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WAYS AND METHODS OF QUALITY IMPROVEMENT OF MILITARY EDUCATION

Statement and justification of the relevance of the problem. In recent decades, the science has been developing very rapidly; the knowledge loses its relevance every 3-5 years, particularly in connection with free access to unlimited sources of information and the speed of their transmission. This fact causes a considerable burden on students, since the amount of knowledge that a graduate of a higher education institute must acquire is increasing year by year. Therefore, if the educational technology is not changed, then the quality and quantity of this knowledge will not be absorbed by the student, which will negatively affect his training as a specialist.

The negative factor influencing the provision of qualitative knowledge and its absolute understanding is reducing the quantity of hours spent on teaching basic disciplines, in particular, on the course “Higher Mathematics”. That induces the teacher to search creatively and to improve his/her pedagogical skills,

which are shown in the ability to choose and apply teaching methods successfully.

Improving the educational process in general and the quality of educational services remains an open question.

Analysis of the recent research and publications. The questions of improving the educational process in general and the quality of providing educational services were studied by M. Kisil [6], V. Kremin [7], O. Lyashenko [8], N. Moskalenko [9] and others. However, despite the large number of studies on the subject, it has not achieved its completeness, and therefore the question of methods for improving the quality of education, in particular the military, needs further study.

We have become acquainted with a broad interpretation of concept “quality of education”, “military education” and “quality of military education”, which help to analyze the comprehensive study of selected issues.

Thus, the Law of Ukraine “On Higher Education” gives the concept “quality of education” as “... the level of education, acquired by a person in a higher education institute due to sustainable, systematical, and purposeful process of acquisition of knowledge. This process is based on the complete secondary education and ends with obtaining a certain qualification for the results of state examination”[1]. Ya. Boholyubash [2] considers “the quality of higher education as a set of qualities of a person with higher education, which reflects her professional competence, system of values, social orientation and predetermines the ability to satisfy both personal spiritual and material needs as well as the needs of the society”. Yu. Pokholkov [11] regards the concept of quality of education in terms of competent approach. In his opinion the quality of education is a complex of characteristics of the educational process, which determine the consistent and practically effective formation of competence and professional consciousness.

There are a considerable number of different classifications of teaching methods, which reveal that they are complex and comprehensive. This issue was also researched by A. Aleksyuk, Yu. Babansky, M. Verzylin, A. Sokhor, A. Khutorsky and others. However, any kind of classification, whatever it seems to you perfect, does not arrange the existing teaching methods.

Purpose of the article. Purpose of this article is to study the scientists’ opinions on the definition of the quality of education and, taking into account personal teaching experience, to propose the ways to improve the quality of professional education in Top Service School (TSS).

Research methods. In the article we use such methods of research as analysis, description, comparison, generalization.

Statement of basic materials. The issue of the officers’ qualitative training appeared to be the most urgent and has gained a research priority in the system of military higher education especially in recent years. This is connected with the conduction of ATO in the east of the country. The obtained experience of conducting military actions put forward certain requirements to the theory of military pedagogy in respect of the development of an appropriate concept of the quality of education, and innovative approaches to its implementation in the educational process of TSS. Therefore, a problem of the qualitative training of military experts arises. Since the experience of warfare can be considered insignificant, the issue of the quality of training remains an underexplored topic both in theory and in practice. Its solution let us achieve the necessary final result in the training of highly professional officers who can effectively perform their functional responsibilities in peace and war time.

There are changes that take place in the system of military education from year to year. This changes are caused by a number of factors, namely: clarification of the tasks of the Armed Forces (AR), reorganization of the Armed Forces structure; the evolution of armaments and military equipment; new needs for the officers’ specialization and qualification; the coordination of

higher military education with the state standards of higher civil education and the requirements of the Bologna system; stepping up the requirements for the physical training of contracted forces; possibilities of social adaptation after the completion tour of duty, etc. In our opinion, the system of military education should be aimed at ensuring the continuous updating of the skills and abilities, which cadets receive during their studies; the mobility of cadets and teachers, the development and implementation of training programs for military specialists.

There are allocated such components of the quality of higher education as: the quality of the educational environment, the quality of the educational process implementation, the quality of this process results. However, this approach leaves out of consideration the following issues: correspondence of the achieved results of education to the requirements of the troops, to the realities of military career, to the effectiveness of military experts training, and to the accomplishment of the content, technologies and the grading system of the results of training, etc.

The academic program for cadets of TSS includes the study of general (basic) disciplines (higher mathematics, computer science, Ukrainian and foreign languages, etc.) and specialized military disciplines (e.g., tactics, fire training). It should be noted that in order to obtain high-quality military education and training of highly qualified military specialists, thorough study and mastering of basic and specialized military disciplines is necessary.

The key to high-quality higher military education is the proper making of curricula, which must be coordinated and mutually supplemented, forming a coherent system. Teaching the topics on one discipline should find practical (in some cases, the theoretical) application, or be a logical complement while studying the other discipline. This process will increase the motivation and interest of the cadets in the disciplines. It will also expand the ability of teachers who will use theoretical knowledge of cadets on other subjects in practical classes and will help cadets learn new material more and more effectively.

In our opinion, the most important factor in improving the quality of military education is the introduction of effective teaching methods in practical classes, since they absorb about 75% of the lecture material. Modern problem aspects of the methodology of teaching the disciplines to the cadets of the TSS can be classified in the following areas:

1. ensuring the fundamental education in the TSS;
2. strengthening of the professional orientation of teaching through the content component (modeling of professional tasks, the creation of a “task bank” of interdisciplinary nature);
3. through the methodological component (contextual and problem-based learning, independent research activity, combination of collective and individual forms of learning);
4. the optimal combination of fundamentalism and professional orientation of knowledge gained from different disciplines;

5. various types of independent work arrangement;
6. development of cognitive independence;
7. intensification of the learning process;
8. improvement of course content;
9. computerization of the learning process.

In the Hetman Petro Sahaidachnyi National Academy of Armed Forces a methodology for training cadets and the appropriate material support provided for such courses as higher mathematics, theoretical mechanics, thermodynamics, and applied mechanics are developed. While developing this methods, the following basic rules were guided by: cadets who are beginning to study a new subject have different levels of training; they are not get used to spending a lot of time for learning new course content; they not able to carry out self-control; and they have an inflated self-esteem.

In accordance with this methodology, each topic of practical classes should be highlighted in 4-5 tasks. These tasks cover all the information required for cadet to know. In addition, for each topic, there have been developed several options of “Tasks for giving practical classes”, “Tasks for control work”. They contain the same-type tasks, and to solve them the same method is used, however, they differ from each other, for example, in numerical data. All the tasks in these variants are answered. Also, each theme offers “Tasks for independent work” with the given answers.

Practical classes are proposed to be conducted in the following sequence:

- a) teacher explains the main points of the new topic and solves the most simple task on the board;
- b) cadets independently solve the first (simplest) task from the “Tasks for giving practical classes”, using the method of solution given by the teacher (the teacher is currently controlling the course of the decision and answer to the specific questions of the cadet);
- c) teacher explains the method of solving the next problem (he does not solve it in full, but emphasizes the new moments in the tasks);
- d) cadets solve independently all tasks from “Tasks for giving practical classes”, having the opportunity to check the correctness of the solution for the given answers;
- e) teacher controls the process of solving the tasks by each cadet and gives answers to their questions.

According to the order of the Ministry of Education and Science of Ukraine dated January 26, 2015, No. 47 “On the peculiarities of the making of curricula for the 2015/2016 academic year” [12] and certain norms of the Law of Ukraine “On Higher Education” [13], up to 2 / 3 ECTS grades are given for an independent work of cadets. Since independent work of the student takes place without the direct involvement of the teacher, the main task of higher education is to form the creative personality of a specialist capable of self-development, self-education, and innovation activity. For this reason a special role belongs to the development of self-control skills, which facilitates the regulation of cadets’ educational process, and makes it possible to outline positive and negative moments in their own activities, to adjust the actions performed, to evaluate their educational and cognitive activity.

The cadet controls the full digestion of the topic studied at the practical lesson, performing exercises from “Tasks for independent work”. In the case of questions to these tasks, the teacher explicitly explains the abstrusities and places the relevant accents during the surgery class.

The proposed method of giving practical classes gives the teacher the opportunity to pay more attention to each cadet. Controlling the process of solving the problems, the teacher has the opportunity to answer questions of each cadet and help him overcome the obstacles. In addition, after completing a practical lesson, the teacher realistically assesses the level of subject digestion of a particular cadet.

In fact, the proposed method is a method of intensification (from French intensification – I do tense), which provides for the achievement of the desired results due to qualitative factors, that is, the strain of mental capabilities of the individual. Each student is forced to solve his variant of tasks from “Tasks for giving practical classes”, which does not coincide with the one solved on the board. The cadet can get help in the form of teacher’s answer to a specific question that arose when solving a task. Of course, he may seek counseling from another cadet because the job options are the same. At the end of the class, each cadet can independently assess his level of knowledge obtained in the classroom, using the answers given to the tasks.

The proposed method of academic training at the practical classes stimulates active self-study of cadets, allows one to establish the relation between the level of topic digestion and ability to use this knowledge for the specific practical tasks solving. This method ensures the individualization and differentiation of student learning.

Thus, according to the methodology introduced, each practical class includes the following stages:

1. introductory, aimed at actualizing the cadets’ knowledge on the topic being discussed and identifying individual difficulties and gaps in knowledge, awareness and formulation of the individual goals of the learning activity;
2. thematic, where the presentation and perception of a new topic occurs;
3. final, which provides the arrangement and evaluation of the received information, consolidation of course content heard by the cadets. At this stage, it is advisable to combine individual and group work.

In our opinion, one of the most important components of the educational process is the control and assessment of the cadets’ knowledge. The control is carried out during all stages of the practical training and further digestion of the course content. The methods of control are: systematic observation of cadets’ educational work, recitation, tests writing, solving various tasks and exercises.

The effectiveness of the lesson involves in developing skills of independent work, in shaping of such individual characteristics as responsibility, self-esteem, ability to manage and obey, interpersonal communication.

Thus, the use of the proposed teaching methodology in the educational process ensures high

quality of course content digestion, promotes the development of logical thinking, creativity and active motivated process of knowledge digestion.

On the basis of the proposed methodology for practical Higher Mathematics classes at the Hetman Petro Sahaidachnyi National Army Academy the training manuals are worked out and published. They are “Method of Solving and Problem Book on Mathematical Analysis” [3], “Method of Solving and Problem Book on Differential Equations” [4] and “Method of Solving and Problem Book On the Theory of Probabilities” [5].

Conclusions. Quality of military education is a complex and multi-faceted concept, which is shaped by a number of factors. In order to improve the quality of military education, it is necessary to: upgrade the material and technical bases and informational and methodological support of the educational process, improve military training courses, and provide the higher education institutions with modern information systems.

In addition, in order to improve the quality of higher military education, it is necessary to implement the following measures: to improve the selection and to complete the groups according to the cadets level of knowledge; to give practical classes on the basis of the proposed method of intensification, which involves an individual approach to every cadet; to exercise systematic control over the level of new course content digestion; to give tutorial workshops for teachers on improving the methodology of giving practical and lecture classes; to take an active part in international programs, to use the experience of teaching in the world’s high schools; to increase the role of TSS as a source of personnel at the state level.

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STEM-СПРЯМУВАННЯ НАВЧАННЯ ПРИРОДНИЧОНАУКОВИХ ДИСЦИПЛІН У ТЕХНІЧНОМУ УНІВЕРСИТЕТІ

Постановка та обґрунтування актуальності проблеми. Протягом останнього десятиліття STEM-напряму здобув світове визнання як один із основних акцентів сучасних реформ у сфері природничої та технічної освіти. STEM (наука, технологія, інженерія та математика) передбачає вивчення та послідовну інтеграцію між різними навчальними

дисциплінами від початкової школи до закладів вищої освіти. Передбачається, що освіта STEM дає можливість учням і студентам розвивати такі важливі навички 21 століття, як спроможність комплексного вирішення проблем, уміння спілкування та хист до співпраці. Формується готовність до роботи в технологічно розвиненому