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Saydullo Sobirovich Arziyev

Fergana Polytechnic Institute

Assistant, The Department of Descriptive Geometry and Engineering Graphics,

Fergana, Uzbekistan

Mukhlisa Mukhtaraliyeva Rustamova

Fergana Polytechnic Institute

Assistant, The Department of Descriptive Geometry and Engineering Graphics,

Fergana, Uzbekistan

THE MODELING METHOD IN THE INTEGRATION OF DESIGN AND ENGINEERING GRAPHICS DISCIPLINES

Abstract: In this article, the author explains teaching the engineering graphics and integrated subjects of design by using easy and effective ways of projecting method. This method helps to express the main idea of integrating two subjects and using them in practice. This method deepens students' knowledge, improves their skills, and also improves their learning activities.

Key words: Cycle, design method, design, engineering graphics, idea, image, individual, integration, integration, project, scheme, technology.

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Introduction

The future of society is determined by the level of development of the educational system, of which it is an integral part. The task of education today is to teach students competently, independently in the information and educational environment, to use information technologies, to organize training based on new technologies. As you know, any innovation in life and technology is preceded by a sketch. This chart identifies the advantages and disadvantages of innovation. The product is also assembled according to its drawings, its elements are dismantled or repaired. When you imagine an object through a drawing, its bright image is the most convenient. It is natural for students to understand this through educational posters, dynamic models, video projectors, various electronic and school boards. Research work is needed to improve the methodology of using design technologies so that students can better understand and master the subject in the process of teaching engineering graphics.

The design method allows students to adapt to life in the integration of engineering graphics and design sciences, independent work, expand the spatial imagination, look at each sketch from an analytical and synthetic point of view, look for the conceptual scheme of the object, reveal the promising direction of the idea, systematic thinking. studying influential methodological materials, familiarization with a sample of project material, viewing project albums, the study of experimental models of the architectural project developed abroad and at home, presentation of data in audiovisual means, the convenience of lighting mode, provision of acoustic and microclimatic conditions, structural aesthetics form a single whole, show a compositional idea in the artistic impact of an object, show the harmony of shape and proportions, execute the project with pencil and graphics, execute in the schedule taking into account the project's cut and each element, creative thinking helps build ash skills. The design method is becoming an important part of educational technologies. As a result of the

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study, the level of theoretical knowledge of students in the design methodology in the field of engineering graphics will be expanded, their interest in studying the disciplines of engineering graphics will be increased, their experience in creative thinking, spatial imagination and independent analysis will be expanded.

MATERIALS AND METHODS

Design (lot. projectus - idea, idea, image), the name itself suggests that it is planning work that will be carried out in the future, and the project is an idea, idea, idea embodied in the form of a description, a description based on certain calculations, graphic figure, etc. It is thanks to this method that to a large extent reveals the essence and possibilities of implementing ideas expressed in the integration of the two sciences. To apply the design method, we first define interrelated topics in the cycle of engineering graphics and design sciences.

As a result of the integration of these two sciences, there are problems, problems, we determine how the results can be achieved using the design method that solves these problems. As a result of the integration of these two sciences, questions or topical questions arise that await a decision on the topics that they discuss. The design method is that the creation of a project can be integrated or now integrated topics that each student chooses at their discretion, interests, or can offer a teacher. In both cases, students should collect the necessary graphic data, find and analyze their solutions. The design method is one of the important aspects of the educational process, which allows the teacher to work with students individually. The teacher works with them individually, effectively using the lesson time, taking into account the individual psychological characteristics of the students. At the same time, a wider path to deeper mastery of these sciences opens up. The application of didactic problem and problems of its solution are considered during the organization of design works. Support of the design method in the integrated teaching of engineering graphics and design sciences, the teacher's task during the course:

- create conditions for students to avoid errors and omissions in the performance of graphic works, expanding their spatial representations and producing creative activities, integrating two sciences into each independent graphic work.

Support of the design method in the integrated teaching of engineering graphics and design sciences, the task of students in the learning process:

- these two sciences must be simple, understandable, interesting in teaching, connected so that they can perform graphic work in a simple, simple way, develop proposals for integrated graphic work for a solution or solution for a certain period.

The design method allows students to:

- finding and solving problems, targeting the flow of information, combining them through the integration of engineering graphics and design sciences;

- Using the right to choose interrelated topics in the cycle of these two disciplines, to determine the effectiveness of various methods, ideas, research, analysis;

- be responsible for the results of integrated training in engineering graphics and design sciences, independently make decisions about the relationship between these two disciplines, identify achievements and shortcomings as a result of integration, look for its causes, correct shortcomings;

- Search for various solutions through integrated training, scientific prediction of the results of proposals;

- Individual and group work evaluates and encourages participation in the discussion of ideas.

However, there are certain features of this method that must be taken into account. It is in vain that we developed this design method for integrating engineering graphics and design sciences.

- Firstly, it is very difficult to apply this method to topics, individual subjects. Because the causes of the problem are extremely diverse. They are difficult to solve within the framework of one science.

- Secondly, not all students can prepare the project and solve the problem.

- Thirdly, this method requires deep knowledge, experience, tireless work, personal participation in various projects.

In integrated training in engineering graphics and design sciences, the teacher assigns students tasks for implementation on a planned basis, that is, he develops an action plan. A general description of the project is given. The project implementation plan should be clear, not too complex. In addition to the general plan, weekly and monthly plans are developed, based on which the graphic work performed by the student is further refined. The project participants are close, supportive students with their interests, thinking circles, and they are united by the goal of the project. Other members can join them later. But overpopulation has negative consequences. Therefore, the task that each participant in the project must perform is clearly written. Project implementation dates are set. If this is divided into stages, it is also indicated by terms.

Design and implementation stages:

- Development of the project. Also shown are forms and means of implementation of the project, step-by-step results.

- Tasks set in the project will be completed.

At this stage, students independently perform individual and group graphic tasks. Graphical tasks similar to this task collect data. Discuss the collected graphical problems, data. They're developing tables.

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– Graphic works prepared by all project participants will be combined as a whole. First, the draft version of the project is drawn. The final version is then prepared.

– The final version of the project will be considered by teachers of engineering graphics and design sciences. In this case, the integrated themes should be well-founded and reflect the work done and the results achieved. Integrated topics should, of course, include tables, charts, programs and other similar materials.

– Completion of the project is evaluated by attached teachers on the basis of established criteria. Projects prepared by students will be reviewed, selected, and then a report prepared.

Evaluation criteria will be developed to assess the performance of the attached teachers. These criteria should be formulated in such a way as the degree of study of the problem, a clear, understandable description of the topic, its specificity, the quality of the design, the use of visual, demonstration materials, proposed proposals and their assistance in solving the problem and other aspects. Projects prepared by small groups during the lesson can also be evaluated by a jury composed of students led by a teacher. The criteria for evaluating projects prepared by students: the relevance of the selected problems based on the integration of schedules and design disciplines, the degree of study of the selected problems, a clear, understandable presentation of the goals and objectives of training based on the integrative of these two disciplines, coverage of the short content of all selected problems, the quality of the design is determined by 10 points. Students learn

independent analytical thinking if they use the knowledge gained in the process of working on projects, practical advice that serves in the process of knowledge. They form the skills of finding new ideas, spatial and creative thinking, choosing the right strategy, solving specific problems. At the same time, the teacher follows his graphic work and projects, gives advice, supports them. No other method forms do not educate students with a sense of responsibility for this methodology.

CONCLUSION

Based on the design method, integration of engineering graphics and design sciences into the organization of the educational process, working groups are created as part of the training group. They are divided into three working groups depending on the level of skill. At the same time, when strong working groups are engaged independently, the teacher is given more time to communicate with students with a low level of skill. High results in training are achieved when the level of skill of the working group participants is approximately the same. It is good that students themselves form such groups since they know very well which group they belong to. You can go from Workgroups 2 and 3 to Workgroup 1. In small groups, and individual practical approach can also be used since each student performs project work individually. The difference between the individual method and the laboratory method is that students try to solve a practical problem using the knowledge that they acquired in the course of their activities. This method deepens students' knowledge, improves their skills, and also improves their learning activities.

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