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ARCHITECTURE DRAWING FOR INDIVIDUAL TRAINING OF SPECIALISTS THE PROBLEM OF GEOMETRY AND COMPUTER GRAPHICS SCIENCE AND ITS RELEVANCE

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Annotation. The article talks about the study of architectural projects on drawing geometry and computer graphics for the training of qualified specialists in the field of architecture in Uzbekistan. It is known that geometric drawings drawn by a specialist are the theoretical basis of a student. Drawing geometry has been taught in institutes and universities for almost 200 years, but, unfortunately, there is no scientifically sound modern definition of the science of drawing geometry, there are gaps in the history of its origin and development as a science, there are differences in the accepted conventions, and information is given about the absence of a clear system, in symbolic notation, about the absence of algorithms for solving design and geometric problems.

Keywords: architecture, qualified specialist, drawing geometry, computer graphics, project, higher school, improvement, practical skills, education, outlook, development of abilities**.**

АРХИТЕКТУРНЫЙ ЧЕРТЕЖ ДЛЯ ИНДИВИДУАЛЬНОЙ ПОДГОТОВКИ Max-32 СПЕЦИАЛИСТОВ ПРОБЛЕМА ГЕОМЕТРИИ И КОМПЬЮТЕРНОЙ ГРАФИЧЕСКОЙ НАУКИ И ЕЕ АКТУАЛЬНОСТЬ

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Аннотация. В статье говорится об изучении архитектурных проектов по чертежной геометрии и компьютерной графике для подготовки квалифицированных специалистов в области архитектуры в Узбекистане. Известно, что геометрические чертежи, нарисованные специалистом, являются теоретической основой студента. Начертательная геометрия преподается в институтах и университетах почти 200 лет, но, к сожалению, научно обоснованного современного определения науки начертательной геометрии нет, имеются пробелы в истории ее возникновения и развития как науки, имеются различия в принятых условностях, даются сведения об отсутствии четкой системы, в символьных обозначениях, об отсутствии алгоритмов решения проектно-геометрических задач.

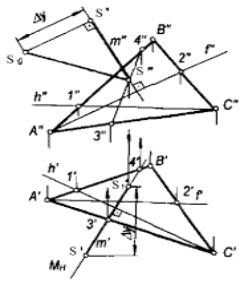
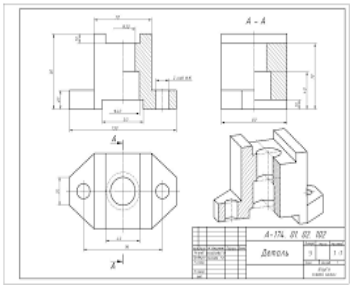
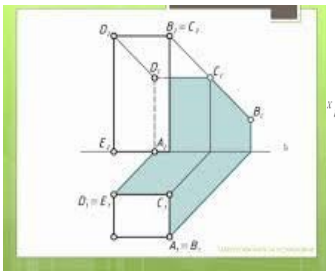
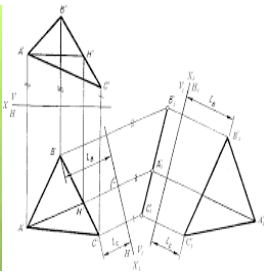
Ключевые слова: архитектура, квалифицированный специалист, начертательная геометрия, компьютерная графика, проект, высшая школа, совершенствование, практические навыки, образование, мировоззрение, развитие способностей.

Introduction. Education is a systemic process aimed at the comprehensive maturation of the younger generation, the formation of their consciousness, spiritual and moral values and worldview based on a specific target and socio-historical experience;

Education is a systematic process aimed at providing students with deep theoretical knowledge, skills and abilities, as well as at forming their general and professional knowledge, skills and abilities, and developing their abilities. Among the main, general technical and special educational disciplines, drawing is the role and place of geometry and computer graphics.

The main attention is paid to the relevance of individual training of specialists.

As a result of the transition to market relations and the formation of the CIS, it became necessary to restructure Higher education. A new law on education is in force in the Republic of Uzbekistan, and a State standard has been approved providing for a multi-level structure of higher education. Despite the fact that the number of specialists with higher education is increasing from year to year, our main goal is to train qualified, insightful and comprehensively mature specialists. Therefore, the main attention should be paid to individual training of specialists.

The new curricula provide for the study of architectural projects in descriptive geometry and computer graphics to graduate qualified specialists in the field of architecture in Uzbekistan. As you know, a specialist is the theoretical basis of a geometric drawing. Descriptive geometry has been taught at universities for almost 200 years, but, unfortunately, there is no scientifically sound modern definition of the subject of descriptive geometry, there are gaps in highlighting the history of its origin and development as a science and an academic discipline, there are discrepancies in accepted designations and there is no clear system. symbolic designations lack algorithms for designing and solving geometric problems. For different specialties, there are problems of scientific substantiation of the structure, scope and optimal content of this course, i.e. There was a need to develop a new concept of teaching descriptive geometry, taking into account the local conditions prevailing in the Republic of Uzbekistan.

In recent years, applied geometry has been rapidly developing and becoming a huge field of scientific knowledge. For a modern engineer, the necessary part of it is also important, which must be installed, i.e.which of these disciplines should be included in the core of the academic discipline — descriptive geometry. In addition, it is necessary to determine which sections and chapters of previously published textbooks can be excluded from the program without compromising the quality of training, and which sections and chapters that were previously ignored have now become important. In addition, with the development of computer graphics and its widespread introduction into the design, manufacture and use of various machines and equipment, technical devices and structures, as well as in technology, it is necessary to determine the role and place of drawing geometry in the modern educational space. How does computer

graphics affect the geometry of a drawing? Is it possible to use descriptive geometry methods in computer graphics, have algorithms for visualizing geometric objects been developed, etc.

Paradoxically, it is a fact that most textbooks have not developed general algorithms for studying geometric shapes from their images, determining positional characteristics and metric characteristics. Therefore, the problem of algorithmization of the drawing geometry must be solved at the modern level.

With the growth of scientific information and the emergence of new academic disciplines in the curricula of higher technical educational institutions, the number of hours devoted to the study of descriptive geometry is decreasing. The question arises about the revision and optimization of the content of this science in accordance with modern requirements. The way out of the contradiction to modern requirements is to improve the theory and methodology of teaching geometry drawing based on new educational technologies that activate the educational activities of students and develop their creative abilities. It is important to determine which of the new teaching methods are most effective in teaching geometry drawing and introducing them into the learning process. It is necessary to develop a methodology for conducting independent work of students under the supervision of a teacher, a subject Olympiad and competitive selection, to give reasonable recommendations on the use of problem-based learning and to use test-rating methods for controlling students' knowledge, skills and abilities in descriptive geometry.

The modern level of computer technology allows for distance learning, which is important in the conditions of Uzbekistan (a huge territory with disparate cultural centers and, consequently, high transportation costs for part-time students from remote areas). There is a need to study and define the basic forms, methods and models of distance learning of drawing geometry.

All of the above indicates the relevance of the problem of systematization, algorithmization and optimization of the content of descriptive geometry for higher technical educational institutions of Uzbekistan, to which this dissertation research is devoted.

The level of development of the problem. Currently, quite extensive material has been accumulated, which has become the basis for improving the teaching of the theory and practice of teaching descriptive geometry. The main works on psychology and pedagogy of the Higher School of Technical profile: S. I. Arxangelskiy [2, 3].

The purpose is to theoretically substantiate, develop and experimentally verify a system of methodological techniques and methods of active learning that develop students' independent activity skills and form their creative abilities, as well as to create an educational and methodological complex on descriptive geometry in Russian and Kazakh languages.

In the learning process, it is necessary to form educational and methodological literature on descriptive geometry and geometric and graphic activities of students of higher technical educational institutions.

The use of modern technologies that help students acquire deeper and adequate geometric knowledge for engineering, and the use of descriptive geometry course content and teaching methods in the course of the lesson. The quality of graphic and geometric knowledge obtained as a result of studying drawing geometry increases if: students show interest in this academic discipline, and drawing acquires the importance of geometry and computer graphics in future professional activities; in extreme schools, drawing involves the use of a more rational system of notation familiar to them from geometry and simple symbolic drawings, the reading of which activates mental activity, the formation of riddles of science, design algorithms, solutions to positional and metric problems and the indication of ways to implement these algorithms in various reversible flat images; the content of classes and compulsory graphic work in accordance with the chosen future specialty and the level of their training, the organization of independent and creative work of students through the use of active teaching methods, conducting a subject Olympiad and attracting them to the research Institute of descriptive geometry; the introduction of progressive control methods (programmable control system, testing and ranking) and distance learning training. application; It consists in the introduction of modern textbooks and methodological developments into the educational process, taking into account the local conditions of the Republic of Uzbekistan.

The problem, purpose, object, subject and hypothesis of natural science teaching have determined the need to solve the following tasks:

1. Study and systematization of the history of the origin, formation of descriptive geometry, development of image methods, paying special attention to the works of medieval and modern scientists of Uzbekistan.

2. Modern drawing the development of the topic of geometry and computer graphics and the definition of its meaning and place between fundamental and fundamental sciences in the era of new information technologies.

3. The definition of a more perfect and logically sound system of signs and signs used in descriptive geometry, and the formation of grammar of descriptive geometry and computer graphics.

4. The study of the classification of the main tasks of descriptive geometry, spatial flat graphical models, algorithms, as well as the development of algorithms for determining the positional and metric characteristics of a geometric object based on their images.

5. Determination and justification of the optimal structure, content and volume of the drawing geometry, the logical sequence of studying individual chapters (presentation of the main didactic units) for each of the architectural specialists.

6. Identification of effective forms of independent and creative work of students on the implementation of geometry drawing projects in computer graphics and the development of a methodology for conducting a subject Olympiad and organization.

7. Study and definition of possibilities, methods and models of distance learning in drawing geometry based on modern computer technologies.

8. Development of tests for the current, threshold and final control of knowledge, skills and abilities in the geometry of the drawing.

9. Creation of an educational and methodological complex, including a standard program, textbook, manuals and methodological developments in Russian and Uzbek languages.

10. Checking the effectiveness of the developed educational and methodological complex of the proposed forms and methods of active learning by conducting a pedagogical experiment and processing its results using mathematical statistics methods.

Summing up, we can say that the theoretical and methodological basis of the science of drawing geometry and computer graphics are: the results of research and recommendations of leading experts in the field of psychology and pedagogy of Higher education; the use of textbooks and textbooks on drawing geometry written by major scientists and teachers from near and far abroad. The Law on Education, the state standard of higher education and other normative acts of the Republic of Uzbekistan; works in the field of theory and methodology of teaching mathematics, descriptive geometry and graphic disciplines; theory of algorithms; theory of activity, pedagogical creativity and cooperation.

The main research methods are: the study, analysis and generalization of scientific and methodological and monographic works on pedagogy, psychology and drawing textbooks, curricula and programs on geometry and computer graphics. The study of advanced pedagogical experience of teachers of descriptive geometry departments between universities of the Republic of Uzbekistan and the CIS; observation of the educational process, analysis of cognitive and creative activities of students, as well as geometry; student questionnaires; pedagogical experience; consists in statistical processing of research results.

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