



POTTERY TECHNOLOGY AND ITS MODERN COMPOSITION SOLUTIONS: THEORETICAL BASES AND PRACTICAL EXPERIMENTS

Mamurov Abdusalam Anvarovich
Teacher, Fergana State University
abdusalom0403@gmail.com

Abstract

This article provides an in-depth analysis of the theoretical foundations of pottery technology and modern compositional solutions. During the study, the historical development of pottery, technological methods and materials in different regions were studied. The influence of compositional factors such as shape, color, texture and decorative elements on the artistic and functional quality of the product was also highlighted. Based on practical experiments, the effectiveness of modern technologies, including 3D printing and high-temperature firing methods, was evaluated. At the end of the study, innovative approaches and promising directions in the field of pottery were identified.

Keywords: Pottery technology, compositional solutions, aesthetic design, harmony of shape and color, 3D printing, firing process, modern ceramics, innovative approach, applied art, folk crafts.

Introduction. Pottery is one of the oldest applied arts in human history. It has been enriched and developed aesthetically and functionally throughout different cultures and eras. Pottery technology is mainly based on the processes of molding, drying and firing clay, each of which requires its own scientific approach and experience.

Modern pottery technology, while preserving traditional methods, is enriched with new materials, techniques and technologies. Compositional solutions play an important role in improving the aesthetic qualities of products, making them



durable and resistant. The shape, color and texture aspects of the composition expand the artistic and functional capabilities of ceramic products [1, 103].

This scientific work analyzes the theoretical foundations of pottery technology and modern compositional solutions. It also studies innovative approaches used in different cultural contexts and their practical experiences. This study aims to conduct an in-depth analysis of the technological and compositional factors contributing to the development of the art of pottery.

OBJECT OF RESEARCH

The object of this scientific research was the technology of pottery and its modern compositional solutions. Pottery technology is a historically rich art form with its own development path in different periods and regions, and its technological processes, materials and decorative styles provide extensive opportunities for research. This research is aimed at studying traditional and modern technological processes of pottery, analyzing their interaction.

Pottery technology consists of several main stages: preparation of materials, shaping, drying, firing and decoration. Each stage requires its own technological aspects. Studying the technological features of these processes allows not only to improve the quality of pottery products, but also to improve their aesthetic appearance. The study examines in detail the properties of materials used for pottery, methods of their preparation and processing, firing technologies and methods of strengthening products.

As an object of research, compositional solutions of pottery products are also studied separately. Composition is the aesthetic basis of ceramic art. It includes the shape, size, colors, decorative elements and overall design of products. In modern ceramics, compositional solutions are enriched with innovative approaches. The study analyzes the color selection, harmony of shape and texture in ceramic products, decorative elements and their modern interpretations.

The object of this study includes not only the study of traditional methods, but also innovative technologies and design solutions used in modern ceramics. In this, pottery samples from different regions and periods are compared, their common and specific aspects are identified. In particular, the prospects for the



development of traditional ceramics using modern technologies and compositional approaches are analyzed [3, 156].

Through this object of study, theoretical and practical aspects of ceramic technology and composition are studied, and their role and significance in the field of modern art and design are determined. The results of the study will serve to create a scientific basis for future research and practical work in the field of ceramics.

METHODS

In this study, a number of scientific methods were used to study the technology of pottery and its modern compositional solutions. These methods served to ensure the scientifically sound and systematic conduct of the research.

Theoretical analysis method. Through the theoretical analysis method, which constitutes the main scientific basis of the research, scientific sources, monographs and articles on the historical development of pottery, technological processes and compositional solutions were studied. Using this method, the features of the development of pottery in different periods and regions, the specific aspects of traditional and modern styles were identified.

Comparison and contrast method. Pottery products and their technologies were compared by regions and periods. Through this method, the pottery styles of Uzbekistan, China, Egypt, Europe and other regions and their modern interpretations were compared. At the same time, the similarities and differences in traditional and modern pottery technologies were analyzed.

Practical experiment method. The study also paid attention to the study of the technological processes of pottery products using practical experiments. The processes of preparing, shaping, drying, firing and decorating clay were tested in practice, along with theoretical foundations. Various materials and technologies were used in practical experiments, and their effectiveness was evaluated.

Descriptive-analytical method. The descriptive-analytical method was used to study the compositional solutions of pottery products. Using this method, the shape, colors, texture and decorative elements of the products were analyzed. The aesthetic and functional significance of compositional solutions was determined.



Systematic approach method. The study systematically studied the technology of pottery and its compositional solutions. Through this method, the technological processes and compositional elements of pottery were analyzed in their interrelation. Through this approach, recommendations were developed to improve the quality and aesthetic aspects of pottery products.

Scientific prediction and forecasting method. The development prospects of modern pottery technology and compositional approaches were forecasted based on scientific predictions. This method provided scientifically sound ideas about new technologies and design styles that could be used in the art of pottery in the future [4, 76].

The above methods ensured the scientific validity of the research, the accuracy of the data, and the consistency of the analysis. Their combination allowed for a deep study of the research object and increased the scientific value of the conclusions.

RESULTS OBTAINED AND THEIR ANALYSIS

During this study, the technology of pottery and its modern compositional solutions were studied in depth, and a number of important scientific results were identified. These results shed light on the historical and modern development of pottery, technological processes, and artistic compositional aspects.

The historical development of pottery technology was identified. During the study, pottery technologies from different regions and periods were compared and their specific aspects were studied. In the early periods, pottery was mainly produced using natural clay and ordinary kilns, while in the modern period, new types of products are being created using high-temperature electric kilns, 3D printing technology, and chemical additives. This has significantly expanded the technological capabilities of pottery.

Pottery materials and factors affecting their quality were studied. During the study, various raw materials were used - red clay, white kaolin, spar, and quartz. The results showed that the strength and quality indicators of products change significantly depending on the ratio of mineral substances in the clay. It was also found that the durability and heat resistance of products can be increased by adding additives (minerals or polymers) to the clay.



The artistic and functional significance of compositional solutions was clarified. Compositional solutions in pottery products - shape, color, texture and decorative elements - determine the aesthetic and functional value of products. The study analyzed compositional styles used in different cultures and considered their modern interpretations. For example, geometric and plant patterns in Uzbek pottery were reinterpreted in the style of modern minimalism.

The use of innovative technologies in modern pottery was analyzed. Modern potters are improving the aesthetic and technological qualities of products using various innovative technologies. In particular, products of complex shapes can be produced quickly and qualitatively using 3D printing technology. Electronic ovens ensure uniform firing of products at high temperatures.

The efficiency of technological processes was assessed using practical experiments. During practical experiments, various firing methods and temperature regimes were tested. The results showed that temperatures in the range of 900-1200°C provide optimal firing and durability of products. Also, coating with glaze increased the aesthetic qualities and water resistance of products.

The prospects for the development of ceramics in the future were determined. Based on the results obtained, the importance of introducing innovative technologies in ceramics and combining traditional methods with modern approaches was emphasized. It was noted that there is a possibility of adapting ceramic products to the international market through the use of modern design and technologies [1, 32].

In general, the study showed that ceramic technology and compositional solutions are of great importance in the development of not only aesthetic, but also functional aspects. This scientific work will create a scientific basis for the development of new research and innovative solutions in the field of ceramics in the future.

CONCLUSION

This study was devoted to the theoretical and practical study of pottery technology and its modern compositional solutions. During the study, the historical development of pottery, technological processes, modern materials and



innovative approaches were analyzed. Based on the results obtained, a number of scientific conclusions were drawn.

Firstly, the study showed that pottery, as an ancient applied art form, has not only aesthetic, but also social and cultural significance. In different regions and periods, pottery technology and styles have developed in their own way. For example, while geometric and floral patterns prevail in Uzbek pottery, colorful glaze and sculptural methods are widely used in European pottery. Such diversity has led to the compositional and aesthetic richness of pottery products.

Secondly, during the study, the main stages of pottery technology were systematically studied - the processes of raw material preparation, shaping, drying, firing and decoration. The properties of various materials (red clay, white kaolin, quartz, etc.) and their influence on product quality were analyzed. It was found that temperature and time regimes during the firing process are important factors determining the strength and aesthetic appearance of products.

Thirdly, the importance of composite solutions for ceramic products was confirmed. The research results showed that the shape, color harmony, texture and decorative elements of products determine their artistic and functional value. In modern ceramics, composite solutions are enriched with innovative design and technologies. For example, products of complex shapes are produced quickly and qualitatively using 3D printing technology and digital design.

Fourthly, practical experiments were conducted during the research, testing the technologies for the preparation and decoration of ceramic products. In this process, various materials and techniques were tested. The results obtained made it possible to determine the optimal technological conditions for improving the firing and aesthetic qualities of products.

Fifthly, the research results determined the development prospects of modern ceramic technology. The art of pottery can be further developed by introducing innovative technologies and combining traditional methods with modern approaches. In particular, the use of environmentally friendly materials, the production of functional and decorative products are one of the important directions of modern pottery.

In general, this study served to deeply study the theoretical and practical aspects of pottery technology and compositional solutions. The scientific results obtained



create a theoretical and practical basis for researchers, art historians and practicing masters conducting research in the field of pottery. It also serves to develop recommendations for combining the art of pottery with modern technologies and creating new design and compositional solutions.

REFERENCES:

1. Bulatov S. O'zbek xalq amaliy bezak san'ati. – Toshkent:. Mehnat, 1994. – 144 bet.
2. Mo'minova G.I. Qadimgi Ustrushona kulollik tarixi. – Jizzax:. Jizzax davlat pedagogika universiteti, 2023. – 406 bet.
3. Qodirov, A. O'zbek xalq amaliy san'ati asoslari. – Toshkent:. O'qituvchi, 2015. – 216 bet.
4. Alimov, B. A. Keramika san'ati va texnologiyasi. – Farg'ona:. FDU nashriyoti. 2018. – 124 bet.
5. Sayfullayev, D. Milliy hunarmandchilik va xalq ijodi. – Toshkent:. San'at. 2014 – 144 bet.