TECHNOLOGIES USING 3D MODELING USING MODERN GRAPHIC SOFTWARE TOOLS

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Annotation

3D modeling is one of the first steps in creating three-dimensional graphics. The concept of three-dimensional modeling means creating three-dimensional models of objects on a computer.

A person who works with 3D models can be called a 3D artist or 3D modeler. A 3D model can also be rendered as a two-dimensional image through a process called 3D rendering, or used in computer simulations of physical phenomena. 3D models can be created automatically or manually.

Keywords: technologies using 3d modeling, using modern graphic software, tools,

Introduction:

The manual modeling process of preparing geometric data for 3D computer graphics is similar to the art of sculpture. A 3D model can be created using 3D printing machines, which create 2D layers of the model simultaneously with the 3D material. Without a 3D model of an object, it cannot be 3D printed. 3D modeling software is a class of 3D computer graphics software used to produce 3D models. Programs such as SketchUp of this class are called modeling applications.

Programming languages or software can be used to develop three-dimensional modeling, or 3D modeling in short. It is more efficient to develop 3D modeling using ready-made software. This makes creating objects faster and easier. Examples of the most common 3D modeling software include Autodesk's 3ds MAX and Maya. The capabilities of these softwares are very wide, through which you can develop any 3D models. After the 3D modeling is done, it is necessary to connect it with the program and use programming languages to develop the programs. C/C++, Java, Python, JavaScript, C# programming languages are among them. In order to convert the finished 3D models into software, it is necessary to write software codes in the translators. This requires a lot of programming code. A number of graphic software have been developed to optimize these tasks. One of them is the Unity 3D program developed in 2005. "Unity 3D" is one of the most convenient software for creating 3D software products and games. In Unity, you can download ready-made 3D models and combine them by writing scripts in C# or Javascript. Working in Unity 3D is very convenient:

3D modeling software produces three-dimensional digital effects. You've seen the results of 3D modeling in movies, animations, and video games, filled with creatures and structures in this world.

3D modeling is the process of creating a 3D representation of any surface or object by manipulating polygons, edges and vertices in a simulated 3D space. 3D modeling can be achieved manually with specialized 3D rendering software, allowing the artist to create and deform polygonal surfaces or scan a real object into a set of data that can be used to digitally represent objects. allows.

How is 3D modeling used? 3D modeling is used in many fields such as engineering, architecture, entertainment, film, special effects, game development, and commercial advertising.

Therefore, the following special courses on geometry and graphic subjects are studied from the first semester to the fourth semester (in the middle of the period) when obtaining a bachelor's degree in technical courses (of higher educational institutions). The geometrical and graphic description of basic training is as follows: drawing includes such subjects as geometry, engineering and computer graphics. Drawing geometry is part of the theory of geometric modeling, is the theoretical basis of geometric and engineering and computer graphics sciences, and serves to study a number of general technical sciences. In general, it is one of the main subjects in the training of service engineers. Engineering graphics is an applied discipline that develops the performance of drawing skills. In this study, the science of computer graphics is considered to be a part of the science of engineering graphics, and in turn, it closely supports the creation of drawings and images using information and computer technologies.

The science of computer technology helps to develop the preparation of students in graphic visualization. Thus, in the creation of an automated design system (ALT) with the help of a computer, the development of project documents, the development of three-dimensional modeling packages of KOMPAS 3D, Inventor, Solid Works, etc. and helped to introduce it into the educational process.

Forming in Drawing Geometry includes a fully automated design system with unlimited visualization capabilities, resulting in a drawing geometry course that helps students develop their graphical visualization competencies.

As a result, the role of geometric graphic training in society has significantly increased, and the field of application of geometric knowledge is constantly expanding. The reason for this is that in the development of complex and medium-complexity products, which are important in the design of electronic geometric models on a computer, in the implementation of technical account books for projects, in the analysis of the efficiency of the designed structures, the analysis of the designed documents is a nominal stage. With its creation, design based on geometric data begins with the modern educational process. This will help in the implementation of accounting books at any stage of future project development, visualizing

its scheme, virtual inspection of how the product works, development of modern production technologies, verification of "assembly and re-disassembly of its parts", drawing up project documents, etc. enables implementation. That is, it will be possible to study the project implementation object and control its production at any stage.

According to the results of the analysis carried out in this research work, the goal of teaching geometric graphics is different from the goals of traditional education. Its distinctive features are the integrity of the content and components of professional activity. The substantive component is based on the readiness of students to implement innovations in fundamental geometric graphics and professional activities, to form the graphic culture of students, as well as to form competencies such as having graphic information in the educational process. The professional activity component is aimed at training a highly qualified professional specialist who can combine design, research and scientific activity, characterized by innovation and creativity.

The software and technical tools of the educational process in mastering graphic subjects provide an opportunity to abandon the traditional methods of creating drawing products, while ensuring the use of modern innovative drawing technologies.

Currently, the researchers are:

- two-dimensional graphical model. In this context, the computer is used as an electronic drawing board;
- created modern information technology approaches in accordance with the requirements of the time, such as a three-dimensional graphic model.

Necessary conditions for the implementation of such model design activities are created, as a result of which an original (original) object model is created. In the process of designing, it is important to solve various geometric problems in the graphic description, which helps to create an image of the original (original) object in the spatial mode in accordance with the spatial model.

Such modeling is considered a more perfect project on the basis of evidence, with the help of which it is possible not only to create a scheme of the object, but also to determine and describe its inertial properties (mass, volume, center of inertia, moment of inertia) with the help of the implementation of accounting activities.

In the process of graphic education, undergraduates develop their spatial imagination, which helps to mentally create the shapes of spatial objects and change them. Therefore, at the initial stage of learning such subjects as engineering and computer graphics, students should develop spatial thinking, which will help solve graphic problems with the help of computer programs. Learning by constructing two- and three-dimensional models does not cause serious conflicts with conventional orthogonal projection algorithms. The development of the content structure of the lesson is based on the main idea that it is necessary to use the creation of two- and three-dimensional models not only as a visual tool, but also as an effective tool for solving graphic

problems. Possession of linear geometry and engineering graphics is an indicator of preparation for creative design activities, and the extended solving of metric problems helps to form research competence.

The competence-based paradigm of education assumes that the educational process is directed to the individual. In this case, the task of the teacher is to organize the educational process, in which the main focus is on the independent work of students on their own educational trajectory (Klushina P.N., Petrova N. P., Kotov S.V. Modern trends in the development of higher professional education. Rostovdon, 2016. 126 p.).

In the logic of the competence-based approach to the subjects studied graphically, the importance and place of such subjects as engineering and computer graphics is determined in the formation of professional competencies at the bachelor's level of education. Also, since the language of these subjects is the language of technology, subjects aimed at teaching this language are included in the program of educational subjects in the direction of "Technology".

The technology of teaching engineering and computer graphics developed in our research involves the formation of components of professional competence of future engineers, taking into account the content of graphic sciences. The following rules are used in the development of technology:

1. Reasonably prove the importance of graphic arts in the professional training of service bachelors.
2. It is considered that students study graphics subjects from the first semester to the fourth semester.
3. The goals and tasks of the educational process are determined by the relevant content of the subjects and their correct methodical provision.
4. The interdisciplinarity of disciplines such as engineering and computer graphics, as well as the integration and integration of disciplines with other disciplines are clearly related to their future professional activities.
5. Special features of studying such subjects as engineering and computer graphics are taken into account.

Based on the results of the application of technology, in this research, the impact on the development of professional skills of future engineers was analyzed in the teaching of subjects such as engineering and computer graphics. It is appropriate to note that the level of formation of all components of students' professional competence has increased.

As a result, for the reliability of the scientific results of the above-mentioned research, in our research work, taking into account the competence of future engineers, not specific competencies, this concept is much broader, including not only cognitive and activity components, but also motivation. Includes.

It should be noted that, taking into account the opinions noted by some authors, in this research, competence is understood as a unique characteristic of a person, i.e. having a certain set of competencies.

Thus, in this study, competence is considered as the integrative characteristics (opportunities, motives, knowledge, skills) of a person that ensure the successful implementation of future professional activities.

According to the State educational standard of higher education, the future engineer in the field of service must acquire general cultural, general professional and professional competences.

The professional competence of future engineers, which was recorded in the educational standard in our research work, is as follows: general cultural (skills of self-organization and independent learning - OK-5); general professional (willingness to solve professional problems on the basis of bibliographic and information culture, using information communication technologies and taking into account information security - GPC-1): professional (skills of service process development, including customer requirements according to); on the basis of modern information and communication technologies - PC-7) collects competencies in its structure:

As a result of studying the literature, it was found that competence is manifested in the possibility of success of a person, reflects the fact that he has knowledge and experience in practical use, in this regard, the following components of competence can be distinguished: motivational, cognitive, activity.

In order to achieve more reliable experimental work and objective results, the content of each component is determined in our research work.

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It should be noted that engineering activities in the field of service are related to solving creative professional problems that do not have a clear solution, so success requires motivation. Motivation, I.A.Zimnyaya is an "alloy", a complex combination of the driving forces of behavior that opens up to the subject in the form of needs, aspirations, interests, ideals, goals that directly determine human activity (Zimnyaya I.A. Pedagogical psychology. M., 2000. 484 p.).

LIST OF USED LITERATURE:

1. Хуррамов, М. Г., & Шойназаров, Р. М. (2017). СПОСОБ ОЧИСТКИ НЕДОСТАТОЧНО ОЧИЩЕННЫХ СТОЧНЫХ ВОД. In Экологическое благополучие и здоровый образ жизни человека в 21 веке: политико-правовые, социально-экономические и психолого-гуманитарные аспекты (pp. 143-146).
2. Хуррамов, М. Г., Хуррамова, Д. М., Хуррамова, С. М., & Шойназаров, Р. М. (2021). Энергосберегающее устройство для выделения волокнистых и грубодисперсных примесей из технологических стоков красильно-отделочного производства. Известия высших учебных заведений. Технология текстильной промышленности, (3), 132-135.
3. Хуррамов, М. Г., & Шайназаров, Р. М. (2017). БЕЗОТХОДНЫЙ СПОСОБ УТИЛИЗАЦИИ ОСАДКОВ ПРОМЫШЛЕННЫХ СТОЧНЫХ ВОД С ЦЕЛЬЮ ИСПОЛЬЗОВАНИЯ В КАЧЕСТВЕ КОРМОВОЙ ДОБАВКИ И УДОБРЕНИЯ. In ПРОБЛЕМЫ РЕКУЛЬТИВАЦИИ ОТХОДОВ БЫТА, ПРОМЫШЛЕННОГО И СЕЛЬСКОХОЗЯЙСТВЕННОГО ПРОИЗВОДСТВА (pp. 797-800).
4. Mamayusubovich, S. R. (2022). Didactic Principles Aimed at the Development of Electronic Publications. Eurasian Research Bulletin, 14, 123-128.
5. Mamayusubovich, S. R. (2022). Model For the Formation of Professional Competence of Bachelors in the Field of Service with the Help of 3D Technology and Graphic Visualization. Eurasian Scientific Herald, 8, 17-20.
6. Хуррамов, М. Г., Шойназаров, Р. М., Хуррамова, Д. М., & Хуррамова, С. М. (2019). Способ доочистки технологические стоков красильно-отделочного производства. Энергосбережение и водоподготовка, (2), 21-24.
7. Shaynazarov Ravshan Mamayusubovich. (2023). POSSIBILITIES OF VISUAL ELECTRONIC EDUCATIONAL PUBLICATIONS IN THE FORMATION OF PROFESSIONAL QUALIFICATIONS OF BACHELORS IN THE FIELD OF SERVICE. American Journal of Pedagogical and Educational Research, 18, 184–189. Retrieved from https://americanjournal.org/index.php/ajper/article/view/1521
8. Shaynazarov Ravshan Mamayusubovich. (2023). MODEL AND METHODOLOGY FOR THE FORMATION OF PROFESSIONAL COMPETENCE OF STUDENTS USING 3D VISUALIZATION TECHNOLOGY IN DISTANCE EDUCATION. Conferencea, 41–46. Retrieved from https://conferencea.org/index.php/conferences/article/view/2041
9. G‘ayratovich, E. N. (2022). It Is A Modern Educational Model Based On The Integration Of Knowledge. Eurasian Scientific Herald, 5, 52-55.
10. G‘ayratovich, E. N. (2022). The Theory of the Use of Cloud Technologies in the Implementation of Hierarchical Preparation of Engineers. Eurasian Research Bulletin, 7, 18-21.
11. Gayratovich, E. N., & Yuldashevna, T. O. (2020). Use of visualized electronic textbooks to increase the effectiveness of teaching foreign languages. European Journal of Research and Reflection in Educational Sciences Vol, 8, 12.

12. Ergashev, N. (2021). METHODS OF USING VISUALIZED EDUCATIONAL MATERIALS IN TEACHING PROGRAMMING LANGUAGES IN TECHNICAL UNIVERSITIES. INNOVATION IN THE MODERN EDUCATION SYSTEM.
13. Ergashev, N. (2020). Didactic fundamentals of electronic books visualization. An International Multidisciplinary Research Journal.
14. Ergashev, N. (2020). Using the capabilities of modern programming languages in solving problems of technical specialties. An International Multidisciplinary Research Journal.
15. Ergashev, N. (2021). ЎКУВ МАТЕРИАЛИНИ ВИЗУАЛ ТЕХНОЛОГИЯЛАР АСОСИДА НАМОЙИШ ЭТИШНИНГ ЎЗИГА ХОС АСПЕКТЛАРИ. Scienceweb academic papers collection.
16. Ergashev, N. (2022, May). FEATURES OF MULTI-STAGE TRAINING OF TEACHERS'CONTENT TO PROFESSIONAL ACTIVITIES USING CLOUD TECHNOLOGY IN THE CONDITIONS OF DIGITAL EDUCATION. In International Conference on Problems of Improving Education and Science (Vol. 1, No. 02).
17. Ergashev, N. (2022, May). THEORETICAL STAFF TRAINING USING CLOUD TECHNOLOGY IN CONTINUING EDUCATION. In International Conference on Problems of Improving Education and Science (Vol. 1, No. 02).
18. Ergashev, N. (2022, May). PROBLEMS OF USING DIGITAL EDUCATION IN PEDAGOGICAL THEORY AND PRACTICE. In International Conference on Problems of Improving Education and Science (Vol. 1, No. 02).
19. Ergashev, N. (2022, May). THEORY OF TRAINING OF PEDAGOGICAL PERSONNEL IN HIGHER EDUCATION USING CLOUD TECHNOLOGIES IN THE CONDITIONS OF DIGITAL EDUCATION. In International Conference on Problems of Improving Education and Science (Vol. 1, No. 02).
20. Ergashev, N. (2022, May). PROBLEMS OF DIGITAL EDUCATION IN PEDAGOGICAL THEORY AND PRACTICE. In International Conference on Problems of Improving Education and Science (Vol. 1, No. 02).
21. Ergashev, N. (2021). METHODS OF USING VISUALIZED EDUCATIONAL MATERIALS IN TEACHING PROGRAMMING LANGUAGES IN TECHNICAL UNIVERSITIES. INNOVATION IN THE MODERN EDUCATION SYSTEM.
22. G'ayratovich, E. N. (2022). The Problem of Training Future Engineer Personnel on the Basis of Cloud Technology in Technical Specialties of Higher Education. Eurasian Scientific Herald, 13, 1-4.
23. Ergashev, N. (2023). Bulutli texnologıyalarda mavjud tahdidlar, ularga qarshi kurashish mexanizmları va metodlari. Electron Library Karshi EEI, 1(01). Retrieved from https://ojs.qmii.uz/index.php/el/article/view/273
24. Ergashev, N. (2023). ОЛИЙ ТАЪЛИМ ТЕХНИКА ИХТИСОСЛИКЛАРИ ЎҚУВ МАТЕРИАЛЛАРИНИ ДАСТУРИЙ ВИЗУАЛЛАШТИРИШНИНГ ИЛМИЙНАЗАРИЙ

АСОСЛАРИ. Electron Library Karshi EEI, 1(01). Retrieved from https://ojs.qmii.uz/index.php/el/article/view/270

25. Ergashev, N. (2023). Texnika ixtisosliklari mutaxassislik masalalarini yechishda C++ visual dasturlash tilida klasslardan foydalanish tahlili. Electron Library Karshi EEI, 1(01). Retrieved from https://ojs.qmii.uz/index.php/el/article/view/272

26. Ergashev, N. (2023). Methods of teaching parallel programming methods in higher education. Electron Library Karshi EEI, 1(01). Retrieved from https://ojs.qmii.uz/index.php/el/article/view/271

27. Ergashev, N. (2023). Raqamli ta'lim sharoitida bulutli texnologiyalar yordamida o'qituvchilarni kasbiy faoliyatga ko'p bosqichli tayyorlashning nazariy aspektlari. Electron Library Karshi EEI, 1(01). Retrieved from https://ojs.qmii.uz/index.php/el/article/view/274

28. ERGASHEV, N. THE ANALYSIS OF THE USE OF CLASSES IN C++ VISUAL PROGRAMMING IN SOLVING THE SPECIALTY ISSUES OF TECHNICAL SPECIALTIES. http://science. nuu. uz/uzmu. php.