptitude to the management of material and information process flows means acquisition of all the necessary means and methods by future officers at the scientific and practical level. These means and methods are required for planning and organization of people movement, vehicles, equipment and ammunition supplies to the battlefield and military formation deployment in any position in the shortest term.

According to expert estimations, we can define the category of «logistics sustainability of future officers of army support units (forces)». It is an ability to accumulate professional knowledge, skills, and abilities and their realization within the educational activity. This category corresponds with three criteria listed in the officer's attestation card: professional knowledge, professional skills and abilities, possibility to accumulate professional experience and its realization within service activity. Such choice was made by 98 % of all respondents.

On the basis of well-known pedagogical principle concerning the possibility of knowledge identification when it is manifested as skills and one may carry out certain intellectual and physical actions and, considering that skill is a possibility to perform certain actions using appropriate knowledge (Semenova, 2006) and regarding the fact that professional knowledge, skills and abilities of future officers are not transformed into the professional experience at the higher military educational establishment, we have come to the conclusion that listed attestation criteria have to be studied in complex. Also, we insist on analyzing of professional experience as a holistic professionally important personal descriptive characteristic of future officers of army support units (forces) with the high level of integrity. That is why this characteristic is demonstrated during the educational process at the higher military educational establishment as an ability to learn, self-education and self-development. It is logically connected with officer's strong will and includes motivation to professional self-improvement, ability to self-evaluation, active participation, and self-control.

The questionnaire findings showed the following list of components of logistics sustainability of future officers of army support units (forces) according to the usage of selection frequency reduction principle by experts: honesty (93%), responsibility and discipline (87%), active participation

(84%), independence and initiative (82%), creative thinking (79%), workability (78%), level of physical preparedness or ability to physical exercises (75%), persistence (73%), communication skills (71%), self-control in the daily service (69%). Also, the experts analyzed the qualities and abilities whose selection frequency was slightly lower in comparison with the previous ones. They are the following: professional qualities and abilities – the ability to professional self-improvement (48%), ability to acts in unexpected situations (46%); core competencies – management skills (51%), entrepreneurship (45%), interpersonal skills (43%), the formation of the positive moral and psychological environment in the team (platoon) (43%); individual and psychological qualities and abilities – leadership skills (50%), stress management (48%), ability to self-evaluation (41%); moral and ethical qualities and abilities – humanity (43%), strong will (53%).

We have analyzed the essence of selected components of general logistics sustainability of future officers of army support units (forces) and have found that almost every component has an integral character of different integrity level. It means that a separate component of general logistics sustainability comprises the qualities and abilities in different combinations. Let us focus on this characteristic.

Honesty of future logistics officer is presented as sincerity, humanity, truthfulness, and directness, fairness, excellent manners, and full responsibility while carrying out professional duties concerning material, technical and information support of the unit (force). This quality of officer's personality provides the efficient performance of military logistics functions like service and combat, planning, organizational, management, information and analytical, control and correction ones. This quality is developed through the whole period of formation of integral competence of future officers of army support units (forces) in the sphere of military logistics while studying at the higher military educational establishment. The quality is measured on the basis of cadets' achievements in Sociometrics.

Responsibility and discipline characterize professional intellectual and psychological qualities of personality of future officers of army unit (force), particularly their neuro-psychiatric firmness and interest in professional activity results. Responsibility is a moral activity of personality, his/her duty analyzed from the view of personality possibilities. Discipline means the accurate and timely performance of obligations, following established rules and actions order, and diligence. Thus, these abilities include such criteria of officer's activity as self-management, professional self-improvement, self-evaluation, strong will, independence, and initiative. They help officers perform logistics functions and professional tasks in peacetime and during

the compat operations at the high level. These abilities are formed simultaneously with the formation of integral competence of future officers of army support units (forces) in the sphere of military logistics while studying at the higher military educational establishment. They are demonstrated as cadets' achievements, awards, absence of misconduct cases.

Active participation is a driving force for self-development of personality, the basis for the formation of professional competence and advanced training. Simultaneously, it can be described as a practical characteristic showing the level of participation of personality; his/her ability to initiate influence upon the surrounding environment and other people; desire to work energetically. Practical experience showed that active participation in the process of formation of integral competence of future officers of army support units (forces), development and self-development of professionally important qualities and abilities should be based upon psychological attitudes to the particular activity of both military instructors and future officers. Simultaneously, instructors have to consider that active participation cannot be cadets' absolute inner characteristic as it can be affected by psychological state, health, economic situation, etc. Active participation of a future logistics officer is closely connected with his/her independence and initiative. Together these qualities form the ability to act independently and creatively. Thus, formation of this ability among future officers of army support units (forces) leads to the performance of all functions and tasks of military and economic logistics, their development and self-development.

Creative thinking of future officers of army support units (forces) influences upon the most of qualities and abilities that professionally important for military and economic logistics, particularly his ability to act in unexpected situations, professional self-improvement, ability to learn, self-education, and self-development. This ability contributes to the performance of all functions of military logistics at the high level. Also, we consider this ability important for the performance of information, analytical and planning functions. The principle of the creative approach is one of the main conceptual ideas of logistics. But at the same time, we shouldn't exaggerate the role of creative thinking. The usage of active and interactive creative teaching methods during the formation of integral competence, particularly during tactical and tactical-special training, wargames and simulations help to develop the ability of creative thinking of future officers of army support units (force) at the higher military educational establishment.

Workability is based on the interest of a future officer in his/her profession, creativity, mastery, diligence, persistence, devotion of physical

and intellectual powers to work, aspiration, etc. Workability is manifested through an officer's ability to perform professional activity within military logistics with minimal errors for an extended period. This ability is measured as cadets' achievements at different learning stages, judgements of their commanders and instructors.

Persistence of future officers of army support units (forces) means their consistency and firmness in the purposes and principles, particularly in the sphere of material and technical support of units (forces). Persistence is subject to neuro-psychiatric firmness, strong will and other intellect structure peculiarities presented in psychological attitudes towards goal achievement. This quality helps to carry out all the functions of military logistics, but it is the most important for the fulfilment of correction and control functions. Persistence is formed and further developed at the higher military educational establishments simultaneously with future officers' logistics readiness. It is demonstrated through positive changes in commanders' and instructors' judgements.

Communication skills mean necessary condition for positive communication, establishments of interpersonal relations within professional environment and reliable information transfer. Communication skills are formed by an officer's intellect structure peculiarities and his/her neuro-psychiatric firmness, organization and companionship tendencies, humanity, leadership skills, level of conflicting features, self-control. Also, they contribute to the development of a future officer's ability to build and maintain interpersonal relations and his/her possibility to form the positive moral and psychological environment in the team (platoon). The skills are oriented towards the performance of organization-management and control functions of military logistics. The humanistic approach to the educational process within the higher military educational establishment, interactive teaching methods, terms of military internship command post exercise, practices in the running of small and medium business contribute to the development of communication skills of future officers of army support units (forces) and also other skills and qualities related to sociability during the period of formation of their logistics readiness.

Management skills of future officers of army support units (forces) are considered to have an average level of significance by selection frequency among instructors and graduates. But, in our view, these skills are the most important for officers wishing to be competent in the sphere of military logistics. Therefore, management skills belong to basic logistics qualities and abilities as they contribute to the fulfilment of management functions and some associated functions like information and analytical, planning and

organization ones. Ability to manage activities, according to expert estimations, is connected with intellectual and psychological characteristics of a person, particularly his/her neuro-psychiatric firmness. Also, it is a condition for efficient activities while making decisions, organizing, controlling, regulating the team, taking into consideration the aim, analysis and conclusions using the reliable data. The ability to manage activities of future logistics officers is developed during the formation of logistics readiness. This ability is measured as cadets' achievements in Sociometrics and on the basis of testing techniques data oriented towards determination of the level of separate components of ability to manage, particularly management style, possibility to solve various management cases, organization skills, etc.

5. Conclusions

Thus, in accordance with the logistics approach and on the basis of implementation of principles of complexity, system and integration and integral formulation of aims, expert estimations and using own experience we have revealed the content and significant components of logistics readiness of future officers of army support units (forces). Also, we have described general logistics sustainability of future logistics officers being the resultant complex of basic qualities and abilities that are professional important for military logistics sphere. The development of these qualities and abilities, in our view, is the main way to implement organization and pedagogical conditions for efficient formation of integral competence of future officers of army support units (forces). Logistics readiness is the basis for integral competence of future officers of army support units (forces). It is formed in the process of studying at the higher military educational establishment.

Acknowledgments

This research was supported by the Military Academy (Odesa) (Odesa, Ukraine). It was conducted in accordance with the plan of scientific and scientific-technical work of the Academy oriented towards improvement of the educational programme in the field 25 «Military sciences, national security, state border security», speciality 254 «Army support units (forces)».

All the participants of the research, 120 second-year cadets and 63 third-year cadets studying on speciality «Army support units (forces)» at the Military Academy (Odesa) were informed about the experiment that lasted 2 years (2017-2018, 2018-2019 academic years) and participated voluntarily in

accordance with the ethical requirement of the research conducting. We appreciate their active participation and significant assistance in the process of the experiment.

Experts were leading professionals of logistics units of Operational Command «South», scientific and teaching staff of the Military Academy (Odesa). Totally, 36 experts were engaged: 31 instructors and 8 active-duty officers of logistics units. The method of expert estimations was applied to complying all the requirements. We thank to the group of experts for their contribution in conducting the research.

References

Balchugov, S. G. (2015). Formirovaniye gotovnosti kursantov voyennykh institutov Vnutrennikh voisk k nauchno-issledovatelskoi deyatelnosti [Formation of readiness of cadets of the military institutes of Internal troops to the research activity]. *Modern Research of Social Problems*, *9*(53), 690–697. https://nauchtrud.com/8119/20200919093922157356

Balendr, A. V. (2010). Pedahohichni umovy formuvannia hotovnosti maibutnikh ofitseriv-prykordonnykiv do vyrishennia konfliktnykh sytuatsii [Pedagogical conditions of formation of readiness of future border guard officers to conflict prevention and resolution]. *Visnyk Natsionalnoi akademii Derzhavnoi prykordonnoi sluzhby Ukrainy* [Bulletin of the National Academy of the State Border Guard Service of Ukraine], *5*. http:// nbuv.gov.ua/ UJRN/Vnadps_2010_5_4.pdf

Bazaliiska, N. P. (2017). Metod ekspertnykh otsinok v doslidzhenni osobystisnykh, profesiinykh, dilovykh ta rezultatyvnykh pokaznykiv trudovoi povedinky [Method of expert estimations for research of personal, professional, business, and resulting indices of work behaviour]. *Naukovyi visnyk Mizhnarodnoho humanitarnoho universytetu* [Scientific bulletin of International Humanitarian University], *23*(1), 91–96. http://www.vestnik-econom.mgu.od.ua/journal/2017/23-1-2017/22.pdf

Beller, E. (1970). The Concept Readiness and Several Applications. *The Reading Teacher, 23*(8), 727–765. https://www.jstor.org/stable/20196410

Bilous, M. V., Shmatenko, O. P., Ryzhov, O. A. & Drozdov, D. V. (2016). Osnovni aspekty medychnoho postachannia y Zbroinykh sylakh derzhav-zleniv NATO [Main aspects of medical support of the Armed Forces in NATO member-states]. *Aktualni pytannia farmatsevtychoi i medychnoi nauky* [Actual problems of pharmaceutical and medical science], *2*(21), 103–109. http://pharmed.zsmu.edu.ua/article/view/71119

Bilous, T. M. (2015). Sotsialna ekspertyza: sfera zastosuvannia ta osoblyvostei vidboru ekspertiv [Social expertise: sphere of usage and peculiarities of experts selection]. *Aktualni problemy sotsiolohii, psykholohii, pedahohiky* [Actual

problems of sociology, psychology, and pedagogics], *3*(28), 94–101. http://apspp.soc.univ.kiev.ua/index.php/home/article/view/391

Bondarenko, O. V. (2020). Sutnist, zmist, struktura profesiinoi hotovnosti maibutnikh ofitseriv Zbroinykh syl Ukrainy dlia zabezpechennia osvitnioho protsesu viiskovykh litseiv yak pedahohichna problema [Essence, content, and structure of readiness of future officers of the Armed Forces of Ukraine to carry out educational activity at military lyceums as a pedagogical problem], *Innovatsiina pedahohika* [Innovative pedagogy], 23(1), 77–81. http://www.innovpedagogy.od.ua/archives/2020/23/part_1/19.pdf

Brzeziński, M. (2000). *Logistyka wojskowa*. WAT.

Chornopyska, N. V., Bren, O. V., & Danyltsiv, O. I. (2015). Zarodzhennia viiskovoi lohistyky v Ukraini [Origin of military logistics in Ukraine]. *Visnyk Natsionalnoho universytetu Lvivska politekhnika. Lohistyka* [Bulletin of the National University of Lviv Polytechnics, Logistics], *833*, 109–117. http://ena.lp.edu.ua:8080/bitstream/ntb/32904/1/17_109-117.pdf

Chu, S., Reynolds, R., Notari, M., Taveres, N., & Lee, C. (2016). *21st Century Skills Development through Inquiry Based Learning From Theory to Practice*. Springer Science.

Colman, A. M. (2008). *A Dictionary of Psychology*. Oxford University Press.

Curtin, A., & Hall, K. (2018). Research methods for pedagogy: seeing the hidden and hard to know. *International Journal of Research and Methods in Education*, *41*(4), 367–371. https://doi.org/10.1080/1743727X.2018.1495366

Demianiuk, Yu. A. (2014). Formuvannia hotovnosti maibutnikh ofitseriv-prykordonnykiv do orhanizatorskoi diialnosti yak pedahohichna problema [Formation of readiness of future border guard officers to organizational activity as pedagogical problem]. *Visnyk Natsionalnoi akademii Derzhavnoi prykordonnoi sluzhby Ukrainy* [Bulletin of the National Academy of the State Border Guard Service of Ukraine], 3. http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?C21COM=2&I21DBN=UJRN&P21DBN=UJRN&IMAGE_FILE_DOWNLOAD=1&Image_file_name=PDF/Vnadps_2014_3_5.pdf

Diachenko, M. I., & Kandybovich, L. A. (1976). *Psikhologicheskiye problemy gotovnosti k deyatelnosti* [Psychological problems of readiness to activities]. BGU.

DiBenedetto, C. A., & Myers, B. E. (2016). A Conceptual Model for the Study of Student Readiness in the 21st Century. *NACTA Journal*, *60*(1a), 28–35. https://www.nactateachers.org/attachments/article/2390/9%20DiBenedetto_NACTA%20Journal%20Special%20May%202016.pdf

Etter, D. M., Foster, R. E., & Steele, T. P. (2000). Cognitive readiness and advanced distributed learning. *Crosstalk: The Journal of Defense Software Engineering*, *13*, 5–6.

http://static1.1.sqspcdn.com/static/f/702523/9457777/1290007081007/200003-Etter.pdf?token=Gp3LUXa0bDAiUKnkE4aCXS3qltc%3D

Fedorova, N. F. (2017). Pro pedahohichnu ekspertyzu [About pedagogical expertise]. *Osvita ta rozvytok obdarovanoi osobystosti* [Education and development of talented personality], *4*(59), 14–22. http://otr.iod.gov.ua/images/pdf/2017/4/05.pdf

Fletcher, J. D. (2004). *Cognitive Readiness: Preparing for the Unexpected*. Institute for Defense Analysis.

Fomichenko, I. P., & Barkova, S. O. (2020). Smart-lohistyka: kontseptualni zasady ta perspektyvy rozvytku v Ukraini [Smart-logistics: conceptual principles and prospects for its development in Ukraine]. *Ekonomichnyi visnyk Donbasu* [Economic bulletin of Donbas], *1*(59), 63–71. http://evd.luguniv.edu.ua/index.php/evd/article/view/122

Harmash, T. A. (2017). Hotovnist do profesiinoi diialnosti yak peredumova efektyvnoi upravlinskoi diialnosti maibutnioho fakhivtsia is lohistyky readiness to professional activity as a precondition of efficient management activity of future logistics expert]. *Scientific review*, *4*(36). www.naukajournal.org/index.php/naukajournal/about/submissions#onlineSubmissions

Harrison, S. R., Back, M., & Tatar, D. G. (2006). *«It's Just a Method!»: a pedagogical experiment in interdisciplinary design*. Proceedings of the Conference «Designing Interactive Systems» ((pp. 261–270). University Park, PA, USA. https://doi.org/10.1145/1142405.1142445

Hnydiuk, O. P., & Didenko, O. V. (2015). Pidhotovka maibutnikh ofitseriv-prykordonnykiv do phizychnogo samovdoskonalennia yak pedagogichna problema [Training of future border guard officers to physical self-improvement]. *Visnyk Natsionalnoi akademii Derzhavnoi prykordonnoi sluzhby Ukrainy* [Bulletin of the National Academy of the State Border Guard Service of Ukraine], 2. http://www.nbuv.gov.ua/UJRN/Vnadps_2015_2_8

Honcharenko, S. U. (2010). *Pedahohichni doslidzhennia: metodolohichni porady molodym naukovtsiam* [Pedagogical research: methodical recommendations to young scientists]. TOV Firma «Planer».

Horakova, T., & Houska, M. (2014). On Improving the Experiment Methodology in Pedagogical Research. *International Education Studies*, *7*(9), 84–98. https://files.eric.ed.gov/fulltext/EJ1070995.pdf

Hurtovenko, N. V. (2014). Motyvatsiinyi component – holovna skladova hotovnosti studentiv do profesiinoi diialnosti [Motivational component as a main component of readiness of students to professional activity]. *Naukovi zapysky Natsionalnoho universytetu «Ostrozka akademiia»* [Research papers of the National University of Ostroh Academy], Series «Psychology

and Pedagogics», 30, 55–58. https://psj.oa.edu.ua/articles/2014/n30-ua/Hurtovenko_NZ_Vyp_30.pdf

Ishchenko, S. O. (2014). Pedahohichni umovy formuvannia hotovnosti maibutnikh ofitseriv do vykhovnoi roboty z osobovym skladom [Pedagogical conditions of formation of readiness of future offciers to educational work with personnel]. *Scientific review*, *7*(17). https://naukajournal.org/index.php/naukajournal/article/view/539

Johnson, B., & Christensen, L. (2000). *Educational research: Quantitative and qualitative approaches.* Allyn & Bacon Educational research.

Kaplun, S. O. (2010). *Formuvannia professiinoi kompetentnosti maibutnikh sluzhb tylu u protsesi vyvchennia spetsialnykh dystsyplin* [Formation of professional competence of future logistics officers in the process of learning special subjects] [Unpublished PhD. Thesis]. Crimean Humanitarian University, Yalta, Ukraine.

Khvyshchun, N. V. (2012). Sutnist poniattia «lohistyka»: retrospektyvnyi analiz [Essence of category «logistics»: retrospective analysis]. *Efektyvna ekonomika* [Effective economics], *11,* UDC 339.87. http://www.economy.nayka.com.ua/?op=1&z=1567

Kobylyanska, T. (2018). Kharakterystyka hotovnosti do profesiinoi diialnosti yak pedahohichna problema [Characteristics of readiness to professional activity as a pedagogical problem]. *Molod i rynok* [Youth and market], *11*(166), 164–170. http://mir.dspu.edu.ua/article/view/152285

Korniichuk, Yu. H. (2011). *Formuvannia hotovnosti maibutnikh ofitseriv do orhanizatsii vykhovnoi diialnosti z viiskovosluzhbovtsiamy strokovoi sluzhby* [Formation of readiness of future officers to organization of educational work with conscript servicemen] [Unpublished PhD. Thesis]. Zhytomyr State University named after I. I. Franka, Zhytomyr, Ukraine.

Krasova, V. M., & Olkhovy, O. M. (2013). The interdependence of professional and physical readiness for future officers of the Air Force. *Pedagogics, psychology, medical-biological problems of physical training and sports*, *12*, 31–36. https://doi.org/10.6084/m9.figshare.879677

Kravchuk, V. (2019). Formuvannia kryteriiv profesiinoi kompetentnosti maibutnikh ofitseriv viddilen lohistyky u protsesi vyvchennia dystsyplin tylovoho spriamuvannia [Formation of criteria of professional competence of future officers of logistics units in the process of learning logistics subjects]. *Zbirnyk naukovykh prats Natsionalnoi akademii Derzhavnoi prykordonnoi sluzhby Ukrainy* [Bulletin of research papers of the National Academy of the State Border Guard Service of Ukraine]*, 18*(3), 131–139. http://periodica.nadpsu.edu.ua/index.php/pedzbirnyk/article/view/75

Kurliand, Z. N., Khmeliuk, R. I., & Semenova, A. V. (Eds.), (2005). *Pedahohika vyshchoi shkoly* [Pedagogics of higher education]. Znannia.

Kurysh, N. K. (2020). Implemnettaion of the pedagogical experiment on the issues of formation of the readiness of teachers of natural specialties to the development of entrepreneurial enterprise. *Journal of Education, Health and Sport*, *10*(1), 270–278. http://dx.doi.org/10.12775/JEHS.2020.10.01.030

Kyrychenko, O. (2017). Kryterii formuvannia hotovnosti do profesiinoi diialnosti inzheneriv na osnovi 3D-modeliuvannia [Criteria of formation of engineers' readiness to professional activity on the basis of 3D-modelling]. *Osvitolohichnyi dyskurs* [Educational discourse], 3–4(18–19). https://core.ac.uk/download/pdf/268480584.pdf

Levchuk, N. (2020). Metodychni zasady praktychnoi pidhotovky maibutnikh ofitseriv-prykordonnykiv z tylovoho zabezpechennia [Methodical principes of practical training of future border guard officers of logistics]. *Zbirnyk naukovykh prats Natsionalnoi akademii Derzhavnoi prykordonnoi sluzhby Ukrainy* [Bulletin of research papers of the National Academy of the State Border Guard Service of Ukraine]*, 2*(21), 105–119. http://periodica.nadpsu.edu.ua/index.php/pedzbirnyk/article/view/423

Marchenko, G. M. (2001). *Formirovaniye professionalnoi kompetentnosti budushchikh ofitserov tyla* [Formation of professional competence of future logistics officers] [Unpublished PhD. Thesis]. Saratov State University named after N. G. Chernyshevsky, Saratov, Russian Federation.

Martin, L. E., Kragler, S. & Frazier D. (2017). Professional Development and Educational Policy: A Comparison of Two Important Fields in Education. *Journal of Educational Research and Practice*, *7*(1), 60–73. https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=1212&context=jerap

Matokhniuk, L. Yu. (2006). *Formuvannia psykholohichnoi hotovnosti maibutnikh inzheneriv-prykordonnykiv do profesiinoi diialnosti* [Formuvannia psychological readiness of future enginners-border guards to professional activities] [Unpublished PhD. Thesis]. National Academy of the State Border Guard Service of Ukraine named after Bohdan Khmelnytskyi, Ukraine.

May, C., & Campbell, R. (1981). Readiness for Learning: Assumptions and Realities. *Theory Into Practice, 20*(2), 130–134. https://www.jstor.org/stable/1476302

Medvid, Yu. I. (2018). Vyznachennia sutnosti i struktury hotovnosti maibutnikh ofitseriv zapasu do sluzhbovo-boiovoi diialnosti determination of nature and structure of readiness of future reserve officers to service and combat activities]. *Naukovi zapysky kafedry pedahohiky* [Research papers of pedagogics department], *43*, 218–235. https://periodicals.karazin.ua/pedagogy/article/view/11964

Miller, F. R., Aguilera Aguilera, O., & Escalona, L. Y. (2012). *Didactic Pedagogic Dictionary: Educational Material.* LAP Lambert Academic Publishing.

Ministry of Defence of Ukraine (2018). *Metodychni rekomendatsii z poriadku orhanizatsii i provedennia attestuvannia viiskovosluzhbovtsiv Zbroinykh syl Ukrainy* [Order No

328 of 19 April 2017, as amended in No 226/4907 of 10 October 2018. Methodical recommendations on organization and carrying out of attestation of members of the Armed Forces of Ukraine]. https://www.mil.gov.ua/content/other/mrk_atest_zi_zmin_328_2018.pdf

Mul, S. A. (2016). *Psykhologiya hotovnosto ofitsera-prykordonnyka do profesiinoi diyalnosti* [Psychology of border guard officer's readiness to professional activity] [Unpublished PhD. Thesis]. Kostiuk Institute of Psychology of the Academy of Pedagogical Sciences of Ukraine.

Nichev, N., & Petrova, E. (2015). *Professional training of future logistics officers at National Military University of Bulgaria.* Proceedings of International Conference «Knowledge-Based Organization», Sibiu: Nicolae Balcescu Land Forces Academy. https://doi.org/10.1515/kbo-2015-0042

Nind, M., & Lewthwaite, S. (2018). Methods that teach: developing pedagogic research methods, developing pedagogy. *International Journal of Research and Methods in Education*, *41*(4), 398–410. https://doi.org/10.1080/1743727X.2018.1427057

Novosad, V. P., Seliverstov, R. H., & Artym, I. I. (2009). *Kilkisni metody ekspertnoho otsiniuvannia* [Quantitave methods of evaluation]. HADU.

Ohiienko, O. I. (2014). Formuvannia hotovnosti do innovatsiinoi diialnosti yak vazhlyva skladova profesiinoi pidhotovky maibutnioho vchytelia [Formation of readiness to innovative activity as an important component of professional training of future teacher]. *Pedahohichni nauky: teoriia, istoriia, innovatsiini tekhnolohii* [Pedagogical sciences: theory, history, innovative technologies], *7*(33), 154–162. http://nbuv.gov.ua/UJRN/pednauk_2013_7_21

Panchenko, A. H. (2011). Ekspertne otsiniuvannia metodychnoi roboty v zahalnoosvitniomu navchalnomu zakladi [Expert estimation of methodical work at the secondary educational establishment]. *Osvitolohichnyi dyskurs* [Educational discourse], *1*(3), 168–176. https://od.kubg.edu.ua/index.php/journal/article/view/57

Pavliuk, T. H. (2019). Metodychni rekomendatsii shchodo formuvannia profesiinoi hotovnosti maibutnikh ofitseriv-prykordonnykiv do roboty z personalom [Methodological recommendations for the formation of professional readiness of future officers-borders to work with personnel]. *Scientific Vector of the Balkans*, *2*(4), 59–61. https://sci-vector-balkans.com/wp-content/uploads/2020/11/SVB-2019-T.3-24.pdf

Penkova, N. Ye. (2015). *Psykholohichna hotovnist viiskovosluzhbovtsiv Natsionalnoi Hvardii Ukrainy do sluzhbovo- boiovoi diialnosti u protsesi provedennia antyterorystychnoi operatsii* [Psychological readiness of servicemen of the National Guard of Ukraine to service and combat activities during the antiterrorist operation]

[Unpublished PhD. Thesis]. National Academy of the National Guard of Ukraine.

Poláková, E. (2016). Philosophical and methodological bases of pedagogical research. *World Scientific News*, *57*, 332–341. http://www.worldscientificnews.com/wp-content/uploads/2016/06/WSN-57-2016-332-341.pdf

Ponomarenko, O. A. (2006). *Pidhotovka maibutnikh ofitseriv tylu Derzhavnoi prykordonnoi sluzhby Ukrainy do profesiinoi diialnosti* [Training of future logistics officers of the State Border Guard Service of Ukraine to professional activities] [Unpublished PhD. Thesis]. National Academy of the State Border Guard Service of Ukraine named after Bohdan Khmelnytskyi, Ukraine.

Ponomarenko, Y. V., Kenzhebekova, R. I., Yessaliyev, A. A., Moldabek, K., Larchenkova, L. A., Dairbekov, S. S., & Jumagulova, G. (2016). Pedagogical Research Methods of Training in Higher Educational Establishments: A Comparative Analysis. *IEJME — Mathematics education*, *11*(9), 3221–3232. https://www.iejme.com/download/pedagogical-research-methods-of-training-in-higher-educational-establishments-a-comparative-analysis.pdf

Potapkina, L. V. (2015). Hotovnist do profesiinoi diialnosti yak psykholoho-pedahohichna problema Readiness to professional activity as a psychological and pedagogical problem]. *Zbirnyk naukovykh prats Natsionalnoi akademii Derzhavnoi prykordonnoi sluzhby Ukrainy* [Bulletin of research papers of the National Academy of the State Border Guard Service of Ukraine], *1*, 198–207. http://nbuv.gov.ua/UJRN/znpnadpcpn_2015_1_19

Raffensperger, J., & Schrage, L. (1997). A New Paradigm for Measuring Military Readiness. *Military Operations Research, 3*(5), 21–34. https://www.jstor.org/stable/43940776

Reziapov, N. (2012). Osnovnye aspekty razvitiya sistemy tylovogo obespecheniya VS SShA [Main aspects of development of logistics support of the US Armed Forces]. *Zarubezhnoye voyennoye obozreniye* [Foreign Military Review], *3*, 24–29. http://pentagonus.ru/publ/osnovnye_aspekty_razvitija_sistemy_tylovogo_obespechenija_vs_ssha_2012/19-1-0-2114

Roberts, B. W., Kuncel, N. R., Shiner R., Caspi, A. & Goldberg, L. R. (2007). The Power of Personality: The Comparative Validity of Personality Traits, Socioeconomic Status, and Cognitive Ability for Predicting Important Life Outcomes. *Perspectives on Psychological Science*, 2(4), 313–345. https://doi.org/10.1111/j.1745-6916.2007.00047.x

Rush, C., & Roy, R. (2001). Expert judgement in cost estimating: Modelling the reasoning process. *Concurrent Engineering: Research and Applications Journal*, *9*(4), 271–284. https://doi.org/10.1177/1063293X0100900404

Sapiha, R. I. (2009). Strukturuzatsiia systemy lohistychnoho zabezpechennia Zbroinykh syl Ukrainy [Structuring the system of logistics support of the Armed Forces of Ukraine]. *Visnyk Natsionalnoho universytetu Lvivska politekhnika. Lohistyka* [Bulletin of the National University of Lviv Polytechnics. Logistics], *649*, 335–342. http://vlp.com.ua/files/special/47.pdf

Semenova, A. V. (ed.), (2006). *Slovnyk-dovidnyk z profesiinoi pedahohiky* [Dictionary of professional pedagogy]. Palmira.

Servatiuk, V. M., & Uhrynovych, O. I. (2013). Perspektyvni napriamy reformuvannia systemy tylovoho zabezpechennia Zbroinykh syl Ukrainy [Prospects of reforming the system of logistics support of the Armed Forces of Ukraine]. *Nauka i tekhnika Povitrianylh syl Zbroinykh syl Ukrainy* [Science and technology of the Air force of the Armed forces of Ukraine], *2*(11), 14–18. http://www.hups.mil.gov.ua/periodic-app/article/431

Sharonov, A. N., & Babenkov, V. I. (1998). *Reformirovaniye vysshei shkoly i kachestvo podgotovki spetsialistov tyla* [Reforming of higher school and quality of training of logistics experts]. Nauka.

Skyba, Yu. (2016). Klasyfikatsiia metodiv pedahohichnykh doslidzhen [Classification of methods of pedagogical research]. *Vyshcha osvita Ukrainy* [Higher education of Ukraine], *2*, 51–59. http://nbuv.gov.ua/UJRN/vou_2016_2_10

Sokhatskyi, O. (2016). *Viiskova lohistyka krain NATO* [Military logistics of NATO countries]. In Proceedings of IX International scientific and practical conference «Innovative processes of economic and socio-cultural development: Ukrainian and foreign experience» (pp. 41-43) Ternopil: Ternopil National economic university. http://dspace.wunu.edu.ua/bitstream/316497/4105/1/Сохацький.pdf

Sokolovskyi, S. A., & Naumenko, M. O. (2018). Analiz osoblyvostei upravlinnia informatsiinymy potokamy lohistychnykh protsesiv pidrozdiliv Natsionalnoi hvardii Ukrainy [Analysis of peculiarities of management of information streams of logistics processes of units of National Guard of Ukraine]. *ScienceRise*, *2*(43), 19–21. http://nbuv.gov.ua/UJRN/Vetp_2016_53_19

Stamatov, S. (2018). Combat readiness as a function of manning, equipping and training the forces. *Knowledge International Journal*, *28*(6), 1893–1899. https://doi.org/10.35120/kij28061893S

Starchuk, O. O. (2011). *Metodyka formuvannia fizychoi hotovnosti maibutnikh ofitseriv do viiskovo-profesiinoi diyalnosti* [Methods of formation of readiness of future officers to military and professional activities] [Unpublished PhD. Thesis]. National Academy of the State Border Guard Service of Ukraine named after Bohdan Khmelnytskyi, Ukraine.

Stuns, K. K., & Heaslip, G. (2019). Effectiveness of humanitarian logistics training: The Finnish Red Cross (FRC) Emergency Response Unit (ERU). *Journal of*

Humanitarian Logistics and Supply Chain Management, *9*(2), 196–220. https://doi.org/10.1108/JHLSCM-12-2018-0080

Syvokhop, E. M. (2010). *Formuvannia hotovnosti do samopiznannia maibutnikh ofitseriv-prykordonnykiv u protsesi fizychnoi pidhotovky* [Formation of readiness to self-knowledge of future border guard officers in the process of physical training] [Unpublished PhD. Thesis]. National Academy of the State Border Guard Service of Ukraine named after Bohdan Khmelnytskyi, Ukraine.

Terziev, V., & Nichev, N. (2017). Some aspects on forming preparedness of logistics military officers for management activities. *International E-Journal of Advances in Social Sciences*, *III*(8), 635–639. http://ijasos.ocerintjournals.org/tr/download/article-file/339559

Torichnyi, O. V., & Bhinder, N. V. (2019). Organizational methods of formation of military and special competence in future border guard officers in the continuing education process. *Revista Românească pentru Educaţie Multidimensională*, 11 (4 Suppl. 1), 278–301. https://doi.org/10.18662/rrem/190

Trokhymchuk, V. V., Shmatenko, O. P., & Ubohov, S. H. (2007). *Istoriia viiskovo-farmatsevtychnoi lohistyky* [History of military and pharmaceutical logistics]. UVMA.

Ulich, V. L. (2007). *Pedagogichni umovy formuvannia hotovnosti maibutnikh ofitseriv do upravlinskoi diyalnosti* [Pedagogical conditions of formation of future officers' readiness to management activities] [Unpublished PhD. Thesis]. National Academy of the State Border Guard Service of Ukraine named after Bohdan Khmelnytskyi, Ukraine.

VornDick, W. T. (2014). The case for the junior joint logistics officer training program. *Joint Force Quarterly*, 73. https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-73/jfq-73_105-110_VornDick.pdf?ver=2014-04-01-122251-793

Wiater-Branco, C. (2008). *Pedagogical Vocabulary: The Language of Instruction*. Kean University.

Williams, P. (2018). *Hnuchka lohistyka u nestabilnomu suchasnomu seredovyshchi bezpeky* [Flexible logistics in unstable modern security environmnet]. https://www.nato.int/docu/review/uk/articles/2018/10/09/gnuchka-logstika-u-nestabl-nomu-suchasnomu-seredovishch-bezpeki/index.html

Yahupov, V. V. (2007). Kompetentnisnyi pidhid do pidhotovky fakhivtsiv u systemi vyshchoi osvity [Competence-based approach to training of specialists in the system of higher education]. *Naukovi zapysky NaUKMA. Pedagohichni nauky* [NaUKMA Research Papers. Pegagogical sciences], *71*, 3–8. http://ekmair.ukma.edu.ua/bitstream/handle/123456789/6871/Yagupov

_Svy%60stun_KOMPETENTNISNY%60J_PIDXID.pdf?sequence=3&isAllowed=y

Yakovlev, B. P., & Bogdan, I. T. (2011). Theoretical aspect of personal readiness for professional activity from future specialist formation position. *European Journal of Natural History*, *2*, 34–38. https://world-science.ru/en/article/view?id=21304

Yeremeev, V. & Kuzminov, V. V. (2013). Statisticheskaya obrabotka pedagogicheskogo eksperimenta v sluchaye neizvestnoi funktsii raspredeleniya [Statistic processing of pedagogical experiment in case of unknown function of distribution]. *Information technologies in education*, *15*, 44–51. http://nbuv.gov.ua/UJRN/itvo_2013_15_7

Zahrebelnyi, O. V. (2019). Formuvannia hotovnosti maibutnikh ofitseriv do profesiinoi samorealizatsii zasobamy informatsiino-komunikatsiinykh tekhnolohii [Formation of readiness of future officers to professional self-actualization by means of information and communication technologies]. *Visnyk Cherkaskoho natsionalnoho universytetu imeni Bohdana Khmelnytskoho. Pedagohichni nauky* [Bulletin of Cherkasy National university named after Bohdan Khmelnytskyi. Pedagogical Sciences], *3*, 135–140. https://ped-ejournal.cdu.edu.ua/article/view/3477