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THE IMPORTANCE OF THE USE OF 3D PRINTERS IN THE FIELD OF TECHNOLOGICAL EDUCATION

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Abstract: This article discusses the importance of the use of 3D printers in the disciplines of technical creativity and design, product manufacturing technology and home economics in the block of specialties of technological education of higher education institutions. The general requirements for the content of the curriculum and science programs of the bachelor's degree in technology education are as follows. In accordance with the curriculum and subject programs of the bachelor's degree program, the description of the professional activities of bachelors in the field of education and the requirements for their professional competencies, students must master compulsory and elective subjects, internships and as a result, it is developed in a context that ensures that they acquire the necessary knowledge, skills and competencies in their professional activities.

Keywords: Engineering, technology, 3D printer, 3D blender, robot, robotics, model, layout, production.

INTRODUCTION

From the first years of independence, our country has paid special attention to the radical reform of the education system, ensuring that our children acquire modern knowledge and skills at the level of world standards, grow into physically and spiritually mature people, their abilities and desires. Great work is being done to reveal the spirit, intellectual potential, to raise the feelings of devotion and devotion to the Motherland in the hearts of the younger generation.

The role of a teacher of technology in fulfilling the social order to prepare students for effective work in various sectors of the economy, the conscious choice of professions, the requirements of general secondary education in our country is invaluable. In order to fulfill this task of national importance, the teacher of technology needs to develop general knowledge, skills and abilities, professional competencies and develop the achievements of pedagogy, psychology, methodological sciences, modern techniques and advanced technologies at the level of the requirements of the dynamically developing pedagogical process which, requires excellent knowledge and skills in production and market economy relations.

In this regard, the scope and quality of knowledge, skills and abilities of a teacher of technology, his achievements in organizing and conducting the educational process in accordance with the requirements of general secondary education SST and to identify the didactic conditions of the process of improving the complex and multifaceted activities related to the shortcomings, professional skills and similar labor activities, to develop a method of control based on the optimal choice of its form, type, method and means, enriching its content, the analysis of the organizational work carried out in this area throughout the country requires that all activities in this area be organized on a scientific and methodological basis. Based on the above considerations, it can be said that the focus on future technology science teacher training needs to be strengthened.

MATERIALS AND METHODS

Undergraduates in the field of technological education cover various aspects of their professional activities: technological knowledge, scientific relations with production, research, pedagogical (general secondary schools and vocational schools). [1]

The general requirements for the content of the curriculum and science programs of the bachelor's degree in technology education are as follows. In accordance with the curriculum and subject programs of the bachelor's degree

program, the description of the professional activities of bachelors in the field of education and the requirements for their professional competencies, students must master compulsory and elective subjects, internships and as a result, it is developed in a context that ensures that they acquire the necessary knowledge, skills and competencies in their professional activities. The curriculum is based on a credit-module system.

In this case, the schedule of the educational process, study time per week, certifications, internships, vacations, semesters, "Natural Sciences and Humanities", "General Sciences", "Specialty Sciences", "Additional" subjects", types of classes, allocated hours, credits, code of disciplines, state certification, etc. Compulsory and elective subjects to be included in the curriculum are determined by the basic higher education institutions in cooperation with related higher education institutions.

Analyzing the purpose of teaching science, education, production needs and technological education today, we can say that it is expedient to organize practical, laboratory classes in technological education classes using modern techniques and technologies. One such technology is 3D printers. This device, which is considered one of the technologies of the XXI century, is in demand by any professional. It can also be used in the effective organization of technological education classes. Using it requires a certain knowledge and creativity from students.

Methods of using 3D printers in teaching the subjects of Technical Creativity and Design, Product Technology, Basics of Home Economics in the block of specialty sciences will be considered. The advantage of using 3D printers in technical creativity and design classes is that students use not only manual labor but also computers to engage in creative activities. You can draw any object model using Blender 3D software. Using this program requires knowledge, skills and creativity from the student.

The purpose of teaching the subject of technical creativity and design is the socio-pedagogical problems of developing students' technical creativity;

organizational bases of technical creative activity; inventions, discoveries, rationalization proposals and patent information; methods of solving problems of technical creativity; design and modeling; basics of ergonomics and design; technical modeling and design; to guide the technical creativity of students, to organize technical creativity in the classroom and out of school; to teach students issues such as developing technical creativity and developing the ability to apply them in practice.

One of the most important tasks is to develop students' technical thinking and creative attitude to work, to raise scientific and technological progress to world standards, to radically improve product quality, to educate the younger generation to ensure high production efficiency.

RESULT AND DISCUSSION

Through the formation of knowledge and skills in the basics of creative activity in future professionals, a thorough mastery of the basics of production and the formation of technical, technological and design qualities inherent in modern production. Students can design and model an object quickly and efficiently using a computer without the use of manual labor, paper and pencil. Using Blender 3D, the model of the product is drawn in exact dimensions. The finished model is converted to 3D format and printed using a 3D printer. Plastic (PLA, PET) materials are used in model printing. The result is a realistic view of the model designed by the student, which increases the student's interest in science, technology. 3D printers can be used in any science class. It is possible to draw any detail of any item. It is also widely used in the field of robotics. The aim is to teach students of technological education to design and model robots. In the process of making a robot, any plastic detail is printed on a 3D printer.

The technical creativity and design science program is designed to teach students the design and modeling of machinery, aircraft, ships and similar equipment. Today, the first task of higher education institutions is to provide students with quality education, to put into practice the acquired knowledge and

skills. In order to ensure the quality of the lessons, it is necessary to study the education system of developed countries. At present, foreign experience is being used in our country as well. Of these, a number of decrees and decisions on the introduction of a credit module system in higher education have been adopted and implemented. General secondary education is provided to students in the presidential schools on the basis of the STEAM education system. Robot design, modeling and design work are at the forefront of modern schools. One of the most pressing issues is the need for more technical education to increase the competitiveness of our country.

Today, STEM education provides an opportunity to train highly qualified professionals who will make a significant contribution to the development of society and the state. It is well known that the modern education system, unlike traditional education, is a mixed environment that allows showing how the scientific-theoretical and methodological methods studied in practice can be applied in everyday life. In addition to math and physics, students learn robotics and programming. In this process, students see first-hand the practical implications of their knowledge of the exact and natural sciences. 3D printers are also used to teach STEAM.

3D printers can also be used in the organization of practical training "Learning to make jewelry" in the science program of production technology.

The purpose of teaching science is to educate students to become masters of their profession, the technology of making products and products, the selection and preparation of raw materials for the manufacture of products and products, the technology of processing of raw materials and products in the manufacture of products and products. to provide basic knowledge of the subject; to develop students' basic knowledge and understanding of the technology of production of goods and products, to teach the selection and preparation of raw materials for the manufacture of goods and products, technology of assembly and preparation of products, technology of decoration, decoration and design of finished products,

formation of knowledge, skills and competencies in the field of occupational safety and health, modern production processes and technology of their use in the manufacture of goods and products.

The purpose of teaching the basics of home economics is to teach students the methods of repair and design of household appliances, the traditions of the industry in our country, as well as modern trends and the development of houses and apartments which, is the formation of skills and competencies about the main types of glazing work and others.

In this discipline, the rules of use of household appliances in the organization of practical training, methodological recommendations for their repair are given. There is a need for plastic parts when repairing and adjusting any household appliances. In such cases, it will not be possible to find plastic parts, and then we will be able to use the 3D printer. Any plastic detail can be made with this device. It is possible to make models and mock-ups of various products using plastic materials. Nowadays, folk handicrafts are widely used in jewelry. Jewelers make jewelry in the desired shape according to the customer's order using a 3D printer.

CONCLUSION

In conclusion, it is important to teach students the techniques of tomorrow, not yesterday or today. That is why it is important to teach students of technological education in higher education institutions to use 3D printers.

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