

**SOME ASPECTS OF DEVELOPING THE PROFESSIONAL GRAPHIC  
CREATIVITY OF THE FUTURE ENGINEER**

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**Abstract**

The article describes the issue of increasing the effectiveness of the educational process by developing the professional-graphic creativity of future engineers based on a competent approach in higher education institutions.

**Keywords:** student, education, training, competent, approach, future, professional, engineer, design, competence, intellectual, integration, intellectual, creative, cognitive, future, ability, science, craft, efficiency.

**Introduction**

In our research, we relied on the experience gained by teaching different subjects in secondary schools, vocational schools, technical institutes with different directions and higher educational institutions. At the same time, we are I. Rahmonov, Sh.A. Abdurahmonov, T.D. Azimov, N.J. Yodgorov, K.A. Zoyirov, R.Q. Ismatullaev, P.O. Odilov, M.H. Pirimzharov, I.T. Rahmonov, E.I. Ro'ziev, and foreign scientists: James D. Bethune, G.S Phull , H.S. We turned to the experience reflected in the works of Sandhu, R.B. Gupta, N.D. Bhatt, which are presented to a certain extent in their scientific and methodological work. T.V. Chemodanov in his research, the concept of "professional graphic preparation" is very interesting and sufficiently expressed - it allows to solve educational and professional problems and adequately perform educational professional tasks using the methods of geometric modeling of flat and three-dimensional images and for future education. "This graphic cycle is a combination of geometric, engineering-graphic, information-technological, methodological knowledge, skills and abilities in the field of general engineering sciences. However, in these works, the curriculum is mixed The scientific and theoretical foundations of teaching, taking into account the connection with subjects, are not fully covered, the methodology of choosing the material that actively increases the student's professional interest is not provided. The existing forms of educational process organization in the subject of "Engineering and computer graphics" do not fully correspond to the potential opportunities related to solving problems in teaching this subject with an emphasis on the studied specialty. One of the ways to overcome the indicated contradictions is to search for new content and forms of educational activities that fully realize the potential of teachers and students. The considered problem is relevant both in terms of preparing students for educational activities in general engineering and graduate departments, and in terms of increasing the efficiency of the educational process and increasing the mental activity of students.

The student's leading activity is his educational and cognitive activity, and for the teacher - educational work. All this requires the teacher to think deeply and reflect on the didactic support of preparation for lectures and practical sessions.

Today, it is necessary to further democratize the society, raise the activity of higher educational institutions to a new level of quality, in the conditions where the activities of private higher education institutions are given ample opportunity. First of all, this should be manifested in the rejection of the principle of uniformity in education, in the establishment of different types of educational institutions, in the creation of new curricula and textbooks whose contents correspond to the educational fields of higher education institutions, and in the revision of teaching methods and tools.

Modern trends in the development of higher educational institutions present a number of new theoretical and practical problems to professors and teachers working in higher educational institutions. One of them is a reflection of the integration and differentiation of knowledge in the content, nature and activity of education.

This problem cannot be solved without taking into account the result of interdependence of studied subjects, Uzbek scientists R.H.Djuraev, N.J.Isaqulova, M.H.Lutfillaev, I.V. Makukhina, A. Musurmonov, M. Q. Mukhliboev, B. N. Oripov, A. A. Salomov, N. I. Taylakov, N. S. Fayzullaeva, N. I. Hurboev; and others are studied developed in the works of pedagogues.

A future engineer should be able to apply a complex of knowledge in various disciplines in his professional activity. In scientific-pedagogical literature, the concept of "interdisciplinary integration" is vaguely interpreted, thus its various roles and place among pedagogical categories (categories) are determined. According to E.B.Shoshtaeva, interdisciplinary communication represents the process of the commonwealth of academic disciplines, which reflects the unity of professional activity, continuous and integral phenomena. E.V. Perekhosheva defines interdisciplinary integration as the process of combining academic disciplines on the basis of knowledge (knowledge) in the light and technological problems.

For us, interdisciplinary integration represents a set of educational goals, principles and meanings in creating a wide-scale interaction of all academic subjects of the educational program. Therefore, professional competence begins to develop at the first stage of student education, senior students are directed to make quick optimal decisions in any complex professional situations, in which the formation of skills to perform certain actions independently can be carried out with the help of interdisciplinary communication. (*Avazov J.D. Formation of professional competence of students of higher education institutions through interdisciplinary integration*)

The sooner higher education abandons ineffective forms of teaching in the educational process, the faster and better it will achieve. Today, there is a need for research based on the existing reality. One of the tools that have a positive effect on the training of specialists is to increase their interest in the profession [10,51].

The researches of some foreign specialists deserve attention. The works of these authors have great scientific and practical value, but most of them are related to the training of future teachers, and they are not sufficiently connected with the educational process and methods of teaching in higher technical schools. The transformation of engineering-graphics education should be related

to the formation of professional qualities of the future specialist based on the awakening of interest in the chosen specialty .

In our opinion, such an approach to the design, organization and implementation of training helps to form the following basic, professional qualities of future specialists: culture (communication, information), interest in the profession, competence, professional pride, pride in the profession, intellectual professional self-development, etc.

Due to the sharp increase in the amount of information that a person needs to perceive and process both in the course of professional activity and in everyday life, informatization of the educational field is becoming a real force. The result of many production and non-production processes depends on its quantity and quality [17,45]. The modern concepts of the educational system of Uzbekistan are increasingly oriented towards new ideas, didactic principles and requirements mainly related to the use of ICT - information communication technologies. The computer plays the role of a tool in professional activities not only in engineering and science, but also in the humanities, business, economics and education. In general, computer technology has become an integral part of modern human daily life.

Informatization of education is one of the priorities of the process of modern society informatization. The tools and capabilities of new information technologies allow for the intensification and acceleration of the educational process, increasing its quality and efficiency. The use of information technologies in education creates great opportunities for both teachers and students. with the help of a computer, students work with activated educational materials, their activity, competence increases, and their creative abilities develop.

Using a computer, students, in addition to the traditional perception of existing information, have the opportunity to observe in dynamics many processes previously studied in a textbook or a teacher's lecture. The computer allows to model various possible solutions according to certain criteria with a high level of visualization, selects the most optimal one according to certain characteristics from the number, that is, it significantly expands the possibilities of visualization methods in the educational process.

The improvement of the quality of specialist training depends on a number of factors:

- the spread of information technologies, computer training leads to becoming one of the main criteria determining the professional training and professional culture of a young specialist;
- the use of computer technologies in studying drawing geometry and engineering graphics at the elementary level is a connecting link connecting the departments of technical schools to a single system of interdisciplinary communication.

The analysis of the work carried out in the teaching of "Engineering and computer graphics" to the students of the field of operation of transport facilities of the Termiz branch of the Tashkent State Technical University shows that the first-year students' mastery of graphic sciences, especially in the first semester, is insufficient. The main reason is the low level of graphic preparation at the drawing school or its complete absence (not studied at school).

There is a problem of raising students' information culture. The analysis of the survey results shows this.

As a result of surveys conducted among students, it was found that 27% of respondents did not learn to draw at school, 22% did not work with a computer, even if they did, to a very small

extent, 7% of respondents did not know how to use the Internet and could not explain its importance.

The situation can be explained by the following reasons:

- most of the students are from remote districts, where access to computers and the Internet is low;
- Lack of drawing specialists with higher education in Surkhandarya schools;
- shortage of educational equipment, lack of computer equipment in rural schools;
- view drawing and informatics as secondary subjects.

The search for the necessary methods and methods that increase educational efficiency should be aimed primarily at improving the content of didactic materials and teaching methods.

Let's focus on scientific-methodical problems.

The analysis showed that there are currently a number of contradictions, namely:

- between the importance of information technologies in the development of society and the attitude towards informatics as a secondary science;
- between the existing reserves (pedagogical, methodological, technical) related to the computerization of education in terms of improving students' readiness and insufficient use of these reserves in the educational process;

In our research, in order to find ways to solve these contradictions, the researches of local scientists were analyzed: the formation of important qualities on the issues of professional education (U.N. Nishonaliev, A.R. Khyjaboev, Q.O'. Tolipov, N.A. Muslimov) and on issues of development, formation and development of qualities important for the engineer's professional activity (A. Umronkhojaev, E.I. Roziev, Sh. Abdurakhmonov, K.A. Zoyirov, etc.).

L.S.Vygotsky, P.Ya.Galperin, V.V.Davidova, A.N. Leont'ev, S. L. Rubinstein studied the issues related to the activation of the teaching process. They studied the ability, talent, its components and characteristics of students' and teachers' activity.

These contradictions determined the relevance of the selected research topic and allowed to define the problem: the process of increasing the knowledge level of engineering students in the study of "Engineering and computer graphics" at technical universities, the use of information technologies, the professional orientation of the teaching content using shortened theoretical blocks, and the independence of students depends on the organization of education.

In conclusion, on the basis of a competent approach to the development of professional and graphic creativity of future engineers, successful professional success will be achieved, and if the connection with production activities is chosen in the future, students will be interested in the profession.

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