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Research Article

EDUCATIONAL AND METHODOLOGICAL SUPPORT FOR THE DEVELOPMENT OF PROFESSIONAL QUALITIES IN THE STUDY OF ENGINEERING COMPUTER GRAPHICS

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ABSTRACT

This article outlines the role of the use of modern pedagogical and innovative technologies in teaching engineering graphics. It is stated that the main purpose of using modern pedagogical technologies is to achieve students' efficiency for the easiest mastering the material and advanced training.

KEYWORDS

Approach, theoretical material, future teacher, personal approach, methodological base, professional activity, educational process, active teaching method, student.

INTRODUCTION

Development of didactic aspects of the application of information and communication technologies in the process of teaching engineering graphics in World educational and scientific research institutions, innovative conditions for training professional teachers suitable for professional activities. Taking into account the level of informatization of education, scientific research is being carried out in the process of teaching engineering graphics disciplines on the basis of the introduction of innovative approaches such as “Animation and graphics”, “constellation of 3D modelind”, modeling, improvement of computer programs Compass, T-Flex CAD, graphics 81, ADEM, SPRUT-technology, credo, CorelDraw. and the improvement of Particular attention is paid to scientific research on the development of practical training and professional qualities of future teachers through the use of AutoCAD/Compass in the educational process

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on the basis of modern scientific approaches to the use of ICT tools and changing the content of pedagogical activity, the application of design method in the teaching of engineering graphics and the improvement of these subjects.

In professional formation, professional qualities and progress are closely related: professional qualities are formed in the process of professional development on the one hand, and on the other-are an important indicator of the manifestation of an individual as a specialist. In practical terms, this means: in order to have their own reputation in a new socio-economic dynamic, not to break in competition, to ensure a prosperous future, a specialist must be in constant development, and, moreover, analyze his position in social and labor conditions. Therefore, the modern direction of research on professional qualities is the study of aspects related to the process of social and professional development of an individual. Professional formation as a transformation of an individual into a specialist is a process that is accompanied by a change in the person's perception of himself, his position in the professional and social environment, moreover, the formation of new professional qualities in himself, in a broad sense – in harmony with the professional self-awareness of the individual. During crises of professional formation, professional qualities are clearly manifested.

In improving the development-oriented design, technological and research features of the pedagogical infrastructure of educational activities on the basis of rounding them down according to the educational goal, drawing science studying in the educational direction 60111200 – "Fine Arts and engineering graphics" of pedagogical higher educational institutions of our Republic is engaged in the formation of spatial thinking of teachers in a state, in order for engineering to receive in-depth theoretical and practical knowledge in the science of computer graphics, they master basic and basic concepts related to science, and in order for them to perform practical work, assignments are developed. Moreover a number of examples of graphic work are developed.

The use of engineering graphics tools and information from computer resources in the educational process makes it possible to perform even more pedagogical tasks as well as exercises, which in turn accelerate the educational process. Imagination is of great importance in creative activity. Imagination can be developed by giving assignments, creating graphic representations on the so-called, or by means of a series of issues. Determining the role of the subject of study is a powerful factor in the activation of cognitive activity. Many students know the need to apply in the process of their further professional activity, independent of the direction and place of work. This factor forms the motive of duty and responsibility.

Students who have graduated from the "Fine Art and Engineering Graphics" course of higher educational institutions need to acquire a number of "competencies" (related to the effective use of information and communication technology tools in the professional activity process) and professional qualities (diligence, diligence, orderliness, responsibility, ability to set a goal and choose ways to achieve it, organization, perseverance, systematic and planned improvement of one's professional career, systematically improving the quality of one's work to go etc.)

Among the professional qualities that make up the structure of students' preparation for graphic work in the "Fine Arts and Engineering Graphics" educational direction of higher educational institutions are not only creative abilities (flexibility and originality of thinking, etc.), but also other professional qualities (empathy,

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competence, extraversion and cheerfulness, emotional stability skills, etc.) Accordingly, as one of the important scientific results of the study, the possibilities of developing the professional qualities of future drawing teachers were improved based on the intensive integration of the skills of empathy, ability, extraversion and cheerfulness into the trajectory of practical actions.

Interest and needs, efforts that can satisfy them serve as a motivator of the educational process. Students have different motivations for studying. The recognition of professional interest in future studies leads to an increase in enthusiasm for studying professionally important educational materials, the development of professional training programs, and an increase in interest in independent education. A higher education institution can do this by ensuring that education is vocationally oriented. Professional interest encourages the development of professional qualities that influence the choice of goals that the student wants to achieve. Professional interest is an important factor in the development of professional qualities and encourages the student to purposefully acquire knowledge and skills for professional self-improvement.

First of all, it is necessary to create a system of psychological-pedagogical diagnosis, in which the educational activity of future students is studied step by step. Educational activities include not only diagnosing the professional qualities of students, but also studying how they adapt to non-standard conditions that are new to them. Based on this, as one of the important scientific results of the research, the possibilities of developing the professional qualities of future drawing teachers were improved based on the integration of design-constructive, technological-research features aimed at the development of the pedagogical infrastructure of educational activities.

In professional formation, professional qualities and development are closely related: professional qualities are formed in the process of professional development, on the one hand, and on the other hand, they are an important indicator of the manifestation of a person as a specialist. In practical terms, this means the following: to gain dignity in the new socio-economic dynamic environment, not to be broken in competition, to be a specialist in continuous development to ensure a prosperous future, in addition, to analyze his position in social and labor conditions should be done. Therefore, the modern direction of the research of professional qualities is the study of aspects related to the process of social and professional development of a person. Professional formation is the change of the individual's perceptions of himself, his position in the professional and social environment, as well as the formation of new professional qualities, in a broad sense - the professional self of an individual. It is a process that goes in harmony with understanding.

The scientific principle is provided through the methodological part of the educational provision and the content of the educational programs. The principle of awareness and creative activity, encouraging creative activity is implemented as a means of applying computer technology and software to the educational process.

The principle of visuality and development of theoretical thinking of teaching is important for the use of engineering computer graphics in the educational process, because graphics are a teaching tool, and the main purpose of their use is to improve the educational process. At the expense of the use of traditional means, visual methods are undergoing major changes.

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Any work on the computer of education is visual, as graphic patterns display the learned information on the screen. The principle of the connection of education with life is determined by interdisciplinary relations and the connection of future studies with future professional activities.

The principle of systematicity and consistency, therefore, the principle of transition from teaching to independent learning, educational information is manifested in the specific features of the structural structure, they are reflected in the content of the course, in terms of meaning. and according to their interdependence, the step-by-step complexity of the studied material and the process of completing tasks are divided into blocks depending on the increase in the degree of independence.

One of the important pedagogical issues is the development of the conceptual basis for the development of the professional qualities of the future personnel science teachers who teach engineering computer graphics on the basis of theoretical analysis. The development of the conceptual basis for the development of professional qualities of the future drawing education is based on several important methodological approaches: personal-activity, competent, complex-integrative and acmeological. Below, we will focus on these methodological approaches that form the conceptual basis for the development of professional qualities of future training.

The task of developing a system for the development of professional qualities of the future employees of the engineering and graphic arts education process is becoming more and more important. According to the research, the system of development of the professional qualities of future students in the engineering-pedagogical education process should be implemented on the basis of systematic, integrative, person-oriented, functional, competence approaches. They make it possible to see the complex of pedagogical and practical training as a whole socio-professional process that ensures the formation of basic professional qualities for future students.

Professional and personal qualities, respectively, are considered the most important conditions for the development of professional activity. The introduction of a personal-activity approach to the development of professional qualities of students in the teaching of engineering computer graphics is aimed at ensuring the possibility of pedagogical influence, taking into account their individuality, psychological and personal characteristics.

The importance of introducing a personal-activity approach to the process of developing professional qualities of future teachers is that the characteristics of professional competence of future teachers are considered in connection with three aspects of pedagogical activity, namely technology, communication and personality.

Professional graphic competence is the future specialist's theoretical knowledge, practical actions and skills, personal and professional qualities acquired in the educational process, and readiness to fully demonstrate them in professional activities.

The essence, structure and effectiveness of pedagogical activity are considered the most important issues of the science and practice of pedagogy. Scientific analysis of pedagogical activity is based on the uniqueness of the creative approach of each teaching. At the same time, it is considered the most promising to use the principles of a systematic approach to the analysis and construction of pedagogical activity models.

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The approach to personal activity is focused on the development of the independence of future students, on the manifestation of their capabilities in non-standard conditions. By designing and implementing a system of activity methods for teaching engineering graphics subjects, an opportunity to develop their professional qualities will be created. As a result, a "joint effective effect" will occur in the educational process: an opportunity to prepare future students for professional self-expression will be provided.

Pedagogical technology system has its own field of application of each approach to teaching engineering graphics. Based on this, it is necessary to organize the educational process of teaching engineering graphics, aimed at the formation of professional qualities for the future personnel science training, on the basis of the above-mentioned approaches, and to optimally use their complementary aspects. According to d. As we mentioned above, at the same time developed countries have developed mechanisms for the introduction of pedagogical technologies into the educational process of self-expression of various methods of teaching.

It is desirable to determine which type of software is most effective in developing the speed, flexibility, originality and accuracy of students' creative thinking.

The speed of thinking is naturally directly influenced by computer programs (educational and training). If, precisely, the speed of divergent thinking is mentioned, then undoubtedly development is ensured if computer programs are based on nonlinear algorithms and new situations are envisaged in the processing of data. The professional graphic competence of the future educational teacher is its integrative quality, characterizes the drawing of details, constructions, practical preparation for the implementation of graphic and design work based on the acquired knowledge and competencies.

Engineering computer graphics educational science should be focused on its use in educational design and design activities. The organization of computer technology-based classes in engineering graphics disciplines provides an opportunity to achieve effective results in teaching using a wide range of systematized information on topics from internet pages. Students should be able to master the disciplines of engineering graphics, the most avallo, to read drawings, perform it, collect graphic information, draw schemes and read them.

Engineering graphics – drawing is an educational discipline that includes geometry, drawing, engineering computer graphics. The main purpose of teaching "engineering computer graphics" is to teach students the procedure and rules for computer - aided execution of all kinds of graphic information-images such as drawings, diagrams, pattern and schemes-from engineering and specialist subjects in two dimensions or three dimensions.

It is known from the science of engineering computer graphics that according to a certain direction of the constructor or trigger, it describes an image created in the imagination of a device or some model of some technique, showing the results as follows:

1.In the process of teaching engineering computer graphics subjects, the development of professional qualities of future drawing science teachers the implementation of the strategy and complexity of mental activity on the basis of new graphic programs that will help to increase the possibility of practical, independent education in the process of independent execution of tasks will provide effective results.

2.The science of future drawing acts as a "simulator" of the intellectual activity of Engineering Computer

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Graphics Tools, in the development of the mental activity of the spatial imagination of teachers. In the process of such intellectual activity, due to the performance of logical operations (high speed and implementation of various algorithms of actions), the professional qualities of students (cognition, logical thinking, creative thinking, creativity, constructor, ability) develop.

3.Subject preparation of future drawing teachers interdisciplinary communication, that is, on the basis of philosophy, sociology, cultural studies, psychology, physiology, pedagogy, established educational goals, the knowledge gained from the fields of theory and methodology of teaching visual arts, engineering graphic Sciences (drawing, computer graphics, etc.) is improved. The textbook, in which the application of a new instrument of activity - practical graphic programs is carried out, allows students to actively engage in intellectual activity, which, in turn, provides a deep assimilation of the knowledge necessary for their further professional activities.

4. In the teaching of engineering graphics subjects, the following tasks are solved: the structure of professional qualities of future teachers is described and analyzed; the conditions for the development of professional qualities and the psychological and pedagogical foundations have been identified; the psychological and pedagogical, methodological aspects of the use of computer-based teaching tools that allow the development of professional qualities have been revealed; in the context of informatization of education, the main knowledge, skills and qualifications were identified in the disciplines of engineering graphics, which will be necessary in the practical pedagogical activity of the future teacher; methodological and methodological approaches to the development of professional qualities of future teachers were based.

Currently, during each lecture, practical training, the theoretical knowledge necessary to perform tasks such as drawing primitives of graphic information-components on a computer screen, creating acceptable options by changing them again, and storing images performed on the screen in memory and extracting them on paper is being given in stages .

With engineering computer graphics, the line of drawing assumes to reform the educational process in the reading of geometry and drawing science, to re-develop it on the basis of a new concept, to adapt it to the demand of the era, to the level that meets the demand of World templates. It is understood that it is a vital necessity to design the teaching of these subjects through the entire educational process and the result introduced from the methods of teaching, to apply differentiated programs, relying on the stated grounds. The main purpose of teaching drawing geometry to students is to visualize spatial and imaginary forms and relationships of various objects and dependencies in the form of drawings, spatial constructive-geometric thinking, as well as methods of their spatial analysis and eneralization, to introduce students to modern computer programs that can be used in teaching drawing geometry.

The purpose of the Science “Engineering Computer Graphics” is to develop professional qualities in students, that is, future teachers of Visual Arts and engineering graphics, teach them the knowledge of Engineering Computer Graphics, the use of modern software products, develop artistic and aesthetic taste in them, educate and bring up a personal stable personality capable of significantly contributing to education and self-improvement. One of the main goals of “Engineering Computer Graphics” science is to teach students the possibility of using the latest versions of AutoCAD consumer packages and other programs, which are most commonly used in the

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performance of design and design documentation in the present era, and to provide knowledge. The purpose of the Educational Science "Engineering Computer Graphics" is to develop the ability of future drawing teachers to perform and read drawings on a computer, their professional qualities so that they thoroughly acquire knowledge from computer graphics and apply it in their practical activities.

It follows from the above considerations that the future teacher of service science should be able to show the principle of its operation, use it without breaking the exact shape and dimensions of the item, and know how to repair it. For this, an expert must be graphic literate. The science of drawing teaches students graphic literacy. The student's theoretical knowledge acquired in the field of science is strengthened through graphic works aimed at creating a drawing of an object. It is necessary to constantly optimize his professional activity, that is, to master new equipment and tools, to master computer technologies in order to design objects.

One of the important requirements for the organization of modern education is to achieve high results in a short time, without excessive mental and physical exertion. Although more than 20 years have passed since the creation of the AutoCAD program, it still remains popular among graphics programs, since the AutoCAD program is an excellent and popular and program for the automated implementation of the design and automation of pedagogical technologies, which performs the creation of schemes and drawings of any type in high accuracy and quality.

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