"FORMATION OF THE SPATIAL IMAGINATION OF CADETS IN THE PROCESS OF PASSING THE DISCIPLINE" DRAWING GEOMETRY AND ENGINEERING GRAPHICS

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Annotation: in the formation of spatial representations of Cadets, objects of being and a drawing on a plane, a scheme, a model, a picture, etc.G.by observing and analyzing them, they realize their characteristics and acquire in their minds the initial knowledge about them, perceiving their abstract images. To perceive them, it will be necessary not just to look at the given image, but to be able to read the images, to realize the features of vision by restoring them in space, that is, to analyze visual information. It is important to evaluate the main indicators of the formation of the spatial imagination of cadets. There are such indicators of spatial imagination as stability, width, flexibility, depth, completeness, orientation to the goal, dynamism of the image of a geometric object. The meeting of these clairvoyants expresses the complete and comprehensive formation of the spatial thinking of cadets.

Keywords: spatial imagination, volumetric thinking, visual information, object, model, drawing, scheme, picture, image.

One of the most important aspects of the policy of training new pedagogical personnel of our state is the issues of professional training of teachers who are able to meet the requirements of the new time and the formation of their creative qualities.

We know that in the process of performing professional tasks of such industry representatives as an architect, constructor, engineer, designer, spatial imagination should be highly formed. It is important that representatives of the military sphere are also able to spatially visualize military objects, devices and military weapons. The role of graphic Sciences in the training of military specialists who can find non-standard solutions, in particular the science of "drawing geometry and engineering graphics", is very great, since in the process of solving positional, metric and constructive issues in it, not only graphic training is formed in cadets, but also a feature that is important in design and In the current period, one of the urgent issues is to focus the teaching process on the formation of the creative activity of the individual. Hence, it is necessary to develop effective methodological recommendations that shape the spatial representations of cadets.

Classes on the subject "Drawing geometry and engineering graphics" at the Armed Forces Academy are planned on the basis of the following sections:

I. Geometric drawing
II. Drawing geometry
III. Projection drawing
IV. Mechanical engineering drawing
V. Construction drawing
VI. Topographic drawings
VII. Computer graphics

Cadets ' spatial imagination and logical thinking skills are more formed and developed in the sections "drawing geometry" and "Projective Drawing". To further consolidate these abilities of the cadets, a plan for independent graphic work is drawn up. Cadets, in the process of independent performance of graphic work, consult among themselves, exchange ideas and mobilize all the knowledge gained to solve one or another problem. As a result, the reserve of creative search and spatial imagination in their minds becomes more active. Every teacher who is able to create such a state in the process of teaching will achieve the effectiveness of teaching any subject.

Visual materials used in educational practice can be divided into three groups:

- objects and models studied (perspective images: photography, artistic reproductions, etc.K);
- conditional graphic images of geometric bodies (drawings, cuts, clippings, sketches, etc.).G.);
- marked models (graphs, geographical maps, topographic plans, diagrams, mathematical symbols).

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On the basis of direct observation of objects and models, an image of a real object is created that can be formed in our consciousness. They are cadets, which are also a means of activating ninng logical thinking, since it is possible to fill in information about images by expressing their characteristics not expressed in the image through the word. But their function is limited only to providing information about their external characteristics (appearance, shape, size, ratio of parts).

Conditional graphic images of geometric bodies are able to reveal properties that, unlike spatial objects, cannot be directly perceived about the object under study. They provide information about the constructive structure of the object, its geometric shape, proportions, the spatial arrangement of its individual parts.

Sign models represent not the individual properties of an object or its constructive structure, but an abstract (abstract), theoretical dependence, typical for most objects.

Any stage of cognition begins with perception. In the formation of the spatial imagination of cadets are also objects of being and a drawing on a plane, a scheme, a model, a picture, etc.G.by observing and analyzing them, they realize their characteristics and acquire in their minds the initial knowledge about them, perceiving their abstract images. To perceive them, it will be necessary not just to look at the given image, but to be able to read the images, to realize the features of vision by restoring them in space, that is, to analyze visual information.

Analysis of visual information images (obeqt, model, raem, drawing, scheme, etc.G.)begins with the formation of a general understanding of the information being brought in and the separation of its elements.

In order to have a complete picture of visual information, it will also be necessary to understand the connection between its elements.

At the time of viewing and perceiving information with a given image, the student compares and clarifies individual parts in it with simple objects and concepts known to him. Thus, in the memory of the cadet, an abstract image of an existing object in existence is formed, that is, a spatial imagination. Based on the above points, it can be concluded that:

spatial imagination is an image that is reflected in the process of perceiving objects in space in our consciousness as in the original, based on the sum of knowledge summed up by logical thinking about a thing and a phenomenon.

It is important to evaluate the main indicators of the formation of the spatial imagination of cadets. There are such indicators of spatial imagination as stability, width, flexibility, depth, completeness, orientation to the goal, dynamism of the image of a geometric object. The meeting of these clairvoyants expresses the complete and comprehensive formation of the spatial thinking of cadets.

The stability of spatial imagination is determined by the degree of freedom in performing actions on the image, taking into account the visual basis of the originally created image.

To develop the stability of spatial representations, it is necessary to acquire the following skills:

- comparison of different images of a geometric figure;
- being able to analyze the image of a geometric figure;
- synthesis of the image of a geometric figure.

The breadth of spatial imagination is manifested in the fact that in familiar situations, new information is ready to be noticed.

The elasticity of spatial imagination is characterized by the variativeness property of the methods of action. The lightness of restructuring when the conditions of movement change, easy transition from one type of movement to another, easy transfer of the quality of one subject to another, going beyond the boundaries of the accepted traditional graphic actions, are expressed in the ability to see situations in which an object can retain its main characteristics when it is changed.

The depth of spatial imagination determines the integrity of perception, that is, the ability to see an object in its integrity and determine the relationship between its constituent elements, as well as their interaction with other objects. This quality of spatial imagination is manifested at the stage of analyzing image information, determining standards – invariable images, collecting additional information and viewing the resulting spatial images in a new connection.

The completeness of spatial imagination is characterized by the structural structure of the spatial image, the connection between its elements, the ability to freely perceive their dynamic ratio in our consciousness. In order for the spatial imagination to be complete, it is necessary to have the following qualifications:

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- being able to disassemble the image of a geometric object;
- being able to determine the size values of the image of a geometric object;
- anic view of the ratio of mutual location of the image of a geometric object in relation to other images;
- being able to determine the mutual arrangement of elements of a geometric image in relation to each other;
- be able to evaluate linear and angular magnitudes by looking at;
- sufficient perception of its properties and the mutual arrangement of its elements in the formed Image.

The dynamism of spatial representations is manifested as a result of a necessary change in the point of view, the location of the spatial object and its elements.

To develop the dynamism of spatial imagination, it is necessary to have the following skills:

- being able to observe, select and modify the point of view;
- recording changes in the content of the image of geometric figures.

The qualification of being able to look at an object from a different observation point is in solving many geometric tasks: the construction of a shear, cross-section of spatial forms, the execution of geometric restructuring operations, projective tasks, etc.G.it is important in them.

The orientation of spatial imagination to the goal is manifested in the purposefulness of the selected actions, in the desire to find the shortest easy and convenient way to solve the issue.

The complete mastery of these adjectives ensures the execution of actions on spatial representations, the ability to easily visualize complex spatial objects without inclination.

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