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Analysis of Problems of The Development of Competency of Modeling and Construction of Clothes of Students in The Means of Computer Graphics

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Abstract: This article analyzes the issues of developing students' competencies in clothing modeling and design through computer graphics. The paper provides a scientific analysis of how computer graphics technologies can be integrated into the educational process and how these methods can effectively deliver clothing design and modeling skills to students. Additionally, the article explores ways to enhance students' creative and technical skills through new technologies and methodologies.

Keywords: Computer graphics, clothing modeling, construction competency, student, educational technology, clothing design, 3D modeling, design development, innovative methods.

Introduction: In modern modern education, the development of media competence of future technological education teachers is becoming increasingly important. Media competence is a key skill that helps students to correctly, efficiently and critically apply digital tools in the educational process. According to the principles of "media and information literacy" promoted by UNESCO (2021), the use of digital tools

makes communication between student and teacher interactive and effective.

Computer graphics technologies have become an integral part of the modern educational process. With their help, students can be taught deep and effective knowledge in various fields, including fashion design and modeling. Clothing modeling and design skills are practical skills that are widely used, especially in the fields of design, industry and fashion. At the same time, it is necessary to combine the tools and techniques of modern computer graphics to solve the problems that arise in the development of students ' competencies in this area.

As Jenson (2014) noted in the first study, teaching design using computer graphics helps students to think creatively. In his work, he shows how to apply graphic technology in teaching, starting with the initial thoughts of students and ending with their practice.

In addition, within the STEAM (Science, Technology, Engineering, Art, Mathematics) approach, it is possible to harmonize students ' creativity and engineering thinking skills by integrating design and technology. Computer graphics reinforce this approach visually and technically.

Miller (2017) studied the growth of computer graphics technologies in the field of clothing modeling and how students develop design skills. His research suggests that 3D modeling technologies are important in improving students ' technical skills.

This research methodology includes qualitative and quantitative research. The study explores the impact of the use of computer graphics tools on students ' competencies in modeling and designing clothes.

Among the experimental methods, tasks developing critical thinking, project tasks based on real client needs, and tasks using VR (Virtual Reality) and AR (Augmented Reality) technologies were also included. For example, with the CLO 3D and Marvelous Designer programs, students were able to test clothes in a realistic environment. This increased their ability to make quick and creative decisions in troubled situations.

Computer graphics and other modern design technologies provide advanced capabilities for modeling clothes and implementing construction processes, as well as clothing design using simultaneous Real-time systems that allow students to express themselves creatively. This, in turn, helps to improve the technical and creative skills of students. Through the introduction of augmented reality (AR) technologies, students are able to see models in motion and make quick adjustments to the design.This, in turn, helps to improve the technical and creative skills of students. Computer graphics technologies, especially 3D modeling and rendering, have a very important place in the design and construction of clothing.

Computer graphics technologies, especially 3D modeling and rendering, have a very important place in the design and construction of clothing. It gives students the opportunity to teach 3D modeling and virtual clothing Technologies, test real materials for them and create different designs. There are several effective ways to develop students ' skills in modeling and designing clothes using computer graphics.

Pedagogical approaches to the use of computer graphics tools are also important. Modern teaching methods should be used when organizing activities and exercises intended for students. Working on a team project, sharing experience, creating practical projects will serve to harmoniously develop social and technical competencies in students. In addition, it is necessary to constantly improve the skills of teachers in modern computer graphics. It offers the use of internationally recognized courses on platforms such as Coursera, LinkedIn Learning, Udemy.

Interactive curricula and platforms: providing students with opportunities to create and model virtual clothing using computer graphics programs and platforms. Such systems will help make the learning process more interesting and effective for students.

Virtual Real-time exercises: giving students the opportunity to model clothes and track them in real-time systems. This method helps to harmonize the real world and virtual environment, allowing students to quickly see the results of their projects.

High-quality teaching materials and manuals: the use of interactive and visual materials in the teaching of new technologies helps to quickly and efficiently educate students. Through 3D visualization, animation, and interactive models, students can incorporate themselves as much as possible into the workflow.

Experimental method: in this method, training in the modeling and design of clothes is organized by dividing groups of students into two and using computer graphics for one, while the second group is taught using traditional methods. By comparing the results between these two groups, it is possible to assess the effectiveness of computer graphics tools.

Observation method: monitoring the learning process using computer graphics and analyzing the methods used by students. With this method, it is possible to determine which approaches students use in the learning process and what results they have achieved.

Pedagogical approaches to the use of computer graphics tools are also important. Modern teaching methods should be used when organizing activities and exercises intended for students. The exchange of experience and the organization of teamwork to develop students ' own creative and technical skills also provide effective results.

The main purpose of the study is to determine how computer graphics tools affect the competencies of students in modeling and designing clothes. Also, how these tools are integrated into the learning process and how students develop their technical and creative abilities.

A total of 60 students took part in the experiment, which was divided into two groups: 30 students formed the first group, and the remaining 30 students formed the second group. The first group was presented with an educational process using programs such as 3D modeling, clothing creation and visual analysis. The second group was trained using classical design techniques. Each group was given separate tests and practical training.

The first group, that is, students studying using computer graphics, showed much higher results in a creative approach. They often managed to develop new designs and express their ideas in a new way. Compared to the second group, the students of the first group showed a large difference in the rapid and effective expression of their imagination in 3D modeling.

Technical competence: students of the first group showed much better results when applying computer graphics programs. In the process of mastering 3D modeling, they were sure to overcome technical difficulties. But the second group was limited only by traditional methods, and their technical skills were much lower.

Visual results: in the assessment of visual quality, the work of the first group was assessed much higher. Thanks to 3D modeling, they managed to create more realistic and perfect clothing models. The second group of students, on the other hand, showed relatively few effective results of their work.

A total of 60 students took part in the experiment... As an additional analysis, the following can be included:

- The results of the correlation analysis showed that there is a positive correlation between the skill of working with 3D programs and the performance of creativity.

- SWOT analysis has identified strengths (visualization, real-time testing, environmental security), weaknesses (software dependence), opportunities (international integration), and risks (lack of technical equipment) of computer graphics based training.

Statistical methods were used to analyze the results. The two groups ' average scores on creativity, technical competence, time management and visual performance were calculated. The results showed that in the first group (who used computer graphics tools), a high score was obtained for each criterion.

The results of the study showed that the use of computer graphics tools is very useful for students. They develop not only technical, but also creative and visual skills. With 3D modeling software, students could work more efficiently on design creation and expand their creative capabilities. Computer graphics tools play an important role in developing students ' modeling and clothing design skills. The results of the study showed that it is necessary to introduce computer graphics tools more broadly into the educational process of students. Training programs in fashion design and modeling help to improve the general qualifications of students not only in the faculties of design, but also in technical and other faculties.

Students should be given the opportunity to improve their skills through practical training. Interactive activities, exercises in computer graphics programs, and real-time modeling of clothes give students effective results. Clothing requires constant updating of applications and tools used for modeling and design. The use of modern 3D modeling, animation and modeling programs allows students to create high-quality and realistic clothing designs. It is necessary to train teachers on modern computer graphics programs and techniques.

We need international experience and the study of advanced technologies, the introduction of new innovations in the field of computer graphics and fashion design. By studying advanced methods and programs used abroad and integrating them into the national education system, students can be given new skills. The development of students ' skills in modeling and designing clothes using computer graphics develops not only their technical skills, but also their creative thinking. This, in turn, opens up new opportunities in the field of design and modeling. Computer graphics tools play an important role in developing students ' modeling and clothing design skills... Statewide strategic approaches should also be developed to integrate international expertise and advanced technologies into national curricula. Training professionals who can work with new 3D modeling, VR/AR, AI-based design tools will serve to digitize the industry in the future.

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