TA'LIM FIDOYILARI
GUVOHNOMA № 1170
ISSN:2181-2160
SJIFACTOR: 4.27 RESEARCHBIB(I.F): 6.2 U.I.F: 6.8
WWW.REANDPUB.UZ

Formation of students' knowledge and skills in engineering sciences and computer graphics disciplines based on a psychological approach

N.O.Akhmedov. U.G'.Otabekov.

Tashkent State Transport University

Abstract: This article discusses the problems and prospects of graphic education in a technical university.

Keywords: Methodology, graphic education, organization of classes, interdisciplinary communication.

In the following years, large-scale work is being carried out in the country to create a higher education system that meets the priority areas of socio-economic development and the requirements of international standards.

Important reforms in this direction are the creation of new higher educational institutions in the regions, the opening of modern educational directions and specialties of personnel training, correspondence and evening departments, increasing quotas for admission to higher educational institutions.

At the same time, a number of problems remain that hinder the improvement of the quality of education in higher educational institutions, ensuring the active participation of these institutions in the large-scale reforms and updates in the social and economic spheres carried out in the republic.

For example, the process of organizing education in universities, the outdated system of assessing students' knowledge, the inefficient use of modern innovations in the educational process by the teaching staff, the lack of effective public control over the

educational process in universities, higher education institutions have not become centers of dialogue where innovative and technological ideas are exchanged, systematic study, analysis of existing problems and shortcomings in related fields and their solutions. the teaching staff on making proposals for a solution, we can show that the prerequisites for the initiative of young scientists and students have not been created.

16 Decree of the President of the Republic of Uzbekistan dated June 5, 2018 No. pp - 3775 "on additional measures to improve the quality of education in higher education institutions and ensure their active participation in the large-scale reforms carried out in the country" - in accordance with the requirement "to provide higher education institutions with modern educational, methodological and scientific literature, periodicals, regularly update the funds of information resource centers", we plan to work out the issue of achieving the quality and effectiveness of the prospect's training, the organization of its integrative training.[3]

Scientific research, educational activities aimed at the development of spatial representations among students when teaching the topic of determining the intersection line of surfaces also correspond to the reforms carried out in the socio-political, spiritual and educational sphere of our republic. "A person comes into the world to do good deeds, to leave a good mark. By raising good children, he prepares worthy heirs of the good deeds he has done and the good traces he has left" (10,64-66). On the other hand, continuity is manifested not only in the relationship between teacher and student. This form of continuity is actually the most important aspect of its content. In this sense, the traditions of Oriental architecture ensure continuity in the content of teaching drawing geometry and engineering graphics in the higher education system. This factor can also be attributed to the number of principles underlying the pedagogical system.

When teaching and improving the topic of determining the line of intersection of surfaces for students of professional colleges, relationships-the relationship between a teacher and a student-become important. In other words, the etiquette of a friendly relationship between a

[3] Resolution of the President of the Republic of Uzbekistan dated June 5, 2018 No. PP-3775 "on additional measures to improve the quality of education in higher education institutions and ensure their active participation in the large-scale reforms carried out in the country".

mentor-teacher and a student is a sign of the pedagogical skill of an educator-teacher. The scholar Kamusi Al-Beruni teaches that "knowledge is the fruit of return and repetition." Based on this, we must promote our teaching methodology. Because in modern conditions of drawing geometry and engineering graphics, the content of academic disciplines is characterized by the use of new methods in teaching the topic of determining the line of intersection of surfaces. Only its essence lies not in the repetition of the educational material passed yesterday, but in the improvement of the teaching content through the application in modern interpretation of traditional approaches that were used by our ancestors. When it comes to the development of spatial imagination among students in teaching tools on the topic of determining the intersection line of surfaces in the learning process, we mean two sides of this issue. Firstly, we are talking about the effective use by teaching persons (teachers, authors of books written for the reader) of the topic of determining the line of intersection of surfaces in order to develop the best conditions for the assimilation of the material under consideration by students. Secondly, it is important that students use the subjects of descriptive geometry and engineering graphics to develop spatial imagination. In professional colleges, sensory-perceptual, abstract-logical and mixed types are used to develop the spatial perception of recipient students.

The first type is associated with the use of more iconic 2 models in the development of spatial imagination of students. At the same time, they act as the main forms of information.

The second type is based on the method of abstract-logical designations of information for the development of spatial imagination of students in the means of teaching the topic of determining the line of intersection of surfaces.

The third type of drawing is based on a system of forms and the semiotics of the development of spatial imagination, which underlies the science of geometry and engineering graphics. At the same time, they act in the process of real mental activity not separately, but in conjunction with each other.

Consequently, when building a pedagogical system for the development of spatial representations in students, it will be necessary to pay attention to the above-mentioned pedagogical and psychophysiological aspects. A large place is occupied by the use of various methods of teaching the topic of determining the line of intersection of surfaces. The use of models, drawings and posters, visual aids, technical means, representing the teaching of the topic of determining the intersection line of learning surfaces, acquires great importance at the initial stages of the development of students' spatial imagination on the subject of descriptive geometry and engineering graphics. The use of such tools as visual illustration, visual aids for their projections, visual aids for the formation, especially teaching the topic of determining the line of intersection of surfaces, allows you to effectively use it in the development of spatial imagination. This allows you to draw readers' attention to images that cannot be restored as a result of rapid or prolonged use.

The same thought can be directed to the development of the rules used in teaching the topic of determining the intersection line of surfaces, by expressing the role, task, goal that the drawing occupies in geometry and engineering graphics. This is to give students a clear idea of the subject of determining the line of intersection of surfaces by highlighting the part related to learning and linking it with the teaching methodology on the subject.

This manifests itself in the imagination of the realities that we see and hear in life, in paintings, films or historical films, in the literature of applied art, through the vision of students, depending on the explicit image. The formed imagination provides students with an effective passage of the lesson process. Because, without stopping at the information received in the imagination, it encourages you to move forward, thereby allowing you to take the next steps.

From the point of view of aspects inherent in the features of the educational material for the study of the topic of determining the intersection line of surfaces, it should be noted that in complex practice related to the use of educational material used in the system of development of spatial representations in students, idealization to one degree or another should be limited to the description. This brings him closer to the development of spatial

imagination. At lectures and practical classes on descriptive geometry and engineering graphics, it becomes important what needs to be used for better assimilation of each topic by students. Observations show that in mastering the basics of drawing geometry and engineering graphics by students who entered the first year, there are a number of shortcomings, due to the insufficient development of spatial imagination in the initial period of training, it is difficult for students, looking at the drawing, to restore it in space, that is, to imagine their spatial position. That's why visibility is of great importance when teaching drawing geometry and engineering graphics. This indicates that the use of drawing geometry and engineering graphics in the description of educational materials is important for the use of related exhibits.

Without precise geometric bodies or their models, as well as drawings and visual drawings, it is impossible to form a clear spatial representation and understanding of the subject being studied in the minds of students.

1. sensory-perceptual - (Latin) - relies on sensory perception.

2. iconic - (Greek) - expression with the help of imagination.

3. semiotics - (Greek) - is based on a system of signs and signs when expressing certainty.

From a psychological point of view, the visualizations used in education can be divided into three groups - original, subject and figurative. In the sciences of drawing geometry and engineering graphics, all three of their types can be used. For example, if the process of creating a line of intersection of two planes was generally performed using a plot drawn on a blackboard, the additional steps performed to solve the problem would not be clear to most readers. The best result is achieved if the teacher shows the spatial position of the problem on the blackboard or with the help of visual posters before working on the problem in the plot or conducts an explanation in a clear image and in parallel in the plot. Drawing although drawing the plot and spatial position of geometry problems on topics related to points, lines, planes and rearranging their plots will not take much time, there are many problems, such as lack of time when working on tasks related to determining the

intersection line of surfaces. The fact that it takes a lot of time to draw the condition of certain tasks on the blackboard, that the drawings are large and small when students draw in a notebook, and that the answer to the problem may be different, that is, that the solution of the problem in the student's notebook differs from the solution on the blackboard, makes it difficult for students to understand the educational material and in many cases leaves the student unable to solve problems in the notebook. To avoid the above problems, the teacher can use visual posters on the topic during the explanation of the subject to teach students different spatial positions of surfaces, especially in relation to finding the intersection line.

It is known that the surfaces of the 2nd order have a circular and general appearance. The normal planes relative to the axis of rotation of the rotating surfaces of the 2nd order intersect them in circles. Planes perpendicular or parallel to the axes of common surfaces of the 2nd order intersect them along curves of the 2nd order (ellipse, hyperbola, parabola). Common 2nd-order surfaces that are often used in building structures include triaxial ellipsoid, elliptical hyperboloids, elliptical paraboloids and hyperbolic paraboloid surfaces, as well as elliptical, hyperbolic and parabolic cylindrical and conical surfaces.

Bibliography

1. Abdurakhmanov Sh. Scientific and methodological foundations for increasing the specialization of the course " physics of geometry". - T.: "Fan", 2007.

2. Drawing geometry and computer graphics. (Textbook) Yu.A.Askarov, A.E.Jabbarov, A.A.Ibragimov, H. M. Shadimetov S.S.Seydaliyev. 2019.

3. Descriptional vocabulary of the Uzbek language. - T.: State scientific publication "National Encyclopedia of Uzbekistan". 2006. P. 216.

KH.Rikhsiboeva, U.Otabekov, A. The valiyev's " Development of spatial thinking of students when teaching drawing " (- m.: "Young scientist". International scientific journal.

2017 G. No. 13, Part VI. G. Kazan, OOO " Young Scientist Publishing House ". 527-533 STR

4. Khorunov R. Physics geometry course. 4th edition. - T.: "The Hunter", 1997.

5. Muradov Sh., Khakimov L., Odilov P., Shamuradov A., Djumaev M. the course of physics of geometry. - T.: "The Hunter", 1988. Muradov Sh.K. and heads, geometry drawing, - t.: "Economics-finance", 2006.

6. Khorunov R. Physics geometry course. 4th edition. - T.: "The Hunter", 1997.

7. E. Ruziev's book " Graphic training in the system of continuing education of the Republic of Uzbekistan (monograph) (- t.: "Fan" an RUz, 2003. – 10.6 p.L.)

8. Otabekov U.G. Methods of teaching perspective based on an integrative approach with other disciplines issn: 2349 - 0012 2013

9. Doing independent work in the AutoCAD program. (Tutorial) Alimov F.H, Akhmedov N.O, Ibragimov A.A. T 2012.