



**METHODOLOGY FOR USING SCAMPER
TECHNOLOGY TO IMPROVE STUDENTS'
CREATIVE ABILITIES IN COMPUTER GRAPHICS**

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Abstract. *This article provides an analysis of research conducted to improve the creative abilities of university students, proposals and recommendations for the use of SCAMPER technology in teaching computer graphics subjects.*

Keywords: *computer graphics, visual project, Scamper, program, productive, ability*

Introduction: Today, many applications related to computer graphics have been created, which can be used to perform various project tasks. Therefore, when effectively organizing practical classes in professional disciplines related to computer graphics and when students perform various project work using practical programs, it is first necessary to form their skills in working with computer graphic programs. For this, it is recommended to use practical tasks of a productive level.

After the formation of students' skills in computer graphic programs, it is advisable to give them practical assignments to improve their creative abilities. By increasing students' creative abilities in computer graphics, it is possible not only to work with graphic programs, but also to solve practical problems and independently prepare animation effects and various advertisements, and independently design websites.

Main part: According to E.B.Korobiyy, B.Lucas, E.Spencer, creativity is a complex and multifaceted phenomenon. According to them, its complexity is expressed, first of all, in the presence of many theoretical and practical directions of study. According to the American scientist D. Wechsler, creative ability requires a person to have several solutions to one problem or issue at once and, unlike template,

boring thinking, helps to understand the qualities of uniqueness, uniqueness in the essence of processes, phenomena. [1,2].

From a pedagogical point of view, creative ability characterizes the readiness to generate new ideas and expresses the meaning of the ability to be part of giftedness as an independent factor. [3]. In general, activity aimed at creating something new is understood as creative ability. A person with creative abilities should reflect such qualities as their thinking, worldview, constant striving for novelty, constant work on themselves, the ability to find a solution to a problem in an unusual way compared to other people, and being an interesting conversationalist. Creative ability plays an important role not only in the creation of new ideas, but also in the improvement of lifestyle or individual aspects and the development of the inner world of the individual.

Based on the above, it can be said that computer graphics skills are the development of various graphic projects, the creation of complex animation effects, and the modeling of various graphic products based on non-standard thinking methods. Therefore, such problems are solved through modern teaching methods. "Therefore, it is necessary to develop the creative abilities of university students in computer science and information technology, including computer graphics and web technologies" [4]. For this, it is recommended to use graphic tasks of the partial-search level.

After developing students' creative abilities, it is necessary to direct them towards research. By creating various projects using computer graphics programs, it is possible to develop students' research skills. For this, it is important to use practical tasks of a creative level.

Thus, one of the main tasks of the study is the use of tasks of the above-mentioned four levels in the effective organization of practical classes in computer graphics in professional disciplines. Their implementation requires the use of modern educational technologies. Therefore, within the framework of the study, the

use of scamper technology in the effective organization of practical classes in professional disciplines related to computer graphics is envisaged.

Scamper technology is a creative technique used to stimulate thinking and generate new ideas. This method was developed by Alex Faivelevich Osborn, a well-known specialist in problem-thinking and inventive techniques, which can be applied in various fields, including business, education, and creativity[5]. The abbreviation Scamper means [6]:

1) thinking: asking what can be replaced in an existing product, process, or idea. Is it possible to replace some elements with new ones or others?

2) ordering: considering how to combine different elements or ideas to create something new and unique. What components can be combined to create a new solution or product?

3) explanation: how can an existing idea or process be modified to adapt to new conditions or situations? What aspects can be adapted to get the best solution?

4) discussion: you are asked to consider making changes to an existing product or process. What aspects can be changed to improve the idea or solution?

5) creation: the use of existing ideas, products, or processes in another area is requested. How can you use them in a new context?

6) development: understand what can be removed from the existing solution or process. What elements can be excluded without disrupting the overall result?

Each stage of the Scamper technology methodology allows one to look at the problem or idea from different angles and search for new ways to improve or develop it. This helps stimulate creative thinking, discover new opportunities, and develop innovative solutions.

Scamper technology is a pedagogical method used in teaching computer graphics. This method is based on the stages of thinking, ordering, explanation, discussion, creation, and development (Scamper), which helps students learn to manage their thoughts and imaginations.

1. Thinking (Substitute): You can give students problems about replacing various elements of computer graphics and transforming them into other objects. For example, you can get their opinion by asking, "What do you replace this image with?"

2. Ordering (Combine): You can give students problems to create new objects by combining elements of computer graphics. For example, you can ask, "You combine these two images and create a new composition."

3. Explanation (Adapt): You can ask students to create new adaptive objects using existing computer graphics elements. For example, you might ask, "What changes will you make to apply this image to the advertising poster?"

4. Discussion (Modify): Students can be given tasks to create new images by changing computer graphics elements. For example, you might ask, "How else can you edit this image by changing the colors?"

5. Creating (Put to another use): You can give students tasks to create objects that adapt computer graphics elements for other purposes. For example, you can ask, "Create a new logo inspired by this image."

6. Eliminate: You can give students the task of selecting objects that are enabled for one of the elements of computer graphics and creating their images. For example, you might ask, "How do you change this image if it's different from the other one?"

Conclusion: Scamper technology develops students' own thoughts and inquisitiveness, increases their level of creativity. Applying this method in teaching computer graphics is an interesting and effective way for students to learn computer graphics and simplify its concepts.

Thus, based on the model, stages, and standard task developments for organizing the above-mentioned practical classes, it is possible to increase the effectiveness of teaching professional disciplines related to computer graphics, develop students' competence in designing various graphic projects, animation effects, and web applications.

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