

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

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Annotation: in the formation of spatial representations of cadets are objects in existence and drawing in the plane, scheme, model, picture, etc.k.by observing and analyzing the S, they realize their characteristics and acquire initial knowledge about them, perceiving their abstract images in their minds. To perceive them, it will be necessary not just to look at the given image, but to be able to read images, to realize the features of spatial restoration, that is, to analyze visual information is required. 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, elasticity, depth, completeness, orientation to the goal, dynamism of the image of a geometric object. The young man 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 important aspects of the policy of the state for the training of new pedagogical personnel is the issues of professional training of teachers who are able to meet the requirements of the new time and the formation of their creativity characteristics.

We know that in the process of performing professional tasks of representatives of the field, such as architects, constructors, engineers, designers, spatial imagination should be formed at a high level. It is important that representatives of the military sphere can also spatially visualize military objects, devices and military weapons. In the preparation of military specialists who can find non-standard solutions, the role of graphic Sciences, in particular the science of "drawing geometry and engineering graphics", is very large, since in the process of solving position, metric and constructive issues in it, not only graphic training is formed in cadets, but also a feature that is important in the work of In the current period, the focus of the teaching process on the formation of the creative activity of the individual is one of the pressing issues. Therefore, it is necessary to develop effective methodological recommendations that shape the spatial representations of cadets.

Classes in the field of "drawing geometry and engineering graphics" at the Academy of the armed forces are planned on the basis of the following sections:

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

The spatial imagination and logical thinking abilities of cadets are more formed and developed in the sections "drawing geometry" and "Projective Drawing". To further strengthen these abilities of Cadets, a plan of graphic work is drawn up, which is carried out independently. Cadets, in the process of independent execution of graphic work, consult among themselves, exchange ideas and mobilize all the knowledge gained to solve one problem or another. As a result, the reserve of creative search and spatial imagination becomes more active in their minds. Each 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 under study (perspective images: photography, artistic reproductions, etc.k;

- conditional graphic representations of geometric bodies (drawings, sections, ridges, sketches, etc.k.);
- character models (graphs, geographical maps, topographic plans, diagrams, mathematical symbols).

On the basis of direct observation of objects and models, an image of a real object is created that can be generated in our minds. They are also a means of activating cursantsnning logical thinking, since it is possible to fill in information regarding images by stating their unrepresented characteristics in an image through a word. But their task is limited only to giving information about their external characteristics (appearance, shape, size, partsinig ratio).

Conditional graphic representations of geometric bodies are able to reveal properties that, unlike spatial objects, cannot be directly perceived about the object being studied. 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 individual properties of an object or its constructive structure, but an abstract (abstract), theoretical connection typical of most objects.

Any stage of cognition begins with perception. Cadets are also involved in the formation of spatial representations of objects in existence and drawing in the plane, scheme, model, picture, etc.k.by observing and analyzing the S, they realize their characteristics and acquire initial knowledge about them, perceiving their abstract images in their minds. 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 spatial restoration, that is, to analyze visual information is required.

Analysis of visual information images (OBE, model, raem, drawing, schema, etc.k.)begins by generating a general understanding of the information being cited and by separating its elements.

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

At the time of perception by looking at the given pictorial information, the student sees individual parts in it by comparing and clarifying them with simple objects and concepts known to him. Thus, in the memory of the cadet, an abstract image of an existing object in existence, that is, a spatial picture, is formed. Based on the above points, one can conclude that:

spatial imagination is an image that is reflected in the process of perceiving objects in space in our mind as originally, based on the sum of logically thought-provoking knowledge about something and 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, elasticity, depth, completeness, orientation to the goal, dynamism of the image of a geometric object. The young man of these seers expresses the complete and comprehensive formation of the spatial thinking of cadets.

The stability of the 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 master the following qualifications:

- comparison of different images of geometric figures;
- 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 taken into account.

The elasticity of the spatial imagination is characterized by the variativity property of the methods of action. The lightness of reconstruction when motion conditions change is expressed in the ability to see situations in which it is possible to easily switch from one type of motion to another, easily move the quality of one object to another, go beyond the limits of accepted traditional graphic actions, preserve its basic properties when the object is changed.

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

The completeness of the 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 mind. In order for the spatial imagination to be complete, it is necessary to have the following qualifications:

- being able to disassemble the image of a geometric object;
 - be able to determine the size values of the image of a geometric object;
 - to make the image of a geometric object an anic of the ratio of mutual location in relation to other images;
 - be able to determine the mutual location of elements of a geometric image in relation to each other;
 - be able to evaluate by looking at linear and angular magnitudes;
- sufficient imagination 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 the involuntary transformation of the point of view, the location of the spatial object and its elements.

To develop the dynamics of spatial imagination, it is necessary to have the following qualifications:

- being able to observe, choose and change 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 different observation points is in solving many geometric tasks: constructing the shearing, cross section of spatial shapes, performing geometric rearrangement steps, projective tasks, etc.k.it is important in the S.

The orientation of the spatial imagination towards 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 acquisition of these qualities makes it possible to perform actions on spatial representations, to be able to easily visualize complex spatial objects without bias.

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