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TASKS IN THE DEVELOPMENT OF DESIGN COMPETENCES IN TEACHING "ENGINEERING AND COMPUTER GRAPHICS" TO ENGINEERING STUDENTS

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Abstract
The article provides information on the current state of development of design concepts and the tasks of solving existing problems in the acquisition of knowledge of engineering and computer graphics by students.

Keywords: digital technologies, computer graphics, modern computer technologies, graphic sciences, design compensation.

Introduction:
Creating conditions for distance independent education of students in higher education institutions of the most developed countries of the world, mastering knowledge through digital methodological support, multimedia educational technologies for developing graphic thinking, creative thinking ability, design skills, virtual modeling methods a number of scientific researches related to its introduction are being conducted. In this regard, it is important to expand the possibilities of digital education in the development of students' spatial imagination, competence in working with non-standard graphic assignments, graphic design drawings. Improving multimedia and digital learning methods, which are considered an intensive method for ensuring graphic competence, knowledge, and skills of future designers, architects, engineers as intellectual potential staff, and the role of multimedia and digital methodological support in developing design competence. and increasing its effectiveness, substantiating the requirements for virtual educational tools in the process of developing students' graphic literacy based on graphic and project knowledge is of great importance.
As a result of consistent reforms in the education system in new Uzbekistan, the concept of the development of the higher education system until 2030 was developed. In the concept, "acceleration of learning and implementation of advanced foreign experiences in improving the quality of education and improvement of teaching

methods"[1], assigned the priority tasks of training qualified specialists in all HEIs. Taking practical steps to include HEIs in Uzbekistan in the list of higher education institutions in the first 1000 of the ranking of internationally recognized organizations, attention is being paid to the fulfillment of duties. In 2017-2021, the Strategy of Actions for further development of the Republic of Uzbekistan, as a logical continuation of the tasks set for HEIs, was also highlighted in the Development Strategy for 2022-2026. In the 46th goal of the strategy: "Raising the level of coverage with higher education to 50% and improving the quality of education" is defined as a priority task. From the set goal, it can be understood that it is important to use modern methods of teaching based on innovative, intensive methods of teaching in the scientific and research work carried out at the Higher Education Institution.

Level of study of the problem

Among the scientists of our country, R. Khorunov, I. Rakhmonov, A. Kholmirzayev, Sh. Murodov, D. Kuchkarova, R. Ismatullayev, on the issues of improving graphic education in terms of teaching methods, students' graphic design, graphic thinking, spatial imagination, It was studied by T. Riksiboyev, E. Roziyev, A. Khamrakulov, S. Saydaliyev, A. Qahharov, Sh. Dilshodbekov, D. Achilova, Ch. Shokirova, N. Yadgorov and others. Issues of teaching "Drawing geometry and engineering graphics", "Drawing", "Engineering and computer graphics", issues of formation and development of students' design competencies I.P. Istomina, L.V. Zanfirov, L.P. Rusinov, A.V. Piliper, Yu.A. Bolkova, A.I. Khubiyev, L.N. Anisimov, P.A. Ostrojkov, J.J.Djanabayev, Charles A, Rankovsky, Minaruth Galey, Neda Bokan, Marko Ljucovic, Srdjan Vukmirovic, Ramon Rubio Garcia, Javier Suarez Quiros, Ramon Gallego Santos, Santiago Martin Gonzalez, Samuel Moran Fernanz, Putz C., Rodriguez de Abajo, F. Foreign scientists such as J, Rubio, R, Toledo, E., & Martinez, M. X, James L. Mohler, Bertoline, G., Burton, T., & Wiley, S, Bishop, J, Dejong, P. S. went A.Khamrakulov, Ch.T.Shakirova, G.Tubayev, A.Kakhharov, A.V.Smirnov, N.G. Semenova, S.V. Scientists such as Panyukova, Z.Zongyi, F.Kaiping, Ch.Bing H.Stachel, D.P.Francesco, Rais-Rohani, M., & Young, K.A. have conducted scientific research.

It is necessary to set the following tasks in the teaching of "Engineering and computer graphics" in the ongoing scientific research, including:

Scientific analysis of the organization of teaching "Engineering and computer graphics" in Technical Higher Education Institutions, teaching methodology,

[1]O‘zbekiston Respublikasi Prezidenti Shavkat Mirziyoyevning 2019 yil 8 oktyabrdagi “O‘zbekiston Respublikasi oliy ta’lim tizimini 2030 yilgacha rivojlantirish konsepsiyasini tasdiqlash to‘g‘risida”gi PF-5847 sonli farmoni.

advantages of the used tools (animation lesson developments, virtual models, computer games);

Analysis of the main factors in the development of students' design skills in the teaching of "Engineering and computer graphics";

Analysis of the scientific research conducted on the development of design skills of students of "Engineering and computer graphics" on the basis of digital technologies and the development of an improved methodology for bringing it to a new level;

The need to implement a number of tasks such as teaching "engineering and computer graphics", criteria for determining educational effectiveness, control methods, reviewing the criteria for the formation of design skills and developing the concept of its development is urgent today.

It can be seen in the researches, experiments and studies that a number of works have been carried out on the application of various methods and tools of teaching in graphic education.

The subject "Engineering and computer graphics" is taught today in the fields of technology, technology and engineering. However, as a result of being taught in 1 semester in most educational areas, it is required to provide students with a large amount of information in a short period of time and to ensure their assimilation. studying in the course complicates the matter even more. besides, if studying in 1 semester is a big problem, it is natural to have questions. Due to the small number of hours (credits) allocated to science, giving students graphic practical drawings and delivering large amounts of information in lecture sessions creates many problems. The reason is that students should be able to understand, visualize and analyze the knowledge they are getting. If the acquired knowledge of students does not turn into skills and qualifications, then the indicators of mastering the subject will remain low. In particular, one of the important tasks of graphic education, the development of design skills of students in the course of teaching "Engineering and computer graphics", should be solved first of all. In traditional educational practice, students' graphic knowledge, including their spatial perception, design skills are formed and developed through practical tasks, that is, students' design skills can be developed even without computer technologies. But it takes a lot of time. According to the directions given in Table 1, the study hours are not considered sufficient for developing students' design skills.

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Table 1

№	Route name	Academic semester	Lecture hour	Amaliy o‘quv soati	krediti
1.	Food technology	3	30	60	6
2.	Canning technology	3	30	60	6
3.	Functional nutrition and children's product technology	3	30	60	6
4.	Alternative energy sources	3	44	46	6
5.	Mechanization of agriculture	3	44	46	6
6.	Transport logistics	3	45	45	6
7.	Organization of traffic	3	44	46	6
8.	Car service	3	44	46	6
9.	Hydraulic construction	1	30	30	4
10.	Chemical technology	3	45	45	6
11.	Technology of oil and oil-gas processing	3	30	60	6
12.	Geology, prospecting and exploration of mineral deposits	3	30	60	6
13.	Construction and installation of engineering communications	2	30	30	4
14.	Construction (design, construction of buildings and constructions)	2	30	30	4
15.	Architecture	1	30	30	4
16.	Road engineering	3	30	30	4
17.	Technical service in agriculture and water management	3	44	46	6
18.	Application of innovative techniques and technologies in agriculture	3	44	46	6
19.	Machine-building technology, machine-building production and automation	2	42	68	8
20	Technological machinery and equipment	3	46	44	6
21.	Ecology and environmental protection	3	44	46	6
22	Labor protection and technical safety	3	44	46	6
23	Electric energy	3	44	46	6
24	Metrology, standardization and product quality management (by sectors)	3	46	44	6
25	Automotive and tractor manufacturing	3	45	45	6

From the analysis of the study hours presented in the above table, it became clear that in the process of mastering the given hours, it is appropriate to master the educational tasks aimed at developing the design skills of students on the basis of computer technologies. After all, the computerization of education is the basis for the formation of learners as mature specialists. Through the computerization of education, it is possible to create, manage, study, diagnose and analyze not only phenomena, experiences and processes in nature and society, but also in the educational process.

As a result, the quality and efficiency of education will be improved.

Figure 1. The structure of digital methodological support in engineering and computer graphics.

The composition of digital methodological support from the science of engineering and computer graphics (Fig. 1) is as follows:

- questionnaire questions to determine design skills;
- base of theoretical knowledge;
- a set of graphic assignments in science;
- non-standard multiple-choice test questions;
- virtual visual materials related to science (2D, 3D);
- computer games related to design skills;
- video lesson;
- a structural structure such as glossaries is necessary.

According to the items given in the above structure (Figure 1), it is necessary to revise the information in the relevant science using the modern view, i.e., using the capabilities of digital technology, and develop them as a database suitable for learners. . There are many printed and electronic textbooks, manuals, and guides on engineering and computer graphics. However, as a result of today's intense reforms, there is a need for new approaches and methods in educating young people, and it will increase as a growth dynamic. The development of technical technology, along with all other disciplines, also imposes new tasks on graphic sciences. Therefore, the

professor-teacher who teaches in today's graphic education should work on himself in keeping with the times, give new knowledge to students, build new technologies, and constantly develop their skills of drawing sketches and designing projects perfectly. is necessary.

Summary

In the teaching of "Engineering and Computer Graphics", first of all, in order to provide students with knowledge in an easy and convenient way, based on this knowledge, to improve skills and qualifications, the educational process should be fundamentally revised, suitable for all types and forms of the educational process. review, in order to increase the efficiency of education, it is necessary to set tasks until the requirements of the state educational standard are met, to develop non-traditional criteria for evaluating acquired knowledge, to develop knowledge-enhancing methods and to apply them to the educational process, and to delay it doesn't. Based on this, by solving the tasks listed above, the basis for increasing the efficiency and quality indicators in graphic education is created, and it serves as a basis for bringing educational activities to a higher level.

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