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GRAPHIC TRAINING OF CADETS OF HIGHER MILITARY EDUCATIONAL INSTITUTIONS OF UZBEKISTAN

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Abstract: The article reveals the features of the educational process in a military University when studying the discipline "Descriptive geometry and engineering graphics". Requirements for military specialists in the context of globalization and Informatization. The existing problems and some ways to solve them, the tasks facing teachers and cadets are considered. The necessity to focus on the graphic training of a modern army cadet is justified.

Keywords: graphic training, military education, training, descriptive geometry, engineering graphics, independent training, cadets.

Ensuring the security of the state is one of the priorities of the government and the Armed Forces of the Republic of Uzbekistan. Military policy is aimed at containing and preventing armed conflicts, modernizing the military organization, and supporting defense and protection.

The tasks of the Armed Forces of the Republic include: comprehensive equipping with modernized systems and samples of weapons, military and special equipment, as well as maintaining them in a state that ensures their combat use; creating multifunctional weapons, military and special equipment; developing new models of high-precision weapons, communication, intelligence and control systems, and electronic warfare.

Consistent strengthening of the country's defense potential and development of the Armed Forces have been identified as one of the priorities of the action Strategy for further development of Uzbekistan in 2017-2021 adopted on the initiative of President Shavkat Mirziyoyev.

In this regard, it is noteworthy that the head of state proposed to create its own military-industrial complex in the country, which will re-equip the troops with modern types of weapons and military equipment. The emergence of the military-industrial complex will require the training of engineering and technical personnel, highly qualified specialists. In this case, the skilled work of military engineers with design documentation of

various types is required, since the basis for creating any product is its development and proper use. This is also an important task to be solved.

For this purpose, special attention is paid to the development and improvement of military education and upbringing systems, personnel training, and the development of military science. Modern military education is aimed at producing specialists with a high level of operational, combat and special training, who are able to work effectively and productively in constantly changing conditions.

The importance of each discipline is determined by the specifics of the University. Unlike students, cadets not only study, but also perform military service, and no matter how much the teachers of each, including a purely civil discipline, would like to pay maximum attention to the subject, military special training will always occupy a dominant position for the vast majority of cadets. This means that the process of training in Humanities, natural science, and General professional disciplines, especially those studied in Junior courses, should be arranged so that students are interested in coming to classes, they clearly understand why this or that material is being considered, where it can be applied and what role it plays in the overall system.

During their studies at the HMEI, students must master a variety of disciplines provided by standards and curricula. Each of them plays a role in the overall business-the formation of a competent military specialist who can work with very complex equipment that is in service with the modern army, be a good commander for soldiers, and perform many other tasks defined by the dynamically developing world. Of particular importance here is the study of engineering disciplines.

The Foundation of engineering and technical science is the drawing and graphic disciplines included in the basic part of the professional cycle of the educational programs of the HMEI.

Graphic disciplines-descriptive geometry and engineering graphics, computer graphics are studied by students of the HMEI in the first year of training. Their goal is to form a common base for cadets to further develop professional military engineering disciplines, prepare for the design and reading of design documentation. In addition, it is traditionally believed that graphic disciplines serve for the overall development of the future officer.

The study of graphic disciplines is a priority for the training of future military engineers, and important for the development of special disciplines. All this, taken together, allows us to solve a certain range of tasks, which include such concepts as promoting independent and creative work of a cadet, developing skills that are in demand by the modern world

community – global and critical thinking, and quickly adapting to changes in information and communication technologies.

The discipline of descriptive geometry and engineering graphics at the Academy of the Armed Forces of the Republic of Uzbekistan is studied in five sections. *Descriptive geometry*, as a fundamental part of the discipline, is studied first, its subject is the scientific development and justification, theoretical and practical study of ways to graphically construct images of spatial forms on the plane and graphical methods for solving various positional and metric problems.

Projection drawing is a logical continuation of the course of descriptive geometry, it gives specific practical skills for building projection images at scale.

Engineering graphics bear the main load in the graphic training of cadets, being one of the important components of their General technical training. Engineering graphics is the first stage of training cadets in the basic rules of execution, design and reading of design documentation and solving geometric and engineering problems on drawings, obtaining the necessary knowledge, skills and abilities for this purpose, which is the ultimate goal of its study as a unified discipline in accordance with educational standards.

Machine building drawing studies the basic rules of execution and design documentation in accordance with the standards.

Computer graphics and modeling allow you to use computer technology to build drawings.

In the study of the discipline uses knowledge of analytic geometry, linear algebra and plotting.

Graphic training is a process that ensures the formation of students ' rational methods of reading and performing various graphic images found in the multi-faceted work of a person. Graphic training provides the basis for graphic literacy, which allows students to navigate to some extent in an extremely large volume of graphic information tools.

The military component of graphic training should include the knowledge, skills and abilities necessary for the study of purely military disciplines, primarily related to combat tactics, etc. Tactics is part of training in the vast majority of military specialties, and without studying such a discipline, it is impossible to imagine military training complete in almost any military specialties, including military-technical ones. Moreover, the main documents are topographic maps with the military-tactical situation marked on them. And the quality of images performed, which are conventional icons-designations of military and other objects, can sometimes depend on the quality of performance of the combat task.

Questions that are subject to study by cadets should not be reduced only to the study of signs and symbols and drawing them on maps. Even the development of reading skills of the map itself will be more qualitative and meaningful, if in the course of graphic training, the cadet will receive basic information about how to create an image of the terrain on it from the point of view of descriptive geometry, fix them by performing a certain amount of graphic work.

Graphic training related to the study of combat tactics and fortification equipment of positions and structures. A comprehensive approach to solving tasks, in which each subject serves the overall purpose of training a competent specialist, is primarily associated with the development of his creative abilities, meeting the level of development of future modern officers. This approach is one of the best solutions for modern higher military education.

Full mastery of the drawing as a means of expressing technical thought, and production documents for various purposes is achieved as a result of mastering the entire complex of technical disciplines of the relevant profile, supported by the practice of course and diploma design in the specialty. Classes in engineering graphics help to establish logical links between the profile course and other academic disciplines for students to learn them as a complete system with the entire structure that reflects the science being studied.

This close relationship with other disciplines requires a thorough, thought-out and logically interconnected program of all tactical and special training, one of the main elements of which should be an early, at the level of General engineering graphic training, the study of the specifics of graphics used on combat documents, including both conventional graphic signs, and the theoretical basis for obtaining topographic maps themselves and so on

Due to the rapid growth of requirements for the level of training of cadets, the main task of the teacher is to improve the presentation of educational material. The curriculum should be designed to avoid duplication of study of the same material, ensure the military orientation of the content of the subject, the distribution of training time by sections, topics and types of training sessions to more fully ensure the assimilation of training material by cadets at a given level of training.

The teacher of graphic disciplines in HMEI faces a number of tasks that need to be solved in order to ensure the effectiveness of students ' learning of educational material:

1. It is necessary to think over and build a course of study so that the material included in the thematic plan is clearly logically arranged, giving

an opportunity to master special disciplines in the future. Thus, the training course begins with the traditional section of descriptive geometry, the purpose of which is to form the spatial thinking of cadets. This is a fundamental, and at the same time, difficult to understand section. It is complicated by the fact that we are talking about rather abstract objects, the display of which on the plane is often difficult for cadets to imagine. Practical application of specific tasks is easy to associate with the further training of the discipline, but not with the life of the troops, which is always relevant for cadets. At the same time, the successful development of descriptive geometry allows you to consciously move to the following topics and sections of projection and engineering drawing, design schemes.

After studying them, cadets must have primary skills in creating and reading design documentation, including the one that will later become part of their course and diploma projects. A separate part of the discipline is computer graphics. It takes less time than we would like, but given the small volume of the discipline as a whole, it was decided, at the moment, to focus on this distribution of training time. In the course of computer graphics, cadets master one of the graphics systems (namely, AutoCAD) and its application for solving professional tasks.

The study of experience has shown that the teaching of graphic disciplines is gradually undergoing significant changes, so manual drawing is gradually replaced by machine, descriptive geometry-three-dimensional modeling. However, in the practice of the military University, it was decided to leave, at the moment, the classical system of teaching graphic subjects.

2. It is necessary to take into account the rather different level of training of cadets to master the discipline, the specifics of the organization of training in HMEI. Quite an acute problem is that drawing (the basis for further education, and most importantly, a means of forming spatial thinking) in many schools is considered a secondary discipline and as a result, the subject is not given special attention. At the same time, in each group there are cadets who have graduated from secondary-special educational institutions of technical orientation, studied in special courses, studied a full course of drawing or computer graphics before entering (extremely rare). In addition, there is a difference in age and in the social environment of those who entered (someone entered immediately after leaving school, someone after serving in the army, there are cadets who graduated from special military lyceums, someone served 3-4 years on a contract before entering). This means that you need to take into account the characteristics of each of these groups of cadets –simply and easily explain the material to those for whom the image of spatial elements on the plane is

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As experience shows, even for the first practical classes in the discipline, the teacher needs to prepare differentiated tasks designed for different levels of students, organize the solution and verification of such tasks, working in fact with several groups in one. This is somewhat complicated by the specifics of a military educational institution, where, unlike most civilian universities, the structure of classes is quite strictly regulated. The time specified for the study of each issue in the methodological development and lesson plan must be observed, which means that you can not, even if there is a need for a specific group, devote more time to part of the material, and leave those tasks that have not been solved for independent study.

3. Such a system of educational and visual aid should be developed, used both in classes and during independent work hours, which will make it possible to build the learning process taking into account the specifics of the University (cadets skip classes while on duty, business trips, performing other official tasks, the time allocated for independent work is extremely limited). This means that in addition to the generally accepted textbooks on engineering and computer graphics, you should develop textbooks that are as appropriate to the curriculum of the discipline and have a practical orientation. For example, these are the ones that students who missed the problem of descriptive geometry in an electronic textbook could quickly parse the training material, perform calculation and graphic work.

This can be both traditional printed publications and electronic textbooks. electronic textbooks provide more opportunities to demonstrate problem solving using different effects. In this case, dynamically changing drawings are easier to perceive, and the algorithm for solving the problem becomes clearer.

It is also necessary to think through visual aid for each lesson (for example, electronic slides), which will make it easier to explain and

illustrate the training material, implement the principles of developing learning, a differentiated approach to learning. For example, as already noted above, some tasks must be solved by all cadets (they are solved at the blackboard, each stage of the solution is analyzed in detail), and some more complex tasks are performed by stronger students. Such problems are usually solved at the board, but you need to check and disassemble them. It is advisable to prepare their solution in advance, put it on a slide and consider it at the right time. In this way, you can save time on the lesson, but demonstrate to the whole group, and not just those who completed the additional task, the solution of the problem.

4. Independent training of cadets is an important stage of training that requires a special approach, because unlike students, cadets can not completely dispose of their time outside of school, they are limited in sources of information (such as the Internet). In a military educational institution, it is especially important to provide a system of consultations, clearly think through the scope of the task, and build the content of training manuals with maximum consideration for the possibility of performing tasks independently.

5. It is necessary to try to make the process of studying the discipline interesting for cadets – to select such examples, illustrations, facts from military history, use modern technologies that would attract the attention of students, form an interest for further study of the discipline, and for some, the need for additional classes, for example, in military scientific section on disciplines.

In the future, at tactical and special classes on engineering and other combat support, cadets solve all the necessary tasks in a complex, using and improving previously acquired graphic knowledge.

Each subject serves the general purpose of training a competent specialist, primarily related to the development of their creative abilities, meeting the level of development of future modern officers.

One of the important tasks at the present stage is high-quality professional training of a new officer of command and engineering staff for military units and divisions that are psychologically ready and able to professionally and competently perform their official tasks. To do this, it is necessary to develop and implement new effective educational programs, make timely adjustments to educational programs, improve the educational process and its technologies, and increase military and scientific potential. The main criterion for evaluating the quality of training should be the ability of cadets to think professionally and act in the future in real combat conditions.

Graphic disciplines have great opportunities for the development of future officer skills - management (goal setting, planning, organization, control and analysis), information (finding, processing and using information), logical (structuring the content of the process, setting and solving tasks), communication (implementation of various types of contacts between participants in joint activities).

And most importantly, the Armed Forces keep pace with technological progress, and everyday service is increasingly associated with complex technical devices and mechanisms that require certain skills in handling. The development of graphic training in higher military educational institutions directly contributes to improving the skills of working with such devices.

Thus, the study of graphic disciplines in HMEI should become an important and, importantly, interesting part of the training of a military specialist.

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