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FORMATION AND DEVELOPMENT OF PROFESSIONAL CREATIVITY OF FUTURE OFFICERS IN HIGHER MILITARY EDUCATIONAL INSTITUTIONS


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conditions of spatial and temporal limitations. Therefore, an officer must be a professional in various activities.

According to a wide range of researchers, the basic determinant of professionalism, which contributes to the self-actualization of an officer in professional activities and determines the innovative and productive orientation of his personality, is the ability to create – creativity. Without it, the effective activity of a specialist in any field and, in particular, an officer while performing service duties is impossible. A creative attitude to management decisions mobilizes the officer's knowledge and experience, allowing him to choose the most optimal one from all possible options to accomplish tasks. In addition to making decisions by an officer to perform tasks related to the protection of the state border, acts of creativity can include solving complex problems of everyday, official and pedagogical activities, ensuring the combat capability of the unit, forming a moral and psychological climate in the unit, influencing the behavior of individual military personnel, and so on.

INTRODUCTION

At the beginning of the XXI century, the study of the problem of formation and development of creative qualities becomes particularly important. It is increasingly becoming the most important factor in social progress. That is why one of the priority areas of state policy today is to stimulate creative work, train and educate young people, and develop their creative abilities and potential. All this directly concerns the professional training of future officers. Legal documents regulating the professional training of officers require them to be capable of innovation, independence and unconventionality in decision-making, and to have broad professional competence. Officers, in particular in the State Border Guard Service of Ukraine (SBGSU), should be ready to: organize the protection of the state border in the area of responsibility and manage the actions of border units to detain offenders; analyze the criminological characteristics of crime and identify the causes and conditions that led to the commission of crimes, develop and implement various measures to prevent them; be able to work with people, educate subordinates and perform other tasks that require a creative approach. In addition, the practical activity of SBGSU officers is characterized by constant direct contact with potential violators of the state border, high independence and autonomy of units, the need for close cooperation and interaction with the local population. At the border often there are non-standard situations that require an officer – the only representative of the State at the border – to make operational decisions and actions in unforeseen situations, conditions of spatial and temporal limitations. Therefore, an officer must be a professional in

Generalization of various scientific views and the most recognized concepts of creativity and development of creativity in modern science (ALTSHULLER, 1991; BERGSON, 1998; GUILFORD, 1986; NOVIKOV, 2011; PONOMAREV, 1983; TORRANCE, 1988; SOROKA, 2019; BALENDR, 2019) gives grounds to interpret it as the production of new thoughts, feelings or images that become direct regulators of further creative actions. We are talking about the ability of a person to offer original ideas, deviate from traditional thinking patterns if necessary, quickly solve problem situations and act in unforeseen conditions, and be able to relate to the usual, typical, and everyday ones in a new way. A prerequisite for the creative process is creativity as a personal quality that characterizes the ability to create.

The problem of forming the ability to create (creativity) constantly attracted the attention of scientists. From the perspective of our research, the works of Andreev (2015), Bink (2000), Didenko (2009), Simonton (1997), Lubart (2001), Khutorsky (2003), Sysoeva (1998), Chernozhuk (2010), Soroka (2019), Didenko (2020), Komarnytska (2019), Balendr (2018) and others, which consider the philosophical, sociological and psychological-pedagogical aspects of the theory of creativity and its essence.

Of particular interest are studies that attempt to solve the problem of developing creativity among military specialists. In the educational process of higher military educational institutions (hereinafter referred to as HMEI) of leading countries of the world, a number of features can be distinguished, including a clearly expressed focus on the development of creative thinking in officers. In the process of training officers in the UK, Germany and France, much attention is paid to precisely those elements of professional training that develop creativity. We are talking, in particular, about formation of skills to produce original ideas, think creatively, quickly assess the situation, make decisions and act in unforeseen conditions, deviate from traditional thinking schemes if necessary, etc. (DIDENKO, 2008). Therefore, the results of a comprehensive study of the formation and development of creativity of future officers in higher military educational institutions have to be published, since such studies have not been conducted before.

RESEARCH PROBLEM

The results of the analysis of professional training of officers indicate that an authoritarian style of managing the actions of cadets prevails in higher education institutions. They are trained in conditions of a clear distribution of responsibilities, high regulation of life, strict statutory order and relationships, intense physical exertion, are subject to certain restrictions of a material and economic nature, are isolated from communication with relatives, friends, are in conditions of forced communication with a limited circle of people, must unconditionally obey their superiors, adhere to both formal and informal norms of behavior, are limited in choice and decision-making. These factors do not contribute to the formation of a creative personality capable of self-development, self-improvement, who would strive to creatively master new knowledge and skills necessary for its development, but on the contrary-reduce the level of independence of cadets when solving various tasks and teach them to the clichéd ideas, restrain independent decision-making. The influence of negative factors is aggravated by the lack of readiness of the command and teaching staff to create conditions for creativity in the educational process of higher education institutions.

The results of experimental work conducted on a large empirical material allowed us to identify other problems: the pedagogical process in higher education institutions is mainly focused on training officers who are able to solve problems and tasks of operational and service activities at the reproductive and algorithmic levels. So, for example, the results of the analysis of reviews of graduates of the National Academy of the State Border Guard Service of Ukraine named after Bohdan Khmelnytsky (NASBGSU) indicate that they lack initiative and the ability to make appropriate decisions in a situation (12.8 %), the ability to produce new ideas on ways to obtain operational information (10.2 %), the ability to quickly solve problem situations and confidently act in unforeseen conditions (15.6 %), the ability to successfully solve non-standard tasks (8.2 %), the ability to show a creative approach when organizing leisure and educational work with staff (10.5 %).

The results of the analysis of fundamental scientific works, normative legal documents and practical experience made it possible to identify contradictions in the process of forming the ability of cadets to professional creativity, in particular between: the growth of society's

requirements for the quality of professional training of officers, due to the peculiarities of protecting the state border in modern conditions, and the lack of methodological base to ensure these requirements; the potential possibilities that modern higher military school has for the effective formation of the ability to professional creativity of future officers, and the insufficient implementation of these possibilities in practice. The need to overcome these contradictions, as well as insufficient theoretical development and practical significance of solving the problem of formation and development of creativity of future officers in higher military educational institutions caused the necessity to substantiate the technology of formation and development of professional creativity of future officers in higher military educational institutions and publication of the results of experimental verification of its effectiveness.

RESEARCH METHODS

The study included conducting a pedagogical experiment, which consisted of two stages: ascertaining and forming. The ascertaining stage of the experiment, which was attended by 750 cadets, was carried out on the basis of the NASBGSU and two other related institutions of higher education with special training conditions – the Academy of the State Penitentiary Service (HMEI 2) and the Lviv State University of Life Safety (HMEI 3). This stage of the pedagogical experiment was conducted in real conditions of the educational process in September – November 2016. 110 cadets from the second, third and fourth courses of NASBGSU, 220 cadets of the first year of NASBGSU and 100 cadets from the Academy of the State Penitentiary Service and Lviv State University of Life Safety were involved in its implementation.

The main goal of the ascertaining stage of the experiment was to find out the level of formation of the ability to professional creativity of future officers. The study also involved 58 teachers and commanders of cadet units (heads of training groups, commanders of training courses and their deputies, heads of faculties and their deputies), whose opinions on the research problem we took into account. For a more complete picture of the state of creativity formation, all participants in the experiment were covered with various types of questionnaires and tests. For this purpose, the necessary research apparatus has been developed, in particular, the components of creativity as the ability to create have been determined; criteria, indicators and levels of formation of this property have been determined; a set of appropriate methods for obtaining numerical data has been determined – tests, questionnaires, interviews, conversations, analysis of the products of creative activity of cadets.

In particular, the generalization of the results of studying scientific papers on the research problem allowed us to justify the choice of criteria and appropriate indicators for determining the state of professional creativity formation in particular, cognitive, operational, intellectual and emotional-reflexive. Indicators of the cognitive criterion determine the ability to see problems in unfamiliar and familiar situations, the ability to formulate the essence of the problem, the ability to master new knowledge, types and forms of activity, methods of organization and management. The operational criterion is represented by the following indicators: the ability to reformulate a problem, classify tasks or parts of the problem solved earlier, the ability to transfer knowledge to new situations; the ability to analyze facts, phenomena, processes, systems, and act productively. Indicators of the intellectual criterion are the ability to generate ideas for solving a problem, ingenuity, flexibility, consistency, mobility, efficiency of thinking in various situations, professional erudition and intuition, imagination and ease of association.

The emotional-reflexive criterion is represented by such indicators as the ability to analyze ideas, the ability to predict the development of situations, critical thinking, the desire for a creative process and the desire to perform educational and professional actions regardless of the formed stereotypes, recommendations and samples, to receive positive emotions from the process of solving professional problems, satisfaction from the solutions found. To determine the levels of formation of the ability to professional creativity, an analysis of dissertations on the formation and development of professional qualities was carried out. Taking into account the results of the works of Drozdikova (1998), Kolobutina (2002) et al., according to certain criteria,

it was found out that the ability to professional creativity of an officer can manifest itself at low, initial, medium, sufficient and high levels.

To ensure the forming stage of the experiment and the reliability of conclusions based on its results, the control (CG) and experimental (EG) groups were set up. The sample size was determined taking into account the requirements for pedagogical research, as well as the specifics of the educational process in NASBGSU and the number of cadets studying in one course. Random selection was ensured by selecting training groups with odd numbers in the EG, and even numbers in the CG. The composition of the groups was approximately the same in terms of basic characteristics and training areas. The total number of participants in the experiment was 220 cadets: 112 in CG and 108 in EG.

RESEARCH RESULTS

The results of experimental and analytical activities and analysis of basic concepts, general approaches to the research problem, requirements of regulatory documents regarding the qualification characteristics of graduates of higher education institutions allowed us to define the professional creativity of an officer as a complex integrative process of performing official duties to protect the state border at the highest productive level, that means originally, in a new way, with optimal use of acquired knowledge and experience. This implies non-standard use of methods and means in solving professional problems, the ability to deviate from traditional thinking patterns if necessary, quickly solve atypical problems, complex tasks and confidently act in unforeseen situations, look at the usual, typical, everyday in a variety of professional conditions.

An officer's ability for professional creativity is a determinant of the creative process. It is a stable characteristic of the officer's personality, its functional and integrative property, which covers motives, knowledge, skills and abilities and is characterized by an appropriate mental and physical state, which ensures successful and productive performance of professional activities.

Generalization of the results of the ascertaining stage of the experimental study made it possible to identify shortcomings in the professional training of future officers associated with the formation of the ability to professional creativity. It is established that these are: the lack of special educational and methodical literature and plans for the formation of this quality of cadets; unsystematic application of creative-heuristic, problematic and analytical tasks aimed at the creative development of cadets; inconsistency of the content of academic disciplines with modern forms and methods of developing creative qualities; slow introduction of modern active methods and technologies of teaching; the use by the vast majority of teachers of traditional reproductive and explanatory approaches in teaching, insufficient use of active forms of classes.

During the training of cadets, distance learning is practically not used, and cadets' access to the local computer network of the educational institution and the Internet is limited. In the educational process of higher education institutions, where the research was conducted, explanatory and illustrative teaching methods and extensive forms of organizing the educational process predominate, which are aimed exclusively at expanding the volume of knowledge, which leads to information overload of cadets and hinders the development of their creative thinking. Stereotypical forms and methods of educational work, formalism in evaluating the results of educational and educational activities significantly reduce the quality of training of future officers. Regarding the subject-subject relationships of participants in the educational process, we note that the atmosphere of classes does not always allow cadets to open up, be sincere, and not be afraid to make a mistake when choosing a solution. An instructive tone on the part of teachers, unethical interference in the discussion, tactless correction of errors of cadets' answers, and authoritarianism reduce the effectiveness of the pedagogical process, etc.

During the ascertaining stage of the experiment, it was established that the formation of professional creativity of future officers is accompanied by a number of contradictions and problems. As a result, cadets act haphazardly, and therefore this process is slow and unproductive. This is confirmed by the data obtained. So, in particular, the initial level of formation of professional creativity of future officers was determined. It was found that 4.77%

of the 220 cadets surveyed have a low level of professional creativity, 19.09% have an initial level, 51.36% have an average level, and 23.86% have a sufficient level of professional creativity. At the same time, there were only 0.9% of future officers with a high level of professional creativity.

So, the study of the essence and features of professional activity of SBGSU officers, the analysis of the structure and determination of diagnostic tools for the formation of professional creativity of future officers, as well as the results of the ascertaining stage of the experiment allowed us to move on to the search for ways to form professional creativity of cadets in the conditions of higher education institutions.

As a result of the theoretical analysis of scientific literature and the practice of professional training, the technological and scientific-methodological basis for the formation of the ability to professional creativity of cadets was determined - a set of methods, forms and means by which it is possible to organize creative educational, cognitive and professionally directed activities of cadets. This was taken into account for the development of technology for the formation of the ability to professional creativity of future officers. This technology is based on the provisions of the concept of problem-based learning by Matyushkin (2003), Makhmutov (1972), Okon (1990), as well as the concepts of developmental learning (KALMYKOV, 1981), which are aimed at the formation of productive or creative thinking.

Important for the development of the author's technology are the provisions of the psychological and pedagogical concept of contextual learning by Verbitsky (1991), psychological concepts of creativity (VOLLACH, 1965; GUILFORD, 1986; TORRANCE, 1988), the position on the positive influence of the external environment as a factor in the development of creativity. The results of research are also taken into account, which note that the creative personality develops in the process of training and upbringing, in direct activity due to purposeful pedagogical influence. The author's technology of forming professional creativity also takes into account the laws, principles and psychological mechanisms of forming a creative personality and creative activity.

Theoretical analysis of scientific literature allowed us to formulate requirements for professional training of cadets regarding the formation of their professional creativity. It was found out that this process will be effective if the educational activity is creative in nature; problem learning situations stimulate the creative activity of cadets; the formation of the ability to professional creativity is dialectically connected with the system of knowledge and skills necessary for future professional activity; a high level of individualization of training is provided throughout the entire period of stay in HMEI; developing educational and professional tasks have optimal complexity.

The principles of compliance with which in the educational process of higher education institutions will ensure the productive formation of professional creativity have been defined. These encompass stimulating the transformation of co-creation of the teacher and cadet into the ability of future officers to professional creativity; personal orientation of cadets to the value attitude and understanding of the unity of professional knowledge and methods of activity with the sphere of professional creativity; optimal complexity of tasks of training and self-training of cadets to the creative performance of functional duties of officers; comprehensive pedagogical support of the zone of actual and immediate creative development of the future officer's personality; continuous pedagogical support of conditions for self-development of professional and creative qualities of cadets.

The analysis of scientific literature and practice of developing professionally important qualities allowed us to conclude that the effective formation of the ability to professional creativity of cadets is possible if the appropriate pedagogical technology is introduced into the educational process - a set of processes of theoretical and practical activity of teaching and command staff aimed at developing the cadet's personality, as well as a system that covers the purpose, content, forms, methods, means and techniques of the educational process, pedagogical conditions, forms of control and correction, which are gradually introduced into the pedagogical process of HMEI and guarantee the achievement of the final result.

The technology of forming professional creativity of cadets implements consistent and step-by-step implementation of certain pedagogical conditions. On the initial stage - disclosure of the creative potential of cadets and development of creative orientation by forming clear ideas among cadets about the essence of creativity; creation and maintenance of a socio-psychological environment favorable for the formation of a creative personality during the educational process; providing subject-subject interaction of teachers and cadets as a basis for imitating creative behavior. On the second - transition stage, pedagogical conditions provide for the formation of skills to use variable ways of solving professional situations and further development of creative abilities by applying creative tasks in teaching special disciplines; optimal use of heuristic methods and methods of problem-based learning to activate the educational and cognitive activity of cadets. Final - third stage of the technology of the formation of professional creativity provides for the consolidation of creative professional skills and development of creative motivation for the professional activities of the SBGSU officers; stimulating independent research work and creative activity of cadets; introducing training methods and professional creative tasks in the formation of the ability to create.

Pedagogical conditions that are gradually implemented in the technology of forming professional creativity are based on psychological mechanisms of creative thinking, creative growth of the individual. The clarity of cadets' ideas about the essence of creativity and creativity, the stimulation of independent research work and creative activity, the formation of creative motivation contribute to the activation of creative thinking, allow them to act in various professional situations more consciously, and at a creative level. A favorable socio-psychological environment and subject-subject interaction of teachers and cadets create an atmosphere of psychological support for intellectual and creative development, provide samples of creative behavior. The environment in which the creative aspirations of the cadet are supported helps effective personal and professional development. The use of creative tasks in teaching special disciplines, the optimal use of heuristic and problem-based teaching methods and training methods are crucial for the technology of forming professional creativity of future SBGSU officers.

Experimental work on the implementation of pedagogical technology for the formation of professional creativity was carried out during 4 years in three stages. *On the first stage* (1-2 courses of study) the main work was focused on revealing the creative potential of cadets and developing their creative orientation. For this purpose, a special course "Fundamentals of professional creativity of an officer" was developed and implemented, the purpose of which was to activate the interest of cadets in the problem of creativity, acquire knowledge about the essence, content and significance of this quality in the professional development of future officers of the State Border Guard Service. When teaching academic disciplines of the humanitarian cycle, in particular "Ethics and Aesthetics", "Fundamentals of psychology and pedagogy", "Ukrainian language in a professional direction", "History of the borders of Ukraine", the teaching staff sought to create a creative atmosphere in the classroom, which was characterized by benevolence and the absence of categorical assessments and critical comments addressed to cadets.

During seminars and practical classes, conditions were created for constructive communication of cadets, regardless of their level of creative development; opportunities to actively ask questions, put forward original ideas, hypotheses; practical application of acquired knowledge, skills and abilities. For the scientific and pedagogical staff, briefings and master classes were held, which focused on compliance with methodological recommendations, in particular: quickly navigate in various communication conditions; correctly plan and implement the communication system; find adequate content and communication situations communication tools that would correspond to the characteristics of the cadet team. At the first stage of the technology, special importance was attached to the communication of cadets with their immediate superiors and commanders (heads of training groups and commanders of cadets' divisions). Samples of creative behavior were demonstrated by both teachers and participants of amateur creative activities and research work in military scientific societies. This allowed junior cadets to see the prospects for their development and patterns of creative behavior.

On *the second stage* of the technology of formation of professional creativity (3rd year of study) was ensured formation of skills to use variable ways of solving professional situations and further development of creative abilities. For this purpose, the following types of educational and creative tasks were used: recognizing contradictions, problem vision of situations, tasks without complete initial information, tasks for forecasting, for optimization, tasks for reviewing, logical tasks, research tasks, communicative tasks, tasks for developing imagination, as well as aesthetic tasks. Creative tasks were focused on the actual and potential development of cadets' abilities. These tasks were of a systematic nature (they were divided into preparatory (propaedeutic), educational (formative) and actually creative), that is, an ordered sequence of tasks of various forms and content was observed, which gradually became more complex and were logically connected with the program material.

Creative tasks were applied in teaching such special disciplines as "working with the local population", "Tactics of the Border Guard Service", "Operational Search activities", "Border Control", "Border Guard Service". In group classes, in accordance with the peculiarities of teaching these disciplines, problem situations, service and story-based role-playing games are widely used. An important form of creative development at this stage was an internship in the border protection authorities. Independent work of cadets involved performing such tasks as preparing problematic official situations of interaction between the management and subordinates to discuss them during a group discussion; a written solution to a specific official situation that the teacher suggested after each lesson.

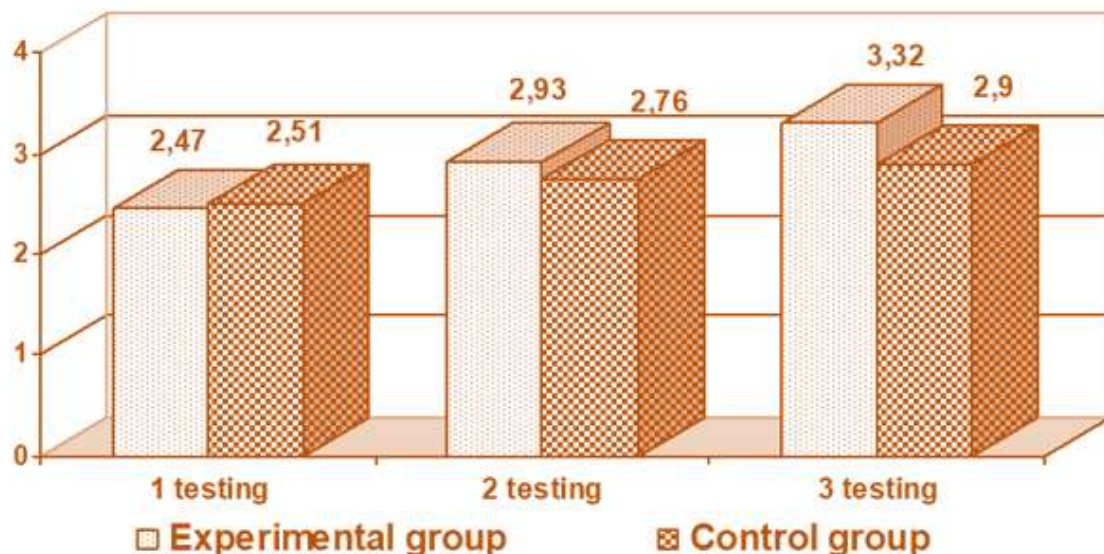
On *the third stage* of the technology of the formation of professional creativity (4th year of study) was ensured consolidation of creative professional skills and development of creative motivation for the professional activities of the SBGSU officers; stimulating independent research work and creative activity of cadets, as well as introduction of training methods and professional creative tasks in the formation of the ability to create. This stage was characterized by a clear professional direction of various situations of educational and practical activity, so the main attention was focused on creating such situations that actualized the creative experience of cadets, formed the need and ability of cadets to create and use it in independent activities. Complex interdisciplinary classes, which were conducted for 6 hours over 3 days, were particularly effective. During these lessons cadets performed the roles of officials of border outposts and departments, border control sections, learned to make decisions in both standard and new situations, work out official documents, give orders, etc. Internship of cadets in the state border protection bodies was the basis for the formation of creative motivation for professional activities.

Independent research work of cadets was the main activity of the military scientific society of the Academy. The teaching staff that participated in the educational process with the final course created such educational situations that activated the desire of cadets to think, analyze, synthesize, and engage in search activities. Research work was carried out on the basis of a personal approach, primarily through individual consultations, selection of interesting topics for essays, speeches, reports, etc. The research topics were diverse, but among the EG cadets, the research topics were relevant, deep, and original. As it turned out later, not only cadets with a high level of creative ability formation took part in their development, but also those who had a desire for creativity that was at the initial level. The teachers performed a function not so much regulating and guiding, but rather tried first of all to motivate the creative activity of the cadet.

With EG cadets in the fourth year, training methods were used to form their ability to create. These cadets in their free time twice a week for one hour were engaged in the training program. The training was based on a set of exercises and techniques that are used in creativity training, but adapted to the specific conditions of professional activity of officers. These are exercises, games and tasks, fragments of texts and methodological tips that help: to gain new experience in analyzing situations that arise due to different views; to develop the ability to see a variety of options for solving problems, readiness to perceive new concepts, images, ideas, behavior styles; to remove fear of the unknown or dilemma; to identify creative qualities, in particular flexibility of thinking, resourcefulness, observation and imagination, etc. The training was conducted by psychologists of the faculties.

Diagnostics of the formation of professional creativity of cadets was carried out at different stages of the pedagogical experiment, its generalized results are shown in Fig. 2. and in Table 1.

Figure 2. The levels of formation of professional creativity of EG and CG cadets at the stages of the forming experiment.



Source: Search data.

The diagram shows that at the beginning of the forming stage of the experiment, the level of professional creativity formation among EG and CG cadets was approximately the same. As a result of the formed influences, statistically significant changes occurred in the levels of creativity formation of future officers: in the EG, the average dynamic increase was 0.85 points, while in the CG - 0.39 points.

Table 1. Dynamics of formation of the ability to professional creativity of cadets in CG and EG by criteria

Stages	Groups	Criteria				Average
		Cognitive	Operational	Intellectual	Emotionally reflective	
1	CG	2.97	2.04	2.63	2.40	2.51
	EG	2.89	2.06	2.71	2.28	2.47
2	CG	3.16	2.09	2.75	3.04	2.76
	EG	3.21	2.54	2.98	2.99	2.93
3	CG	3.42	2.19	2.89	3.10	2.90
	EG	3.61	2.93	3.29	3.45	3.32

Source: Search data.

The results of the introduction of pedagogical technology for the formation of professional creativity of future SBGSU in the EG of cadets proved its effectiveness.

CONCLUSIONS

Statistical evaluation of the results of the experimental study was carried out using the Kolmogorov-Smirnov criterion, which made it possible to confirm the objectivity of changes that occurred in the formation of professional creativity in EG under the influence of the proposed technology.

$$\lambda_{kp} = \begin{cases} 1,36 & (p \leq 0,05) \\ 1,63 & (p \leq 0,01) \end{cases}$$

The resulting value λ turned out to be higher than the critical value with a reliability of at least 95%, it indicates that there have been statistically significant changes in the structure of professional creativity, and the level of statistical error is less than 5%. We performed calculations for each criterion. An example of calculations and results obtained by the operational criterion is given in Table. 2.

Table 2. Distribution of cadets by levels of professional creativity formation according to the operational criterion

Level	1st measurement			2nd measurement			3rd measurement		
	CG Q-ty (%)	EG Q-ty (%)	<i>d</i>	CG Q-ty (%)	EG Q-ty (%)	<i>d</i>	CG Q-ty (%)	EG Q-ty (%)	<i>d</i>
High	-	-		5 4,5 %	8 7,4%	0.0295	8 7,4 %	12 11,1 %	0.037
Sufficient	15 13,4 %	12 11,1 %	0.0228	11 9,8 %	23 21,3 %	0.0143	12 10,7 %	40 37,0 %	0.300
Average	50 44,6 %	49 45,4 %	0.0155	40 35,7 %	47 43,5 %	0.222	40 35,4 %	38 35,2 %	0.297
Initial	34 30,4 %	34 31,5 %	0.043	45 40,2 %	27 25,0 %	0.070	43 38,4 %	18 16,7 %	0.080
Low	13 11,6 %	13 12,0 %	0.043	11 9,8 %	3 2,8 %	0.070	9 8,0 %	-	0.080
Statistical evaluation	2.04	2.06	$\lambda=0,319$	2.09	2.54	$\lambda=1,648$	2.19	2.93	$\lambda=2,227$

Source: Search data.

The statistical assessment was carried out using the formula

$$a = \frac{1}{n} \sum_{i=1}^n x_i$$

, where n - sample size (number of cadets in the group),

x_i - individual assessment of the cadet.

$$\lambda = d_{max} \cdot \sqrt{\frac{n_1 \cdot n_2}{n_1 + n_2}}$$

Value λ it was evaluated by the formula d_{max} - absolute difference of accumulated frequencies relative to each level of the criterion. We compared the obtained

$$\lambda_{kp} = \begin{cases} 1,36 & (p \leq 0,05) \\ 1,63 & (p \leq 0,01) \end{cases}$$

empirical values of the criterion with the critical value. If the empirical value of the criterion is less than the critical value, it means that with a reliability of at least 95%, the differences between the samples are insignificant. Higher than critical values indicate significant differences between the samples.

Analysis of numerical values in Table 1 allows us to conclude that at the beginning of the experiment (1st measurement), the difference between the average values according to the criteria for the formation of professional creativity in the control and experimental groups is insignificant. Analysis of the results of the second diagnostic testing during the forming experiment showed that the level of professional creativity formation in the experimental group is already higher than in the control group. After the forming experiment (3rd measurement), the difference between the obtained average values according to the criteria is quite significant in favor of the experimental group of cadets, which, subject to statistical verification of the results, indicates the advantage of the proposed technology for forming professional creativity of future officers by establishing the reliability of these discrepancies.

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Formation and development of professional creativity of future officers in higher military educational institutions

Formação e desenvolvimento da criatividade profissional dos futuros oficiais em instituições de ensino militares superiores

Formación y desarrollo de la creatividad profesional de los futuros oficiales en las instituciones de educación militar superior

Resumo

O artigo é dedicado ao estudo do problema de formação e desenvolvimento da criatividade profissional dos futuros oficiais no alto exército. Os autores definem a essência do conceito de "criatividade profissional de um oficial" e identificam fatores que influenciam as manifestações de criatividade no ambiente profissional e educacional das instituições de ensino superior. Foram determinados os critérios (cognitivos, operacionais, intelectuais, emocional-reflexivos), indicadores e níveis de formação da criatividade profissional dos futuros oficiais, considerando sua estrutura. A partir dos resultados do estudo, comprova-se a eficácia das condições pedagógicas propostas para a formação da criatividade profissional, que foram implementadas em etapas no âmbito da tecnologia do autor durante a formação profissional de futuros oficiais em instituições de ensino militares superiores.

Palavras-chave: Criatividade profissional. Tecnologia de formação. Condições pedagógicas. Propriedades criativas. Treinamento profissional.

Abstract

The article is devoted to the study of the problem of formation and development of professional creativity of future officers in higher military. The authors define the essence of the concept of "professional creativity of an officer" and identify factors influencing manifestations of creativity in the professional and educational environment of higher military educational institutions. The criteria (cognitive, operational, intellectual, emotional-reflexive), indicators and levels of formation of professional creativity of future officers have been determined, considering its structure. Based on the results of the study, the effectiveness of the proposed pedagogical conditions for the formation of professional creativity is proved, which were implemented in stages within the framework of the author's technology during the professional training of future officers in higher military educational institutions.

Keywords: Professional creativity. Formation technology. Pedagogical conditions. Creative properties. Professional training.

Resumen

El artículo está dedicado al estudio del problema de la formación y el desarrollo de la creatividad profesional de los futuros oficiales en las instituciones de educación militar superior (HMEI). Los autores definen la esencia del concepto de "creatividad profesional de un oficial" e identifican factores que influyen en las manifestaciones de creatividad en el entorno profesional y educativo de las instituciones de educación militar superior. Se han determinado los criterios (cognitivos, operativos, intelectuales, emocional-reflexivos), indicadores y niveles de formación de la creatividad profesional de los futuros oficiales, considerando su estructura. A partir de los resultados del estudio, se demuestra la efectividad de las condiciones pedagógicas propuestas para la formación de la creatividad profesional, que se implementaron por etapas en el marco de la tecnología del autor durante la formación profesional de los futuros oficiales en instituciones de educación militar superior.

Palabras-clave: Creatividad profesional. Tecnología de formación. Condiciones pedagógicas. Propiedades creativas. Formación profesional.