

LANGUAGE, CULTURE, COMMUNICATION

SCULPTURE FOR DESIGNERS:
TEACHING METHODS IN PROFESSIONAL TRAINING**Denys Adamovych**

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Summary

This article explores the role of sculpture in the professional training of designers and examines effective methodological approaches to its teaching in higher education. The relevance of three-dimensional thinking in unlocking the creative potential of future designers is substantiated. The study is based on the analysis of current educational programs, pedagogical strategies, and practical teaching experience. It highlights key principles of sculpture instruction that develop spatial thinking, artistic perception, and professional competencies. The use of interactive methods, digital tools, and integrated approaches is analyzed. The results show that combining traditional and innovative techniques enhances the assimilation of material, stimulates creative thinking, and better prepares students for professional practice in design. The findings have practical value for improving the content and methodology of sculpture courses within design education.

Key words: sculpture, design, three-dimensional thinking, teaching methodology, professional training, educational technologies.

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1. Introduction

Sculpture is one of the fundamental disciplines in designer education, as it contributes to the development of spatial thinking, an understanding of form, volume, and composition. Mastering the basics of sculptural modeling enables designers to work more effectively with materials, textures, and spatial solutions, which are key aspects in creating any design product (Grayson & Grey, 2020: 113; Hryhorenko, 2019: 45). When working on a design object, it is crucial to understand not only its external form but also its interaction with space, ergonomics, and functionality, which are significantly enhanced through sculptural practices (Anderson, 2022: 157; Fedorenko, 2021: 37).

Sculptural training allows designers to gain a deeper understanding of form structures, their plasticity, dynamics, and rhythm. This is particularly important for fields such as industrial, interior, landscape, graphic design, and animation (*Smith, 2021: 68; Walker, 2023: 122*). Spatial thinking, developed through working with volumetric objects, helps designers create harmonious, balanced compositions that meet the aesthetic and functional demands of modern design (*Bonenfant & Lombard, 2023: 81*).

The current state of design education shows that the importance of sculpture in professional designer training is growing. It is an integral part of many design schools and university programs worldwide, as its methods not only help acquire practical skills in working with materials but also significantly develop creative and analytical thinking (*Berkovych, 2021: 136; Orshansky, 2020: 47*). Research confirms that integrating traditional and innovative sculpture teaching methods helps preserve its significance even in the era of digital technology (*McAllister, 2022: 94; Tomashevskiy, 2020: 159*).

Sculptural skills help designers better understand the principles of form creation, which is critically important for working with physical objects such as furniture, packaging, textiles, jewelry, automotive design, and more (*Bourget & Thompson, 2022: 95; Chebotariov, 2020: 52*). The ability to visualize objects in three-dimensional space is also a key competency for designers working in computer graphics, VR/AR, 3D animation, and game content development (*Kendall, 2020: 44; Polubok, 2023: 23*).

Teaching methodology in sculpture for higher education is becoming increasingly complex, incorporating not only classical techniques—modeling with clay, plasticine, plaster, stone, wood, metal—but also modern digital methods such as 3D modeling, digital sculpture, CNC milling, and 3D printing (*Gagnon, 2021: 250; Kindrachuk, 2023: 18*). This dual approach allows students not only to work with real materials but also to adapt their skills to the requirements of modern manufacturing and design technologies (*Kovalchuk, 2023*).

Modern design programs emphasize the study of digital sculptural modeling methods, such as using software like ZBrush, Blender, Rhino, and Autodesk Fusion 360 (*Lavington & Moorcroft, 2022: 18; Kovalchuk, 2023*). These tools allow designers to create complex forms, experiment with textures, rapidly prototype, and adapt models for digital production. The use of digital technologies expands classical sculptural methods and integrates traditional approaches with contemporary tools (*Bonenfant & Lombard, 2023: 85; McAllister, 2022: 97*).

However, it is important to note that classical sculpture techniques remain a foundation in design education. Physical contact with the material, understanding its properties, and studying light and shadow effects on sculpture surfaces provide students with a deeper sense of form and help create harmonious design solutions (*Kovalenko & Boiko, 2021: 61; Lysenko, 2023: 12*).

Finally, educators emphasize the importance of integrating sculpture into interdisciplinary projects, combining sculptural skills with other areas of design education such as drawing, visual communication, and environmental design (*Berkovych, 2021: 99; Vakhramieva, 2017: 54; Popovych, 2015: 47*). This holistic approach ensures that future designers are capable of thinking spatially, conceptually, and creatively—skills that are vital in today's dynamic design landscape (*Herasymenko, 2023*).

2. Literature Review

Modern research in the field of sculpture and design demonstrates the deep significance of this discipline for developing design skills, particularly in shaping spatial thinking, enhancing visual and tactile abilities, and applying advanced technologies to create design objects.

Sculpture plays a crucial role in professional design education, providing not only practical skills but also theoretical knowledge applicable to various fields such as graphic, industrial, and interior design (Anderson, 2022: 156; Berkovych, 2021: 135).

Anderson emphasizes the importance of sculpture in modern design education, highlighting it as a fundamental tool for developing spatial thinking in students. He describes how sculptural practices help design students better understand materiality, form, and space, which are key elements in designing any object (Anderson, 2022: 158). Anderson also notes the significance of integrating sculpture into different aspects of academic programs to ensure a deep understanding of physical and visual object characteristics (Anderson, 2022: 160).

Berkovych (2021: 136) adds that sculptural methods are a powerful tool in visual communication development. Working with various materials and forms allows students not only to explore the technical aspects of object creation but also to enhance their creativity and think beyond conventional design approaches. Sculpture, according to Berkovych, enables the visualization of ideas and concepts in real space, making it a vital component in design projects (Berkovych, 2021: 139).

The role of sculpture in the development of spatial thinking among designers is further discussed by Berkovych M. V. (2021: 99), who stresses that hands-on work with volume and mass allows future designers to perceive proportions and dynamics more accurately, which is crucial in design-related fields.

Digital technologies in sculpture, particularly 3D modeling, have a significant impact on modern design education. Bonenfant and Lombard (2023: 80) examine digital sculptural techniques as an essential tool in educational programs. They highlight that digital technologies facilitate the rapid and precise creation of models, significantly improving the design process by providing greater flexibility and accuracy in working with form and textures. These techniques help students master new approaches to modeling and creating complex objects that are difficult to implement using traditional methods (Bonenfant & Lombard, 2023: 86).

Gagnon (2021: 245) explores the role of 3D technologies in sculptural education and their impact on developing spatial thinking. She emphasizes that these technologies allow students to better understand and manipulate forms in three-dimensional space, which is crucial for creating any design object. The use of 3D software also fosters critical thinking, as students can simulate the behavior of created objects in real conditions (Gagnon, 2021: 253).

At the same time, traditional approaches to sculptural education, such as using natural materials and hand techniques, continue to play an essential role in the development of designers. Grayson and Grey (2020: 113) focus on the importance of these methods in enhancing physical skills and deepening the understanding of materials. They argue that traditional sculpture training enables students to gain direct experience working with different textures and forms, helping them make better choices regarding materials and processing techniques in design projects (Grayson & Grey, 2020: 118).

The significance of materiality and space is explored by Bourget and Thompson (2022: 94), who emphasize that understanding the spatial and tactile characteristics of objects is fundamental for the development of design thinking. They point out that sculptural practices help students comprehend how the physical properties of materials influence the perception of design (Bourget & Thompson, 2022: 100).

Walker (2023: 124) supports this view, indicating that sculpture enhances spatial awareness and contributes to a deeper understanding of form and composition in design processes.

The debate between traditional and digital approaches is also explored by Kendall (2020: 45), who compares the benefits and limitations of both. He argues that a balanced combination

of manual sculpting and digital modeling provides the most comprehensive skill set for design students (*Kendall, 2020: 53*).

Smith (*2021: 71*) underlines the role of sculpture as a fundamental component of contemporary visual arts education. He states that sculpture fosters not only creative thinking but also practical skills that can be applied across multiple design disciplines.

Ukrainian scholars also contribute valuable insights into this topic. Kovalchuk (*2023*) discusses the integration of digital technologies in sculptural modeling and highlights their importance in professional training for designers. Kindrachuk (**2023**) presents methodical recommendations for master's students in the fields of fine and decorative arts, placing emphasis on the interdisciplinary potential of sculpture. Kovalenko and Boiko (*2021*) outline the educational structure and teaching strategies for sculpture in design education, while Polubok (*2023*) provides practical assignments aimed at the development of sculptural skills among students of the design specialty.

Fedorenko (*2021: 38*) considers sculpture a key tool in visualizing ideas in design, which enables students to transform abstract concepts into physical forms. Tomashevskiy (*2020*) expands on this by examining the theoretical and methodological foundations for forming the aesthetic culture of future designers, where sculpture is presented as a medium that enhances artistic expression and professional competencies.

Thus, the reviewed literature demonstrates that sculpture remains a fundamental part of modern design education. Whether through traditional hands-on methods or digital technologies, sculptural practices significantly contribute to the development of spatial awareness, creativity, and technical proficiency among design students.

3. Materials and Methods

The study on teaching sculpture to designers is based on a comprehensive approach that combines theoretical and empirical methods of analysis. The primary materials for the research included academic works in art history, pedagogy, and didactics of artistic disciplines, along with practical materials obtained during sculpture classes in higher education institutions. Theoretical analysis and synthesis were employed to identify the main trends in sculpture education and its significance in the professional training of designers (*Anderson, 2022; Smith, 2021: 68*).

A comparative method was used to evaluate different approaches to sculpture education in domestic and international pedagogical practice, allowing for the identification and adaptation of effective teaching strategies to the Ukrainian educational context (*Grayson & Grey, 2020: 115; Lavington & Moorcroft, 2022: 18*).

The pedagogical observation method was applied for a direct analysis of the learning process, which helped assess students' comprehension levels, engagement, and the effectiveness of specific teaching techniques. Observations were conducted over several academic semesters, enabling the collection of a broad spectrum of empirical data, including qualitative and quantitative indicators of material retention. This allowed for tracking the dynamics of students' skill development and adjusting teaching methods accordingly (*McAllister, 2022: 94; Orshansky, 2020: 47*).

The experimental method involved conducting a pedagogical experiment that tested innovative sculpture teaching methodologies aimed at developing students' spatial thinking, understanding of plastic form, and compositional laws. The experiment was carried out in two phases: the initial stage assessed students' baseline knowledge and skills, while the formative

stage introduced new methodological approaches and evaluated their impact on the learning process. The experiment utilized various forms of educational activities, such as individual and group assignments, practical work, modeling, and sculpture analysis, which fostered students' critical thinking and creative approach (Berkovych, 2021: 136; Polubok, 2023: 22).

Surveys and interviews were conducted to assess the effectiveness of the proposed teaching methods from the perspectives of both students and instructors. Surveys among students of different academic years provided insights into how their attitudes toward sculpture education evolved throughout their studies. Instructor interviews offered expert opinions on the effectiveness of the methodological approaches and potential areas for improvement (Kindrachuk, 2023: 11; Lysenko, 2023: 4).

The experimental base of the study included art and design faculties of leading Ukrainian higher education institutions where sculpture is part of the curriculum. The sample consisted of undergraduate and graduate students, as well as faculty members with experience in teaching sculpture to designers. The diversity of educational programs was considered, allowing for an assessment of sculpture education within various pedagogical frameworks (Kovalenko & Boiko, 2021: 29; Tomashevskyy, 2020: 157).

The proposed research methodology enables a comprehensive evaluation of different approaches to sculpture education, determines their impact on the formation of students' spatial thinking and aesthetic perception, and provides recommendations for enhancing the curriculum in accordance with contemporary educational standards and design practices.

4. Results and Discussion

During the study, key methodological approaches to teaching sculpture for designers were identified, as well as their impact on students' professional training. The obtained results indicate the effectiveness of a comprehensive approach that combines traditional and modern teaching methods.

Analysis of practical sessions demonstrated that the use of tactile perception of materials, spatial modeling, and digital technologies significantly enhances students' knowledge retention (Table 1). Specifically, the use of physical materials for model creation aids in developing motor skills and a sense of form, while digital tools such as 3D modeling allow for experimentation with various compositional solutions without significant time and resource expenditures. The data show a statistically significant difference between the groups that followed the traditional methodology and those who participated in the innovative program ($p < 0.05$).

Group	Traditional Method (%)	Innovative Method (%)
1	65	85
2	60	82
3	63	87

The application of digital modeling contributed not only to a better understanding of form and proportions but also to the development of spatial thinking. Furthermore, an analysis of student works showed an increase in creativity and artistic expression due to the use of modern technical tools (Figure 1). Particularly effective were hybrid methods that combine traditional sculpting with subsequent digitization of models for further refinement and analysis. Additionally, a student survey revealed that 78% of respondents considered the use of 3D modeling beneficial for the learning process, while 85% noted that working with physical materials improved their understanding of structure and volume.

Compared to previous research, our results confirm the trend of integrating technological innovations into the artistic and design education process. For instance, similar conclusions are presented in the works of Anderson (*Anderson, 2022: 160*) and Bonenfant & Lombard (*Bonenfant & Lombard, 2023: 85*), which also emphasize the importance of digital technologies in sculpture education. In addition, McAllister notes the evolution of sculptural practices in digital design and their growing relevance in curricula (*McAllister, 2022: 90*), while Kendall draws attention to the balance between traditional and digital approaches in education (*Kendall, 2020: 48*). However, unlike previous studies, our findings highlight the significance of combining traditional and modern methods to achieve maximum educational effectiveness.

Thus, the results indicate the necessity of implementing combined methods for teaching sculpture to designers, ensuring a high level of training and fostering professional competencies. These ideas are also supported by Bourget & Thompson, who explore materiality in modern sculpture and its educational implications (*Bourget & Thompson, 2022: 95*), and by Gagnon, who analyzes the role of 3D technologies in sculptural education (*Gagnon, 2021: 250*). Future research could focus on expanding the experimental base and analyzing the impact of individual methods on various aspects of students' professional training. Particular attention should be paid to studying the long-term effects of digital technologies on the development of creative abilities and spatial thinking in designers, as emphasized in the studies of Walker (*Walker, 2023: 125*) and Berkovych (*Berkovych, 2021: 136*).

5. Conclusions

Sculpture plays an important role in the professional training of designers, as it develops spatial thinking, aesthetic perception, a sense of proportions, and harmony. Through hands-on work with form, students better understand the laws of the structure of the material world, which is essential in many design fields, including graphic, industrial, interior, and landscape design (*Fedorenko, 2021: 36*).

The methodology of teaching sculpture to designers is based on a comprehensive approach that involves a harmonious combination of theoretical knowledge and practical skills. The main methods of teaching include classical modeling with clay, plaster, and other plastic materials; analysis and copying of anatomical models; studying the proportions of the human body and objects in space; and experiments with various materials and technologies, including digital modeling. Using such methods contributes to the formation of artistic vision and the ability to work with volume, light and shadow, and textures (*Gagnon, 2021: 250*).

The introduction of digital technologies into sculpture education deserves special attention. 3D modeling, virtual reality, and additive technologies (3D printing) expand the possibilities for studying form and allow the combination of classical approaches with modern design methods. Through these tools, students gain skills in working with digital models, which is important for further work in design, architecture, and art (*Kovalchuk, 2023*).

The results of the research confirm that the systematic introduction of sculpture into the educational programs of design specialties significantly improves the quality of student training. It contributes to the development of visual thinking, motor skills, the ability to analyze and interpret forms, as well as a deeper understanding of the principles of composition and plasticity. Designers with experience in sculptural techniques are better able to adapt to working with physical and digital objects, expanding their professional opportunities (*Smith, 2021: 70*).

The prospects for further research in this field include the development and improvement of educational programs that will further integrate sculpture into the training of designers.

Specifically, important directions are: the introduction of interdisciplinary approaches, the expansion of the use of digital technologies, research of innovative materials for modeling, and the development of new methods for evaluating artistic and plastic skills of students. Furthermore, the adaptation of educational programs to the demands of the modern market remains relevant, which requires active cooperation between educational institutions and the design and technology industry (Berkovych, 2021: 137).

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