PEDAGOGICAL CONDITIONS FOR THE DEVELOPMENT OF ARTISTIC AND CREATIVE ABILITIES OF STUDENTS OF "ART AND ENGINEERING GRAPHICS" IN THE PROCESS OF STUDYING COMPUTER GRAPHICS

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Abstract. Computer graphics is considered a separate department of information communication technology, and it is important to solve problems of an artistic and creative nature in open conditions from algorithmic thinking. It should be noted that the purpose of education is to use the computer as an educational tool, which is a modern level of education informatization, and the wide development of electronic educational resources in various subjects, testing and control of the computer. we consider it permissible to confess. This leads to the expansion of the content, forms and methods of education. At the same time, in order to create a consistent and didactically appropriate educational environment, it is necessary to emphasize the need to maintain a certain balance between new and optimal methods of traditional teaching and educational technologies.

Key words: computer, visual arts, graphics, media, education, technology, innovation, engineering, graphics, artistic creativity, ability, student, development, science, knowledge, skill, skill, modern, electron.

It is known to everyone that systematic work is being carried out in our country in the following years to form a national information system, to expand the use of modern information and communication technologies in all aspects of state and community life.

In particular, the content of modern art-pedagogical professional education includes various types of art-creative activities that allow to improve the professional and general culture of future pedagogues-artists. In the formation of such specialists, computer technologies - computer graphics, including three-dimensional, play an increasingly important role. In the conditions of modern pedagogical reality, the environment is considered as a constantly changing educational environment, and it

should be recognized that the practical experience of using information and communication technologies (ICT) further expands educational opportunities.

Computer graphics – a separate branch of ICT, which is more important than algorithmic thinking in solving artistic and creative problems in an open environment. In this case, the goal of education is the modern level of education informatization - the use of the computer as a teaching tool, the wide development of electronic educational resources in various subjects, testing and control of the computer. allowed this leads to the expansion of the content, forms and methods of education. At the same time, in order to create a coherent and didactically appropriate learning environment, it is necessary to maintain a certain balance between the most appropriate methods of traditional teaching and new educational technologies for the successful formation of professional qualities of future artists, designers and other specialists in art education, computer technology and traditional types of visual activity - from drawing and technical drawings to fine art graphics, from photography to manual work. large models integration of these processes is important.

Computer graphics means a set of techniques and methods of processing visual information using a computer. Computer graphics – a set of hardware and software tools for creating, storing and visualizing graphic data using a computer. Graphic information means models of objects and their images.

Initially, the term "computer graphics" meant only a visual form of displaying the results of mathematical calculations, later its meaning gradually expanded significantly. Now it is related not only to scientific, engineering and business graphics, but also to the whole range of computer technology related to visual arts.

The use of computer technologies in various fields of education requires the identification and use of relevant scientific concepts and terms: "computerization of education", "computer literacy", "media education", etc. The term "computerization of education" is widely known. No. meaning is a modern trend in the development of didactics and specific methods of teaching. This concept includes a set of theoretical concepts and technologies developed for computer education, curriculum design. Also, the term "computerization of education" is understood as "computer learning", "computer literacy" means the knowledge and skills necessary for every person in the conditions of the information society. There are unofficial world standards that classify people who know how to work with computers: 1. user; 2. advanced user; 3. programmer; 4. system administramanager.

Media education is a branch of pedagogy that teaches students about mass media: press, television, radio, film, video, audio equipment (tape recorders, players, hubs, tuners), telephony (SMS messages), electronic and computer products (CD). includes preparation. -based on ROMs, multimedia encyclopedias and educational games), the Internet (educational, cognitive, informational, technological sites and

WEB-quests; WEB-conferences; online or distance education programs through consultations and classes), etc.

Computer graphics are widely used in the following areas: modern publishing, polygraphy, graphic design, WEB-design, electronic textbooks, digital photography, computer educational games, three-dimensional graphics, virtual reality simulation systems (for example, airplanes management simulators) and others.

Virtual modeling is used to create realistic three-dimensional images and composites from them. Based on the synthesis of three-dimensional shapes from flat elements and their animation. Computer graphics does not require special technical training for work, but requires the presence of spatial imagination and artistic and creative abilities. The implementation of models requires the study of cinematographic methods of management and planning, that is, directing and scripting. It allows for the development of realistic models, spatio-temporal compositions, and independent narrative works for various purposes.

According to the method of presentation of graphic information, computer graphics are static and moving, each of them, in turn, is divided into two-dimensional, three-dimensional and fractal graphics according to the type of image formation and processing algorithms.

Two-dimensional computer graphics are divided into vector, raster and fractal graphics according to the type of presentation of graphic information. Vector graphics represent an image using mathematical formulas. A drawing is stored as a set of coordinates, vectors, and other numbers describing a set of primitives.

Raster graphics always work on a two-dimensional array (matrix) of pixels. Each pixel is assigned a value - brightness, color, transparency, or a combination of these values. Raster graphics have fewer rows and columns.

Three-dimensional graphics work with objects in three-dimensional space. Usually the results are in the form of a flat image, a projection. Fractal graphics, like vector graphics, are based on mathematical calculations, or rather, fractal geometry. A fractal is a structure made up of parts that resemble a whole and have fractional dimensions. Since the detailed description of elements of smaller size is carried out according to a simple algorithm, such an object can be described by several mathematical equations.

There are many programs for working with graphics. Special programs that allow you to correct a digital image, perform various manipulations with it, for example, increase / decrease the brightness or contrast of a certain color or the general tone of the image, change its size and finish with complex changes; create collages, remove unnecessary details from the photo.

All of them differ in size, functions and capabilities. For example, Adobe Photoshop, Adobe Illustrator and Corel DRAW are the most popular and widely

recognized graphic editors. A graphics editor is a program used to create, edit, save, and display graphics.

Computer graphics play an important role in creating conditions for the development of students' creative abilities. At the same time, graphic editors make it easy to create images in graphic design and design. Due to their uniqueness, they not only shorten the way to create an image, but also allow to find different ways to solve a problem, so graphic programs can be considered as a tool for developing students' flexible, holistic thinking and creativity.

The following goals are set in teaching computer graphics: mastering visual forms of information presentation, artistic expression tools (shape, color, rhythm, proportions, composition), methods of visual organization (stylization, transformation) and visual information. development of professional qualities of students with the help of graphic editors based on understanding as a tool.

Visual culture complements the traditional forms of communication between people - the culture of direct communication and the culture of writing (books).

If the process of teaching computer graphics is carried out correctly, conditions will be created for the formation of the following qualities: the ability to creatively solve problems, find original solutions; logical thinking; spatial-figurative thinking; design culture as one of the aspects of artistic and aesthetic development of students; the ability to successfully solve problems of an artistic nature, to develop the artistic taste of future professionals.

The education of students of the Faculty of Arts includes various disciplines of the artistic cycle: drawing, painting, composition, shaping, the basics of applied decorative art, decorative drawing and decorative composition of graphics, types of applied decorative art (painting, carpentry, woodcarving, pottery, etc.), design.

There are two contrasting approaches in the practice of teaching computer graphics: 1. A graphic program is used as a learning goal, as a result of which students have a standard system of skills for working with various graphic editors and standard methods of achieving it formed results are determined; 2. The graphic editor is used as an auxiliary tool in solving their artistic ideas, as a result, students develop the skills to solve visual problems within the framework of sample programs, and the need and skills to find their own ways to achieve results are formed. formed different programs are created.

Apparently, the second approach is effective. The advantages of computer graphics, which determined the prospects of this type of activity - availability, quick solution of complex graphic tasks - require a reconsideration of approaches to its creative component.

The volume of purely technical training in this subject includes a certain technical minimum, knowledge of new information technologies and experience in

working with graphic software packages. It is important that more future professionals master the methods of visual presentation of information, taking into account the rules of composition, color and style requirements. It should be noted that the main requirement for an image specialist is to effectively manage the methods of presenting information verbally and graphically.

Artistic training of future specialists in art pedagogy such as "Chizmatasvir", "Rangtasvir", "Composition" (teachers of fine arts, pedagogues of professional education in the field of design). based on the content of the courses. In the subjects of "Composition", "Colorology", "Designing", "Typewriting", certain ideas about the artistic taste and quality criteria of students are formed. To create a full-fledged product with the help of different graphic editors, it is desirable to flexibly apply different knowledge and reduce them to solve specific problems in order to avoid miscalculation of the artistic plan. The process of teaching computer graphics not only allows to combine different fields of knowledge, but also requires such integration.

Integration (Lat. integration - restoration, filling from whole number - whole) 1) System, integration of differential parts and functions of the body into a single whole. 2) the process of rapprochement and connection of sciences that occurs along with the process of differentiation.

The integration of education means the purposeful implementation of the connection between the content of the educational material and the educational activities previously included in different educational subjects or subjects in order to achieve the synthesis of knowledge and activities, facts or events. In particular, it is appropriate to emphasize the understanding of the whole structure of activities, the complex of interrelated subjects, opened by students from different points of view.

Interdisciplinarity in the process of teaching computer graphics, combining the knowledge gained in the process of mastering the material of various educational subjects allows: to develop the artistic and creative abilities of students, the flexibility of thinking, and to increase their creative abilities knowledge and creative activity; more effective teaching of graphic language comprehension; "scanning" old knowledge on various topics of the art cycle and engaging students in creative research activities in order to find the necessary information and the right solution; solving practical problems using computer graphics; implementation of research projects using computer graphics; development of design and visual-graphic culture of future professional designers.

At the same time, it is appropriate to consider graphic programs as a means of teaching the basics of artistic activity and developing the artistic and creative abilities of students.

Educational tools are material and natural objects, as well as artificially created by man, carriers of educational information in the educational process and teaching, teacher and student learning. and used as a means of action to achieve development goals.

Computer graphics belongs to the group of technical means of teaching; according to its characteristics, it is a complex, audiovisual, virtual, electronic, innovative tool with the following functions: compensation - recovery, saving energy and time, easing the nature of work (both for the student and for the teacher) ; information - getting to know the necessary educational information; integration - the ability to consider an object or phenomenon both as a whole and in terms of its constituent elements; instrumentality - performance of technically safe and reasonable actions by students and teachers, education of pedagogical work culture.

It is important to use the knowledge, skills and abilities that affect students' ability, first of all, their artistic and creative development in the process of mastering the content of teaching the basics of computer graphics.

The content of educational activities in the field of computer graphics is determined by the following factors: the studied object - the structure of a personal computer, its capabilities and the studied program material; division of activity into theoretical (theoretical foundations of computer literacy) and practical (program of skills and competencies for working with various graphic editors); the structure of personal characteristics corresponding to the specific characteristics of the activity being mastered, that is, the qualities related to the subject of the activity - the ability to find alternative solutions, such as flexibility of thinking, creativity; placement of educational material in accordance with the age and psychological characteristics of learning this activity experience; individualization of education according to the interests, inclinations and abilities of students; summarizing the components, it should be noted that the content of education and training in the field of computer graphics is determined by two factors: the structure of the field of education and the structure of activity.

It is known that in order to create qualifications, it is necessary to carry out special work on the content of educational activities that clearly define the program of knowledge and qualifications. In particular, the theoretical foundations of the introduction of various types of activities that provide the opportunity to perform specific tasks that are both typical and leading elements of creativity at each stage of student education.

If we turn to computer graphics, it should be noted that the clear presence of graphic programs leads students to remember standard solutions, which allows them to revise the information obtained, develop their skills and solve problems. makes it difficult. leads to better understanding. ways of doing things. In this case, the

effectiveness of teaching decreases sharply, which affects the quality of professional training of students.

It is possible to increase the effectiveness of the educational material by using different methods of organizing the process. The didactic dominants and characteristics of the effectiveness of the educational process are presented in the following form.

Methods and methods of explanation and description are actively used in traditional visual arts classes. At the same time, when working with an object, the main focus is on observation, comparison and repetition. But the experience of teaching special subjects shows that these methods are effective only at the initial stages, that is, when getting acquainted with new graphic editors and tools. The explanatory-descriptive method can be used to solve visual-practical or modeling tasks in special subjects (decorative art, composition, applied decorative art, etc.). Such tasks can take the form of small learning problems to be solved during the session and large "course" projects. Reproductive teaching methods and methods, which consist of students repeating the given algorithm of actions shown by the teacher, and then getting the given result, are used at the beginning of the training to master even the simplest actions.

Basically, the use of traditional teaching methods and methods only for these two groups leads to insufficient development of artistic thinking and creative imagination, which, in turn, complicates the process of creating an artistic image. When choosing methods and methods of teaching computer graphics, students should understand themselves in a certain environment in educational graphic activities, where non-traditional approaches to the implementation of any educational work are recognized as the main means. It is very difficult to determine the specific methods and methods of teaching that show the development of certain abilities of students, because it should be noted that these processes are complex and diverse. For this, comprehensive analysis of the content of the educational material is important. Nevertheless, the research conducted by various authors and their methodological recommendations made it possible to determine the methods that have the most positive effect on the development of students' creative abilities in educational activities. One of them is a group of problem-based teaching methods and methods, which are understood as the highest form of effective and active approach to education when optimal conditions are created for the manifestation of students' independence and creativity.

Problem-based methods are based on active learning methods, in which the traditional reproductive nature of thinking (first acquiring knowledge, and then applying it) is effectively replaced by the discovery of the mechanism of phenomena and processes "for itself". enables knowledge. In other words, problem-based

learning is structured in such a way that knowledge and activity methods are not transferred in a finished form, no rules or guidelines are offered. After that, the student can be guaranteed to complete the task.

In particular, no training material is given, but problem situations are presented. This approach comes from the following: firstly, directing modern education to the education of a creative person; secondly, the problematic nature of modern scientific knowledge; third, the problematic nature of modern human practices, in unstable living conditions; fourthly, in problematic situations, the laws of development of personality, human psyche, in particular, thinking, interest and will are formed.

The correct organization of the problem method requires each student to be busy with solving any task possible for him. But to encourage them to do this, a student is sought and creates a problematic situation. This is the main condition for developing their abilities. In this regard, the development of students' creative abilities can be carried out mainly through problem-based education. In our opinion, the method of setting problems of different complexity that rapidly develops cognitive activity, helps meaningful and independent acquisition of knowledge and skills, develops students' creative abilities is the fastest and most effective way of meaningful and creative development of graphic software. worth noting. Creating an artistic image is a problem in artistic activity. This problem is solved not only in visual compositions, but also through font compositions that express a certain mood and emotional state with the power of the font. Here, the level of independence and activity of students, and the level of participation of the teacher can be different:

1. The method of showing the problem - the teacher poses a problem and shows ways out of it. In art education, this can be called creative assignment method.

2. Partial search or heuristic method consists in organizing an active search to solve cognitive tasks set in classes under the guidance of a teacher or based on heuristic programs and instructions. The thinking process will be productive, but at the same time it will be guided and guided step by step by the teacher or the students themselves, based on the work on programs (including computers) and educational tools. In art education, it can be called the method of joint creation of the teacher and the student.

A research method of teaching is used to develop the artistic and creative abilities of students at a sufficiently high level. Research method - the teacher organizes creative activities to solve problems, creates creative tasks, and students independently formulate a problem and find ways to solve it. In practice, the research method is rarely used, except when working with gifted students, or at least with students who show a special interest in mastering one or another type of artistic creation. The use of this educational method guarantees comprehensive, comprehensive development of all mental forces, personal characteristics, creative

potential. It is important to call it a method of independent creativity in art education. Here the participation of the teacher is reduced to a minimum, it should be noted that the use of this method is carried out only in conditions of serious initial professional and artistic training of students.

Getting into independent creativity, acquiring the skills and methods of independent artistic and creative activity of students, approaching them as a necessity for creative self-expression is an extremely complex goal. But to achieve this, you need to make a serious effort.

The above-mentioned methods of problem-based education, partial examination and research belong to problem-based education, and in the following years are recognized as the most appropriate method of comprehensive development of the student's personality in the science and practice of pedagogy. Z.I. Kalmikova states that "the main principle of developmental education is its problem." Education, in which "the initial stage of acquiring knowledge and forming intellectual skills takes place in the process of relatively independent solving of the task-problem system. This corresponds to the nature of thinking as a process aimed at discovering and solving new laws of education. cognitive and practical problems.

The artistic activity of students in computer graphics classes is the activity of posing and understanding problems, searching for ways to solve them. The peculiarity of the tasks solved during the lesson is that even the simplest of them differ from educational tasks in other subjects, because they initially include the possibility of choosing expressive tools, methods and ways of creating methods.

Even in situations where the teacher gives complete instructions and shows the progress of the work, each student has a certain degree of subjective perception, an individual approach to creating images on the computer - this reflects his level of preparation, taste in choosing colors. Temperament. confidence in using different tools, filters, objects, etc.

Therefore, the methods and methods of teaching computer graphics are very different depending on their direction, what content and meaning the teacher gives to the concepts of "creativity" and "learning", and what priorities he has in his work. . does. does. can be different. All methods of pedagogical influence, as well as the methods used within each method, are used in a complex, in various combinations, and this variety creates the complexity of the content of art education.

In artistic pedagogy, all methods of pedagogical influence require complex application, harmonization and complement each other. Choosing a computer graphics teaching method or a system of methods in a specific lesson is determined by factors such as its purpose and tasks; type of artistic and creative activity; level of preparation of students; the teacher's level of pedagogical skills and his understanding of educational goals and tasks.

The activity of students in the teaching of computer graphics has its own characteristics, which determine its artistic and creative nature and should be taken into account when creating an educational system:

1. Students' activity in "Computer graphics" classes begins with solving educational and cognitive tasks, they develop in this area and turn into artistic, figurative, creative tasks, and the ratio of different types of tasks can vary significantly from lesson to lesson. lesson

2. Students' activity in mastering graphic programs is demonstrative, practical and does not affect the nature of teaching, which relies more on demonstrative and practical methods than verbal methods.

3. The artistic and creative activity of students is characterized by a sufficiently large freedom, spontaneity and unpredictability and does not correspond to strict, prescriptive pedagogical guidance. If we go beyond the scope of the program, the flexible use of its tools is recognized not as a goal, but as a way to obtain original graphic products.

4. The students' creative activity is related to the solving of figurative problems, and the approaches to its organization are based on the unity of emotional-intuitive and rational-logical principles. The field of artistic problem solving requires an appeal to emotions; this approach is replaced by a logical and clear presentation of computer literacy material.

5. Artistic activity is based on the entire life experience of students, the entire fund of visual images and ideas, the brighter and more colorful they are, the higher the result. Students should have a systematic experience of viewing different images and familiarizing themselves with different graphic products in order to develop their own artistic solutions.

6. The result is important in artistic and creative activity, which is a clear evidence of the level of artistic development of students. This can be assessed based on the quality of professional training. Evaluation and analysis of the result should be recognized as effective pedagogical methods that affect the development of students' creative abilities, professional and effective work with images.

As a result of the research, a model for the development of artistic and creative abilities of students in computer graphics classes was developed, which consists of the following components:

- motivational component (directing students to find new ways to solve problems; developing the need to create a new original artistic image; creating a positive emotional background);

- the instrumental and performance component, which includes the formation of professional competencies in the field of fine arts (fine art skills, the basics of drawing, drawing, composition, the ability to create an activity plan, developed visual

perception, acquisition of image skills) and professional competencies in the field of computer graphics (mastery of graphic programs, tools and expressive means of graphic programs, various image creation and editing technologies);

- artistic-creative component (development of imagination, ability to create an artistic image, selection of means of artistic expression in accordance with the visual concept, evaluation of creative products).

The systematic and functional model of the process of development of artistic creative abilities of future visual arts teachers in computer graphics classes is effectively implemented taking into account all psychological and pedagogical conditions. By the set of psychological and pedagogical conditions, we understand the set of conditions that ensure the results of higher education. The set of pedagogical conditions can have its own variability and completeness, because it affects students in different ways. Thus, they can learn one learning material better, another worse, and the third one at the level of creative rethinking. They may be more active in some learning situations and less so in others.

In Russian, the concept of "condition" is interpreted as "the basis, condition of something". S.I. Ojegov and N.Yu. Shvedova's "Explanatory Dictionary of the Russian Language" explains this situation as "a situation that depends on something."

In philosophy, condition means "something else (conditional) depends on it"; means "the thing, state, or process that makes it exist." Given that the conditions are affected by events and processes that affect them, it is possible to create favorable conditions for that activity and eliminate unfavorable conditions.

Depending on the purpose and content of the research being carried out, different authors give different definitions of pedagogical conditions. Thus, Yu.K.Babansky them that the components of the educational process (the subject, teaching and learning) are presented in the best interaction and effective teaching, teaching the teacher interprets the lim process as an environment that allows the learning process to be controlled. process. process".

V.I. Andreyev defined didactic conditions as "conditions of the educational process that are the result of purposeful selection, design and application of content elements, methods (techniques), as well as organizational forms to achieve certain didactic goals." reef. riffs.

As a result of the analysis of various approaches to classifying and defining the concept of the set of pedagogical conditions existing in the practice of science and art-pedagogical education, we identified a number of interrelated goals (principles of organizing the pedagogical process). . and subjective (professional and personal qualities of an engineering computer graphics teacher) we developed a complex that includes conditions.

Objective conditions for the development of artistic and creative abilities of future visual arts teachers in the process of teaching engineering computer graphics include:

1) Compliance with the unity of tasks of artistic-creative and professional-pedagogical training. A distinctive feature of teaching at art faculties is the implementation of practical educational work, studying the laws of visual art, developing methods, forms and tools of visual expression, learning the basics of pedagogical skills, and professional-pedagogical training. should be combined with In the process of teaching computer graphics, students should acquire the skills of finding visual images to implement their concepts in the process of designing and solving creative problems, and on the other hand, the skills of organizing the creation process. idea and its implementation among students, solving professional-pedagogical problems.

2) Compliance with the unity of educational and cognitive and artistic and creative tasks. It is not correct to divide the tasks into "creative" and "non-creative" in the process of performing graphic tasks. The level of creative problems varies from introducing elements of creative thinking to a complete "set of creative tasks" that cannot be solved once and for all.

The requirements for a teacher of a higher educational institution are manifested in the creative nature of the organization of the pedagogical process in artistic education, changes in the direction of strengthening its creative qualities, broad thinking and freedom of thought in general. abilities. The basis of the modern art education system is a variety of experiences - cognitive, valuable, creativity, and the teacher must be theoretically and practically ready to transfer it to students, organize the management of its acquisition.

In the process of teaching computer graphics, all conditions for the development of students' creative abilities should be interrelated, ensure its activity and renewal, leave room for individual creativity of students. Only such a free and rapidly developing educational process helps to develop the artistic and creative abilities of students and to maintain their interest in the profession for a long time.

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