

**PERSONAL GRAPHIC COMPETENCES AND THEIR IMPACT ON THE PROFESSIONAL AND CREATIVE DEVELOPMENT OF STUDENTS OF ARCHITECTURAL SPECIALTIES**

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**Abstract.** Graphic skills are a key component of an artist's creative professionalism. Training future specialists in creative fields requires mastering manual graphics, which develops thinking, creativity, practical abilities, and an understanding of graphic processes. The variety of graphic techniques forms the basis for constructing images, highlighting the relevance of this research. Continuous reforms in higher education demand new approaches to organizing the learning process, making high-quality training essential for competitive professionals. Consequently, educators in higher education institutions face the challenge of improving and diversifying educational activities to enhance students' professional preparation. The professionalism of future architects and artists is shaped by the theoretical and practical graphic competencies they acquire, particularly the ability to visualize, analyze, and synthesize objects within contemporary stylistic contexts. This article examines the structure of graphic competencies and their impact on students' professional development. The study employs theoretical analysis, generalization, observation, surveys, experimentation, and statistical methods. The findings demonstrate that high-quality graphic training is achieved through a comprehensive approach to the educational process..

**Keywords:** graphic disciplines, personal graphic competencies, professional development, students of architecture.

**Introduction.** Developing the most effective methods for teaching graphic disciplines creates favorable conditions for the formation of creative personalities and is a constant subject of close study by higher education teachers. The methodological basis is a comprehensive research method with a differentiated individual approach. Over time, new methodological experience is gained, methodology, innovations in the educational process, and other sciences are developed. New material appears, requiring the search for and testing of new, more modern means and methods of teaching. Today, visual perception of information closely interacts with graphics and modern technologies. We can say that the concept of visual perception is a creative synthesis of art and precise pragmatic calculations. The methods of teaching graphic disciplines developed in the past need to be improved, especially given the fact that, firstly, in the last decade, many general education institutions (lyceums) have lacked such a subject as "Drawing", and almost 80% of first-year students in creative specialties do not have pre-university graphic training. Improving methods, techniques and teaching aids, as well as pedagogical technologies will help increase students' interest in new material, teach them to independently search for the necessary information, conduct a qualitative check of its adequacy, etc. Secondly, it is necessary to take into account that at the present stage, the potential of distance learning is widely used in education, which can overcome

geographical barriers and provide applicants with new opportunities. Therefore, as innovative approaches in the graphic training of future specialists, such technologies as the development and use of multimedia tools for lectures and practical classes, for the development and implementation of individual variants of graphic tasks and calculation and graphic works, and the use of special programs and Internet resources, etc. are recommended. Methods of teaching graphic disciplines developed in the past need to be improved, especially considering the fact that, firstly, in the last decade, many general educational institutions (lyceums) have lacked such a subject as "Drawing", and almost 80% of first-year students of creative specialties do not have pre-university graphic training. Improving teaching methods, techniques, and tools, as well as pedagogical technologies, will help increase students' interest in new material, teach them to independently search for the necessary information, conduct a qualitative check of its sufficiency, etc.

**Analysis of the recent research and publications.** Nowadays, it is necessary to maintain dialogue using drawings or graphic diagrams in virtually all areas of life, especially in creative professions such as architecture, design, or engineering. An analysis of the results of studies [1, 3, 7; 8, 10; 12] shows that the introduction of a competency-based approach in higher education requires the search for new principles of the educational process and the improvement of existing ones. A comprehensive study of the mechanism of interaction, individual and differentiated approaches during classroom activities, as well as the identification of factors influencing the activation of educational and cognitive activities, contribute to increasing interest and motivation and, accordingly, the quality of student learning, as noted by many researchers [2, 4, 5, 6, 9, 11, 13]. Now a person receives information "packaged" in pictures and visual images, which is no less than the printed text "letter". The famous English poet, publicist, and art critic Herbert Reed emphasized that "Design is a form of higher art, an independent super-profession," for which an important feature is a high-quality command of graphic language.

**Statement of the objective.** The main task of modern higher education is to train specialists who are ready for future professional activity. Graphic education is one of the most important areas of creative activity. The main purpose of this article is to study the structure of personal graphic competencies and analyze their impact on the professional and creative development of students specializing in architecture.

**Main material and results.** Modern reforms in education are putting new demands on higher education in Ukraine, which means we need to keep students interested in learning and monitor their progress based on a competency-based approach. Graphic work is the basis of the architect's creative process: with the help of drawings, sketches, diagrams, etc., students express spatial ideas, formulate concepts, and develop comprehensive design solutions. That is why the level of graphic skills directly affects the professional maturity of future specialists and determines their ability for creative self-expression. Graphic competencies include spatial-visual thinking, the ability to analyze objects and phenomena, the ability to transform three-dimensional space into two-dimensional graphic forms, and the ability to create a visual language that is understandable to others. They are comprehensively formed on the basis of knowledge of composition, constructive logic, coloristics, and modern digital technologies. Modern graphic competence is a synthesis of artistic and engineering thinking, high technological literacy, and individual creativity. Therefore, today's students must master both traditional techniques, namely academic drawing, architectural graphics, and layout design, as well as digital visualization and modeling methods.

The structure of personal motivation is a key factor in the learning process. Junior students who have an internal need for graphic self-expression develop their individual style much faster and demonstrate higher levels of success in their test work. Pedagogical observations show that participation in creative competitions, exhibitions, etc. contributes to the formation of professional confidence. In turn, a low level of graphic competence often leads to decreased motivation, difficulties in completing educational tasks, and limited creative initiative. Teaching methods play an important role in the development of graphic competencies. Traditional approaches based on academic drawing and architectural drafting create a solid foundation of technical literacy. A

combination of individual and group work is effective, as students learn to present their ideas, receive feedback, argue their decisions, and refine them through discussion.

The article presents illustrations of student works that are examples of the application of the theory and practice of such disciplines as descriptive geometry, drawing, painting, and coloristics to compare their significance in professional graphic education. Building the professional graphic skills of future architects and artists starts right from the first year of study. Descriptive geometry for architecture students, including those studying design, is a key discipline for transforming two-dimensional thinking into three-dimensional thinking. It is well known that no science can do without mathematics. Mathematically gifted people believe that the whole world is numbers, but at the same time, it can be emphasized that numbers will be more understandable if they are converted into any geometric shape. A point creates a line, a line creates a plane, a plane creates a surface, and surfaces connect or intersect with each other and form unique creative examples of art. Descriptive geometry, in general, has a broad "interdisciplinary" property, meaning that it is here that future specialists first become acquainted with graphic language and methods of drawing and reading drawings, algorithmization of solving theoretical and applied problems, and acquire a fairly high level of graphic skills, which will be required in subsequent semesters when studying other disciplines in the educational process. The main approaches to improving the formation of graphic competence are considered by the authors on the example of many years of research in the process of teaching graphic disciplines to first- and second-year students at the Architectural and Art Institute of the Odessa State Academy of Civil Engineering and Architecture.

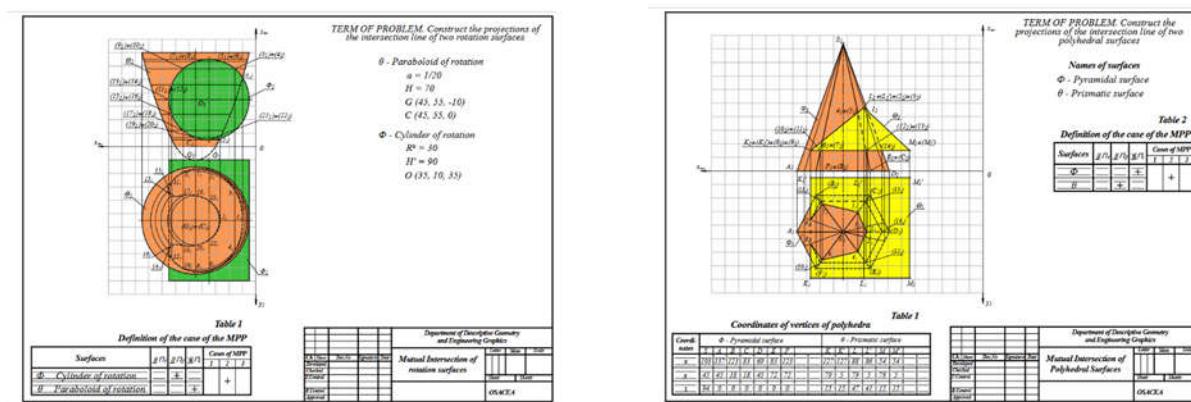


Fig. 1 shows examples of the implementation of graphic tasks on the topic "Intersection of surfaces" by students of architectural specialties according to the curriculum

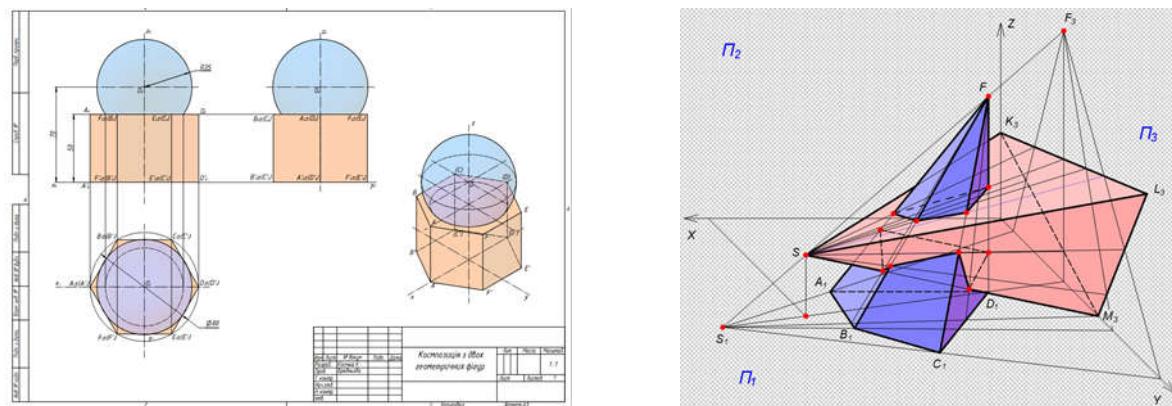


Fig. 2 shows examples of performing fragments of graphic tasks as student scientific works

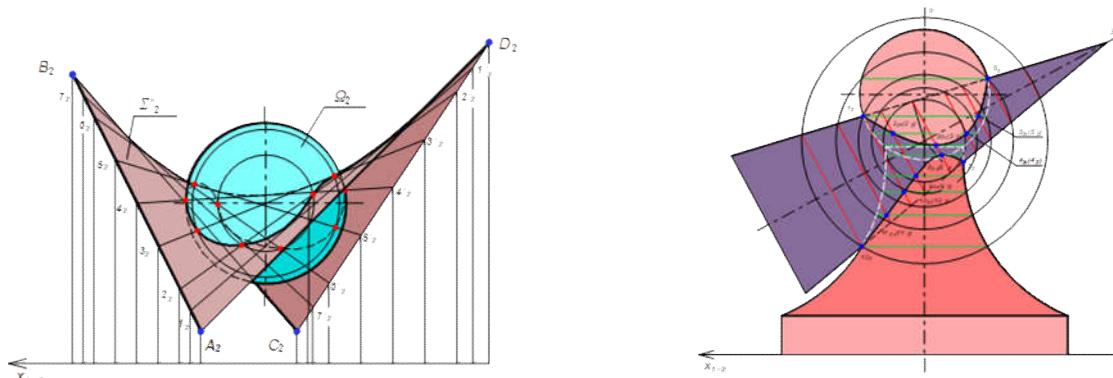


Fig. 3 shows examples of individual graphic tasks on the topic "Construction of projections of the line of intersection of ruled surfaces with surfaces of rotation".



Fig. 4 shows examples of graphic works on color composition in the Graphic Design program.

As is known, higher education institutions have a system for monitoring the quality of student learning, which, as a rule, includes ongoing control (between sessions) and final control (at the end of the semester). This system and criteria for assessing knowledge are aimed at developing interest and increasing motivation for learning among higher education applicants, introducing healthy competition, identifying and developing creative abilities. In our opinion, the organization of systematic educational work of students during the semester is of great methodological importance. It is important to emphasize the importance of introducing innovative technologies into the educational process, which impact improving the quality of education, creating favorable conditions for learning, etc. Improving teaching methods, techniques, and tools, as well as pedagogical technologies, will help increase students' interest in new material, teach them to independently search for necessary information, and conduct high-quality verification of its adequacy, etc.

In the process of professional training of students of architectural specialties, an integral component is scientific and research work, which is organically inherent in the educational and creative activities of applicants. The development of scientific research activities is related to the problem of the modernization of the culture of scientific research, as well as scientific and practical skills. Computer-based learning technologies are a very important factor in the quality of professional training for creative specialists, so from the first year, students are encouraged to use them both to consolidate and generalize theoretical knowledge and to perform various types of classroom and independent work, including creative graphic tasks. With the help of such technologies, modern specialists, when creating the form of an object, have the opportunity to design from an aesthetic point of view and give the modeled objects the necessary properties. Graphic professional education for students of creative specialties also involves improving teaching methods while simultaneously realizing the student's creative potential, namely by providing non-standard options for completing individual tasks.

Research on the impact of graphic skills on the professional and creative development of future specialists shows that students with a high level of visual culture demonstrate an ability to think systematically and take a comprehensive approach to learning. They are able to form concepts based on an analysis of the task at hand and find non-standard solutions. Developed graphic skills allow them to work freely with various types of graphic information, from conceptual diagrams to detailed architectural drawings. This ensures a high level of communication, first of all, with teachers. A valuable factor in teaching students is the formation of an individual authorial style, which is revealed through the manner of presenting graphic material and compositional solutions. Students who possess certain competencies and their own graphic language are capable of creating unique and high-quality presentations. In the long term, this contributes to the competitiveness of young architects in the labor market.

The results of the study conducted by the authors were selectively submitted to scientific research work "Improving the organization of the educational process using distance learning methods and teaching methods for graphic disciplines to students of construction and architectural and artistic specialties based on a competency-based approach," which has been carried out for many years at the Department of Descriptive Geometry and Engineering Graphics of the Odessa State Academy of Architecture and Construction

**Conclusions.** The need to improve teaching technologies, including the introduction of new tools into the educational process, is determined by current socio-economic conditions and is aimed at enhancing the quality of specialist training. The rating system represents a comprehensive assessment of the quality of students' academic performance. It increases students' motivation to master educational programs and encourages them to intensify their work, as it provides a differentiated evaluation of their achievements. The results of the authors' experimental research presented in this article confirm the relevance of the selected methodological factors influencing the structure of personal competencies and the stability of motivation during the qualitative study of graphic disciplines. Quantitative and qualitative analysis of graphic materials produced by students was carried out using a set of statistical methods and multiple comparison techniques, supplemented by generalized observations, surveys, and experiments. They determine the nature of creative thinking, the quality of design solutions, the ability to innovate, and the level of professional communication. Promising areas for further research include studying the impact of digitalization on the formation of graphic skills and analyzing the relationship between artistic abilities and student performance. In addition, creative individual approaches in pedagogical methodology proved to be the most effective in forming creative independence in decision-making and in fostering creativity in the development of graphic competencies among future specialists. The final analysis clearly demonstrated that a qualitative study of graphic disciplines is achievable through a comprehensive approach to the educational process, which corresponds to the authors' further research direction. It can be stated that the issue of forming professional graphic competencies among graduates of architectural specialties requires further in-depth investigation.

## References

[1] Bredniova V. On the improvement of the methodology of engineer staff's graphic training on the basis of optimization of psychological and pedagogical approaches. Modern Tendencies in Pedagogical Education and Science of Ukraine and Israel: The Way to Integration. Ariel University, 2016, № 7, pp. 38–42. ISSN 2218-8584.

[2] Brednyova V. P., Kosharskaya L. V. On the formation of professional competencies of future engineers in the process of studying graphic disciplines in university. Visnik Odeskogo Natsionalnogo Morskogo Universitetu. Bulletin of the Odessa National Maritime University, 2017, № 2 (51), pp. 188–193.

[3] Brednyova V. P., Smychkovska O. M., Prohorets I. M. To the problem of forming of graphic competencies of students of architectural and artistic specialties. Naukovi visnik Pivdennoukrainskogo natsionalnogo pedahohichnogo universytetu imeni K. D. Ushynskoho. Seriya Pedagogichni nauki, 2018, № 1 (120), pp. 17–21.

[4] Brednyova V. P., Prokhorets I. M., Yavorska N. M. Research of feedback in the study of graphic disciplines in higher educational institutions. Innovative Pedagogy, 2024, № 67, t. 1, pp. 122–126.

[5] Brednyova V. Formation of graphic competences of first year architecture and art students. Scientific problems of architecture and urban planning, 2025, № 3, pp. 215–227.

Dudyak V. O., Zanko N. V., Selmenska Z. M. The nature of color and its characteristics. Lviv: Ukr. akad. druku, 2013. 208 p.

[6] Kaidanovska O. O. Theoretical and methodological foundations of the visual arts training of architects in higher educational institutions. Manuscript. Dissertation ... Doctor of Pedagogical Sciences, specialty 13.00.04. National Pedagogical University named after M. P. Dragomanov. Kyiv, 2015. 125 p.

[7] Kucher S. L. Pedagogical conditions of continuous design training of future technology teachers. Ukrainian Journal of Educational Studies and Information Technology, 2018, № 6 (1), pp. 12–22.

[8] Molnar T. I. Teoretychni osnovy kompetentnisnoho pidkhodu yak osvitnoi innovatsii. Zbiór artykułów naukowych, 2017, pp. 21–22.

[9] Perperi A. O., Brednyova V. P., Dumanska V. V., Dotsenko Y. V., Viktorov O. V., Sydorova N. V. Improving the methodology of teaching graphic disciplines for students of architectural, artistic and construction specialties. Monograph. Odesa: OSACEA, 2022. 181 p.

[10] Prygoda T. Creative class: creativity or (and) technology. Scientific Bulletin of the Lesya Ukrainka Eastern European National University. Philosophical Sciences, 2019, № 13 (397), pp. 51–62.

[11] Shostachuk T. V., Piddubna O. M., Maksymchuk A. P., Pogosyan D. R. Modern graphic design as a specific creativity of the individual. Bulletin of Science and Education, 2024, № 23, pp. 1827–1839.

[12] Voznyuk O. V. New post-non-classical paradigm of art education. Actual issues of art pedagogy: collection of scientific works, ed. I. M. Shorobura. Khmelnytskyi: 2016, № 5, pp. 8–14.

## ОСОБИСТІСНІ ГРАФІЧНІ КОМПЕТЕНЦІЇ ТА ЇХ ВПЛИВ НА ПРОФЕСІЙНО-ТВОРЧИЙ РОЗВИТОК СТУДЕНТІВ АРХІТЕКТУРНИХ СПЕЦІАЛЬНОСТЕЙ

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**Анотація.** У статті досліджено роль графічних навичок як ключової складової творчої та професійної підготовки майбутніх фахівців творчих спеціальностей, зокрема архітекторів. Обґрунтовано значення ручної графіки у формуванні просторового мислення, творчих і практичних умінь, а також у розвитку здатності до аналізу, синтезу та візуальної інтерпретації об'єктів у контексті сучасних художніх і архітектурних тенденцій. Підкреслено, що володіння різноманітними графічними техніками є основою технології створення будь-яких візуальних образів, що зумовлює актуальність дослідження в умовах цифровізації освіти.

Проаналізовано сучасні трансформації системи вищої освіти, пов'язані з оновленням змісту та форм організації навчального процесу, і визначено необхідність удосконалення методів графічної підготовки студентів. Розкрито структуру особистісних графічних компетенцій та їхній вплив на професійний і творчий розвиток студентів спеціальності «Архітектура». Для досягнення мети дослідження застосовано комплекс теоретичних і емпіричних методів, зокрема аналіз і синтез наукових джерел, узагальнення педагогічного досвіду, спостереження, опитування, педагогічний експеримент, а також кількісну й якісну обробку результатів із використанням методів математичної статистики.

Результати дослідження та моніторинг якості графічної підготовки студентів засвідчили, що ефективне формування графічних компетенцій можливе за умови впровадження комплексного підходу до організації навчального процесу, який поєднує традиційні та інноваційні методи навчання.

**Ключові слова:** графічні дисципліни, особистісні графічні компетенції, професійний розвиток, студенти архітектурних спеціальностей

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