

Integrating Tradition and Innovation: The Impact and Prospects of AIGC Technology in Yixing Zisha Design

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Received: 22 May 2024 | Accepted: 18 June 2024 | Published: 31 July 2024

DOI: <https://doi.org/10.55057/ijbmt.2024.6.2.49>

Abstract: *This study explores the application of AIGC technology in the design of Yixing Zisha teapots through focus group interviews with experts, analyzed using Nvivo 12 qualitative analysis software. The research highlights the significant advantages of AIGC in enhancing design efficiency, optimizing design processes, and fostering creative innovation. However, it also identifies the challenges of integrating this technology with traditional craftsmanship and cultural values. Experts proposed various improvement suggestions, emphasizing the need to balance innovation and tradition. The study concludes that the future development of AIGC will become more intelligent and human-centered, with the potential for further integration in specific fields to promote the modernization and diversification of Yixing Zisha design.*

Keywords: AIGC, Yixing Zisha, Focus Group, Nvivo, Innovation

1. Introduction

1.1 Research Background

Yixing Zisha teapots perfectly combine China's two traditional cultural treasures: "tea" and "ceramics." They are also a renowned representative of the "Yixing Zisha pottery-making technique," one of the first items in the National Intangible Cultural Heritage list (2006). According to Gao, Y. (2021), the culture of Yixing Zisha teapots originated in the Ming Dynasty, named after the unique purple clay found in the Yixing region of Jiangsu Province. However, these teapots' craftsmanship and aesthetic culture have gradually developed over thousands of years of Chinese cultural heritage. Creating Zisha teapots deeply integrates China's geographical environment, material resources, production techniques, and human factors, reflecting rich cultural connotations and craft value. Each piece of Zisha pottery is a crystallization of artisans' wisdom and effort, often containing rich cultural meanings in its shape and decoration, such as auspicious patterns and inscribed poems. This showcases artistic beauty and embodies the transmission and development of Chinese culture.

With the rapid development of artificial intelligence technology in recent years, AIGC (AI-generated content) technology has gradually emerged. According to the Tencent Research Institute (2023), AIGC, or generative artificial intelligence, is a technology that autonomously generates content based on training data and generative algorithm models. This technology can

create various forms of content and data, including text, images, music, videos, and 3D interactive content (such as virtual avatars, virtual items, and virtual environments). The Quantum Intelligence Library (2022) found that AIGC technology has been widely applied in the media and entertainment fields, such as news generation, video editing, and music creation, and has also shown tremendous potential in the education, healthcare, and design industries, as illustrated in Table 1. Cui, H., & Liu, W. (2024) pointed out that the application of AIGC technology has profoundly impacted the digital economy and social development, quietly leading to a technological revolution and industrial transformation. Si, R., Pang, S., & Bai, Y. (2024) further indicated that AIGC technology significantly enhances drawing, photography, modeling, design, and retouching efficiency, bringing convenience and transformation to traditional work modes. By learning from many design samples, artificial intelligence can generate highly innovative design schemes, assisting designers in their creative processes. AIGC technology not only improves design efficiency and reduces designers' workload but also uses algorithmic analysis and optimization to generate creative and practical design works. G. Yongquan and J. Bang (2013) have always believed that improving ceramic design standards is a crucial task in ceramic design, making it especially important to explore the impact and prospects of AIGC technology in Yixing Zisha design.

Table 1: AIGC Application Scenarios

Field	Specific Application Scenarios
Media	Human-machine collaborative production, promoting media integration
E-commerce	Creating immersive experiences
Film & TV	Expanding creative space and quality
Entertainment	Extending reach and impact
Education	Revitalizing educational materials
Finance	Reducing costs and increasing efficiency
Healthcare	Empowering drug development and the entire treatment process
Industry	Enhancing industrial efficiency and value
Agriculture	Soil monitoring, disaster warning, smart wearables for livestock

He, Y. (2022) pointed out that AIGC technology can significantly expand design thinking and inspire creativity, achieving a perfect blend of artistry and practicality in ceramic product decoration, thereby promoting the development of ceramic product design. AIGC technology, by learning and analyzing traditional Zisha design elements, can generate new design schemes with traditional cultural characteristics, injecting new creativity and vitality into Zisha pottery. Meanwhile, AIGC technology can also assist designers in innovation, optimizing algorithms to generate multiple design schemes, improving design efficiency, and enriching the artistic expression of Zisha pottery. Furthermore, AIGC technology can be applied in the production and marketing stages of Zisha pottery, such as by optimizing intelligent production processes and providing personalized customization services, thereby further enhancing the overall competitiveness of the Zisha industry.

However, the application of AIGC technology also brings several challenges and issues. Traditional Zisha-making techniques are highly artisanal and culturally valuable, and how to reasonably apply AIGC technology while maintaining traditional craftsmanship and cultural essence is a question that requires in-depth exploration. The rapid development of AIGC technology has brought new challenges to the skill inheritance and employment of traditional artisans, involving technical issues and the protection and transmission of cultural heritage. In applying technology, it is essential to focus on protecting and inheriting traditional culture and skills. By reasonably applying AIGC technology while improving design efficiency and

innovation capacity, it is crucial to ensure the continuous transmission and development of traditional craftsmanship, achieving the dual goals of technological advancement and cultural preservation. This helps modernize the Zisha pottery industry and injects new vitality and life into traditional craftsmanship.

1.2 Research Objectives

This study employs the content analysis research paradigm, utilizing Nvivo 12 qualitative analysis software to comprehensively and systematically analyze the focus group interview data conducted with experts. The aim is to explore the impact and future development trends of AIGC technology in the design of Yixing Zisha. By analyzing and summarizing existing application cases, the study investigates how AIGC technology functions in the design process, including generating design schemes, optimizing design workflows, and enhancing creative efficiency. Additionally, the research comprehensively evaluates the multifaceted impact of AIGC technology on Zisha design, including improvements in design efficiency and quality and the challenges posed to traditional craftsmanship. Based on the analysis of current conditions and trends, the study also forecasts the future development directions of AIGC technology in the Zisha design field. By integrating the results of the focus group discussions, the study proposes potential future application scenarios and development pathways for technological innovation in Zisha design, offering reference and guidance on how to reasonably apply and develop AIGC technology while preserving and inheriting traditional crafts, thereby promoting the modernization and innovation of Zisha pottery art.

2. Research Methods and Process

2.1 Research Methods

Given its exploratory nature, this study adopts the focus group research method. Initially, an interview outline with 9 questions was designed to concentrate the discussion on the research interests of this paper, facilitating subsequent data extraction and analysis. The focus group discussion outline and process are presented in Table 2.

Table 2: Focus Group Discussion Process

Focus Group Discussion Process	
Date and Time:	May 3, 2023, Friday, 7:00 PM - 9:00 PM
Location:	Tencent Meeting
Participants:	Experts in AIGC technology and Yixing Zisha pottery
	Theme 1: Application of AIGC Technology in Yixing Zisha Design
Q1:	How do you think the design process changes with the introduction of AIGC technology?
Q2:	What specific changes do you anticipate in the Yixing Zisha design workflow?
	Theme 2: Advantages, Disadvantages, and Improvement Measures
Q3:	What is the most significant advantage of AIGC technology in assisting Yixing Zisha's design?
Q4:	In which aspects do AIGC technology show significant shortcomings compared to traditional design methods?
Q5:	How can the existing AIGC technology be improved to better serve Yixing Zisha's design?
	Theme 3: Impact of AIGC Technology, Including Positive and Negative Effects
Q6:	What impact do you think AIGC technology has on the traditional craftsmanship of Yixing Zisha?
Q7:	Is this impact positive or detrimental?
	Theme 4: Future Directions and Predictions for AIGC Technology in Yixing Zisha
Q8:	What do you think are the future development directions?
Q9:	Are there any possible technological innovations or trends that could further promote the integration of AIGC technology with Yixing Zisha design?
Other:Question:	Please add any crucial points should have been mentioned during the interview.
Summary and Feedback:	Summarize key discussion points and invite participant feedback.

The focus group interview method involves collecting material through interactions and discussions among group members on specific topics outlined by the researcher. In some cases, this method elicits, observes, discovers, and analyzes similar and differing opinions among participants on a specific theme, ultimately deriving certain research conclusions. Stoll-Kleemann, S., O'Riordan, T., & Jaeger, C. C. (2001) noted that focus group interviews incorporate two social science research methods: focus interviews, which extract information on a topic and group discussions, where a skilled moderator guides a small group of relatively diverse individuals to discuss a particular topic. This view is supported by Massey-Burzio, V. (1998). Balch, G. I., & Mertens, D. M. (1999) believe that focus groups have group dynamics where a question raised by one participant can spark ideas from another. Hudson, P. (2003) further proposed that focus groups allow participants to express themselves more freely, helping researchers uncover unanticipated issues. Shi, Q., Sun, X., & Zhang, K. (2005) argue that focus groups reveal deep-seated issues in user interface design and provide an economical and effective way to gather multiple viewpoints. Bloor, M., Frankland, J., Thomas, M., & Robson, K. (2001) added that focus groups are more cost-effective and time-saving than individual interviews. Focus group interviews can be divided into two types based on research framework and design: participant-focused "focus group interviews" for collecting firsthand materials and expert group "focus group interviews" for explaining specific issues. Fang, Z., & Cheng, J. (2012) identified three research designs for the latter:

- Collaborative design involving knowledgeable professionals and experts in related fields
- Using participating experts as design elements in policy-making
- Consensus-building among experts through debate to develop social science and policy behavior knowledge

A combination of these two research designs is employed, where focus group participants are target system users or product design users and experts in related fields. Purposive sampling was adopted to recruit participants. Given the emerging interdisciplinary nature of combining AIGC technology with Yixing Zisha design, domestic experts in this field are relatively limited and come from various disciplinary backgrounds. This study interviewed ten experts from AIGC technology and Yixing Zisha design. These experts have rich research backgrounds covering artificial intelligence, design arts, and traditional craftsmanship. Due to the different national locations of the 10 participants and the moderator, arranging all participants for a single offline interview was challenging. Hence, an online meeting format was chosen for the interview. After coordinating a convenient meeting time, an online focus group interview was organized. During the interview, experts discussed the application of AIGC technology in Yixing Zisha design, its advantages and disadvantages, improvement measures, its positive and negative impacts, and predictions for its future development in Yixing Zisha. The specific interview arrangements and participant information are shown in Table 3.

Table 3: Basic Information of Focus Group Participants

Focus Group - Introduction of Expert Panel Members			
Note: Listed in alphabetical order by last name, with no ranking implied.			
Member Code	Gender	Appointment	Field
A	Male	Senior	Craft Art (Yixing Zisha)
B	Female	Senior	Craft Art (Yixing Zisha)
C	Male	Professor	Interactive Design & Art Education
D	Male	Intermediate	Craft Art (Yixing Zisha), Ceramic Product Design
E	Female	Senior	Craft Art, Research in Yixing Purple Clay Design Theory
F	Male	Professor	Cultural Creative Product Design
G	Male	Professor	Industrial Design, Smart Design, Service Experience Design
H	Female	Professor	Research in Symbolics & Redesign, Traditional Craft Design, Brand Image System Innovation
I	Male	Senior	Craft Art (Yixing Zisha)
J	Male	Professor	Smart Design, AIGC

With the consent of 10 participants, a focus group interview was recorded. After the interview, a verbatim transcription was made, resulting in a transcript of approximately 27,000 words from a 2-hour discussion. The interview was then coded and analyzed using Nvivo 12 qualitative analysis software. Sun Fangshuo (2024) and Qin Qiong (2019) found that Nvivo, as a mainstream qualitative analysis tool, primarily functions to uncover the internal connections and patterns of research content through coding. It can process various materials, including documents, audio, video, and images.

2.2 Analysis Process

The initial analysis of the expert interviews found that current research themes of AIGC technology in Yixing Zisha design cover applications, advantages and disadvantages, impacts, and future development. The application theme addresses how AIGC technology is practically used and its effects on Yixing Zisha's design. It can be categorized as practical application research of AIGC technology in Zisha design. The advantages and disadvantages theme assesses the performance and limitations of AIGC technology in improving design efficiency and quality, which can be summarized as comprehensive evaluation research of AIGC technology. The impact theme explores the positive and negative effects of AIGC technology on Yixing Zisha design, including impacts on design diversity, creativity, and traditional craftsmanship, which can be categorized as impact analysis research of AIGC technology. The future development theme discusses the potential application scenarios and development directions of AIGC technology in Yixing Zisha design, which can be summarized as prospect research of AIGC technology. Thus, four dimensions for analysis were determined.

2.3 Coding Process

As Pan Hong and Tang Li (2020) noted, Nvivo coding typically has two approaches: fully open coding and setting coding variables based on an existing theoretical framework. This study adopts the latter approach, where nodes were first established based on the analytical framework, followed by coding of the interview content. During the coding process, the first step was establishing four primary nodes for the application and the advantages and disadvantages, impacts, and future development of AIGC technology in Zisha design based on the research dimensions. Secondly, some secondary nodes were created according to the different categories covered by the four primary nodes, including specific applications of AIGC technology, practical effects, efficiency improvements, quality performance, positive impacts, negative impacts, potential application scenarios, and development directions. Finally, the interview content was coded individually, forming several sub-nodes placed under the corresponding secondary nodes, thereby creating a hierarchical tree node system.

Table 4: illustrates the three-level coding and references for Theme Three.

Primary Node	Secondary Node	Tertiary Node	Reference	
			Points	Reference Examples
Impact	Positive Impact	Changing Design Methods and Processes	17	AI has transformed our design methods, thinking, and processes.
		Bringing New Ideas	24	It has brought many new ideas and inspirations to our design thinking. I believe the involvement of these technologies provides an excellent platform for our masters. They can realize some ideas more intuitively or directly through AIGC technology.
		Providing a Creative Platform	9	By introducing AIGC technology, clear design guidance can be obtained, a significant advantage in the design process.
		Providing Clear Design Guidance	13	AIGC technology can make some ideas more intuitive or directly realizable. This not only provides more creative space for the masters but also implements these ideas possible.
		Turning Creativity into Reality	7	They can now design on their own, feeling that they can achieve original designs with the help of AIGC.
		Assisting in		The combination of art and technology provides a convenient attempt, and I look forward to future development.
		Achieving Original Designs	10	AIGC is a revolutionary reform that has brought some benefits. For example, the Buddhist series Teapot I just showed has yet to be modified because it can be produced entirely.
		Combining Art and Technology	21	The innovation of this technology lies in its ability to generate diverse design concepts quickly through a data-driven approach.
		Revolutionary Reform	9	Although I am not an expert in the Zisha industry, I can still design Zisha teapots with the help of AI. AIGC technology has raised the requirements for practitioners and encouraged designers to enhance their capabilities.
		Rapid Generation of Diverse Designs	14	AIGC technology has raised the requirements for practitioners and encouraged designers to enhance their capabilities.
		Basic Design Capability	17	Yixing Zisha teapots favor traditional culture, and AIGC-generated works may not conform to specific aesthetic and cultural identities.
		Enhancing Designer Skills	13	This craft retains the traces of manual work; thus, we emphasize "all-handmade craft." However, if new technologies such as molds or mechanical production are introduced, the products will lack these manual traces and may seem "cold" or mechanized.
		Differences Between New		While these technologies bring convenience, they may also disrupt our traditional processes.
		Technology and Traditional Cultural Aesthetics	16	
		Lack of Handcraft Warmth in	13	
Mechanized Products				
New Technology Disrupting Traditional Production	19			



Cannot Replace the Value of Traditional Handcrafts	9	AI-generated images are just that—images. Craft art emphasizes handcrafting techniques. AI cannot replace the value of traditional handicrafts.
Cannot Cover All Knowledge and Skills	5	No encyclopedia can cover all subjects, and no master can be proficient in all techniques.

3. Results and Discussion

3.1 Application of AIGC Technology in Yixing Zisha Design

Based on the data obtained, the application of AIGC technology in this field mainly revolves around seven aspects: technical familiarity, technical evaluation, application cases, implementation process, technical innovation, technical challenges, and cultural integration. Firstly, experts demonstrated an in-depth understanding of AIGC technology and listed various AI software used in actual design, such as MidJourney and Stable Diffusion. This software significantly enhances design efficiency and diversity, quickly generating multiple design schemes, saving time, and bringing new ideas. For example, one expert mentioned that they had already used AI technology to design several Zisha teapots and generated concept and design drawings using these tools, indicating that AIGC technology improves efficiency and brings rich design ideas, which is difficult to achieve with traditional design methods. Furthermore, the "Gongchun" app produced locally in Yixing is considered an excellent tool for designing Zisha teapots, showcasing the potential of localized AI tools in Zisha design. Figure 1 shows a Yixing Zisha teapot generated by the "Gongchun" APP. Experts unanimously believe that AIGC technology improves design efficiency and speed while increasing the diversity and creativity of design works. AI technology can generate high-quality design schemes and optimize design processes intelligently, helping designers complete challenging design tasks quickly. However, experts also emphasized that AI is only an auxiliary tool and can only partially replace designers' creativity and basic design capabilities. AI should be seen as part of the design process, helping to form and optimize concept drawings, with the final design quality still relying on the designer's professional judgment and meticulous refinement.



Figure 1 : Yixing Zisha teapot generated by the "Gongchun" APP

Experts shared their experiences using AI technology for design in practical application cases. For example, some experts used AI technology to design multiple Zisha teapots and generated concept and design drawings using AI software. These cases demonstrate that AIGC technology can quickly generate design schemes and various styles of Zisha teapots through intelligent means, bringing many innovative design ideas. Another application example is the frequent training of AI to generate biomimetic design, showcasing AI's potential in continuous learning and improvement. Despite this, experts mentioned that the effectiveness of AIGC technology depends on its usage. The initial questioning and feedback improvement process shows that the quality of AI-generated designs gradually improves with software refinement. Experts also detailed how to use AI for multi-step iterative processes to ensure the uniqueness and innovation of each design work. Designers typically start with hand-drawn sketches, then use AI to generate designs, adjust parameters, and repeatedly generate until satisfied. This method effectively avoids design homogenization, ensuring the uniqueness and innovation of each design work. Experts also noted that AIGC technology helps designers balance the practicality and artistry of Zisha teapots, enhancing the visual presentation of the designs. For instance, AI-generated designs can balance the practicality and artistry of Zisha teapots, improving the visual presentation of the designs. Moreover, experts mentioned that incorporating elements of traditional Chinese culture, such as Peking Opera, into Zisha designs can unleash artistic imagination, creating innovative works with rich cultural connotations.

Although AIGC technology has brought many new design ideas and innovations, its application also faces technical and practical challenges. For example, AI-generated designs must consider practicality, aesthetics, and feasibility, as mechanical production may produce coarse product quality. Additionally, AIGC technology still needs to be improved in understanding and expressing the artistic presentation of traditional Chinese painting, requiring precise training data to generate satisfactory designs. Experts pointed out that AIGC technology is still in its early stages, and improving algorithms and data optimization is critical to future technological development. Furthermore, AI-generated design works may face intellectual property issues, as their similarity to existing works could lead to legal disputes. Designers need to be cautious when using AI technology to ensure the originality and legality of their designs.

Regarding cultural integration, experts emphasized that AIGC technology needs to maintain the traditional aesthetic characteristics of Zisha teapots while utilizing AI for innovation. AIGC technology can innovate in shape and decorative details, but artistic creation must be human-centered, driven by humanities, and supported by technology. Experts proposed that balancing traditional aesthetics and modern technology is crucial for the inheritance and innovation of Zisha design. By combining AI technology with traditional cultural elements, designers can create Zisha works with both a modern sense and a traditional charm. Additionally, experts pointed out that AIGC technology provides a new perspective and method for Zisha design, promoting the modernization and diversification of Zisha design while protecting and inheriting traditional craftsmanship.

3.2 Advantages, Disadvantages, and Improvement Measures of AIGC Technology in Yixing Zisha Design

3.2.1 Advantages and Disadvantages

The advantages of AIGC technology in Yixing Zisha design are particularly significant, mainly in improving design efficiency and significantly reducing costs. Experts pointed out that AIGC technology can generate multiple different design schemes in a short period, which significantly improves efficiency compared to traditional design methods. Moreover, AIGC

technology significantly reduces design costs. Traditionally, designing a Zisha teapot might require a substantial amount of time and expenses, whereas AIGC technology significantly cuts these costs, making the design process more economical and efficient. AIGC technology not only improves design efficiency but also reduces the workload of designers, enriches the diversity of design works, and enhances the quality of the works. The rapid prototyping capability of AIGC technology especially allows designers to realize their ideas quickly, conduct quick iterations and experiments, and find the best solutions, which took much work to achieve in the past. By analyzing market trends and consumer preferences, AIGC-generated designs align with modern aesthetics and incorporate traditional elements, enhancing the market appeal of the products.

Despite the apparent advantages of AIGC technology in improving design efficiency and quality, there are also some shortcomings and challenges:

- AIGC-generated designs may need more practicality, making some design details challenging to realize in actual production.
- AIGC-generated design schemes may sometimes need a more scientific basis, potentially leading to issues such as poor breathability or difficulty in cleaning, affecting the practical value of the designs.
- AIGC-generated designs might only sometimes align with current fashion trends, making it challenging to meet market demands.

Experts also pointed out that AIGC-generated designs often need manufacturing difficulties, especially those with solid surface spatiality and three-dimensional effects, making it hard to realize in actual production. Another notable disadvantage is the inconsistent quality of AIGC-generated designs, poor handling of details, and possibly relying too much on technological aspects while lacking traditional aesthetic appeal. AIGC technology also has limitations in understanding and expressing traditional Chinese painting, making it difficult to achieve the depth and essence of traditional art, thus limiting its application in high-end art design.

3.2.2 Improvement Measures

To address the disadvantages above, experts proposed several improvement measures. Firstly, designers should combine hand-drawn sketches with AI to ensure the uniqueness and personalization of the designs. AIGC-generated design drawings need manual adjustments to avoid homogenization, enhance individuality, and ensure the uniqueness and innovation of each design work. Experts also suggested that the effectiveness of AIGC technology depends on the quality of training data, thus requiring more model training and data input to improve design quality. Particularly for the specific needs of Zisha design, designers should establish specialized or customized models, developing more AIGC applications that align with traditional Chinese culture to preserve traditional elements better and enhance the designs' cultural connotation.

Additionally, improving algorithms and developing specific function plugins can meet particular needs, further enhancing the application effect of AIGC technology. To find a balance between technology and traditional protection, designers should increase their knowledge of humanities and social sciences, applying technology reasonably and promoting traditional education to achieve sustainable development and inheritance of Zisha craftsmanship. Experts also emphasized that experts and designers in the Zisha field should closely cooperate, fully utilizing the multifunctionality of AI to ensure the organic combination of technology and traditional craftsmanship. Through improvement measures, the application of AIGC technology in Zisha design will become more effective and diversified. Designers must integrate traditional craftsmanship with modern technology to achieve the best fusion of

technology and art. This not only helps enhance the innovation and market competitiveness of Zisha design but also provides new possibilities for the protection and inheritance of traditional craftsmanship.

3.3 Positive and Negative Impacts of AIGC Technology on Yixing Zisha Design

3.3.1 Positive Impacts

The positive impacts of AIGC technology on Yixing Zisha's design mainly lie in changing design methods, providing creative platforms, and enhancing design capabilities. Firstly, AIGC technology has fundamentally changed traditional design methods and thinking. Experts noted that AIGC technology provides new tools for designers and redefines design processes by quickly generating diverse design concepts, significantly improving design efficiency. This technology allows designers to realize their ideas faster and conduct quick iterations and experiments to find the best design solutions. AIGC technology provides a creative platform for designers, enabling some previously unachievable ideas to be presented more intuitively or directly. This expands the creative space for designers and provides them with clear design guidance, helping them to have a more defined direction during the design process. In the interviews, experts also mentioned that AIGC technology can quickly generate diverse design concepts, allowing even those not experts in the Zisha industry to design high-quality Zisha teapots. The widespread adoption of this technology raises the standards for designers and promotes innovation and progress across the entire industry. Through AIGC technology, designers can also analyze market trends and consumer preferences, generating designs that align with modern aesthetics and traditional elements, thereby enhancing the market appeal of the products. Applying this technology not only enhances the creative capabilities of designers but also provides more possibilities for original design, promoting the combination of art and technology.

3.3.2 Negative Impacts

However, the application of AIGC technology also reveals some negative impacts, mainly in the differences from traditional cultural aesthetics, product mechanization, and the disruption of traditional production processes. Experts pointed out that AIGC-generated designs sometimes differ from traditional cultural aesthetics, possibly not aligning with the specific aesthetics and cultural recognition of Yixing Zisha teapots. Experts noted that Yixing Zisha teapots retain the warmth of craftsmanship, whereas mechanically produced products often lack these handcrafted traces, appearing relatively "cold" or mechanized. This changes traditional production processes and may worsen the products' cultural value and emotional connection. Additionally, although AIGC technology can generate high-quality design images, it cannot replace the value of traditional craftsmanship. Craft art focuses on the uniqueness and artistry of handmade techniques, whereas AI-generated designs are merely images, lacking the warmth and soul of handcrafted works. Experts emphasized that AIGC technology can only encompass some of the knowledge and techniques of Yixing Zisha, similar to how no encyclopedia can cover all topics. The limitations of AIGC technology make it challenging to replace craftsmanship fully. Furthermore, AIGC-generated designs may need more practicality, with some design details being challenging to realize in actual production, possibly reducing the market acceptance of the design works.

To balance AIGC technology with traditional craftsmanship, designers should focus on combining technology and art, maintaining respect and inheritance of traditional craftsmanship. Simultaneously, designers should be trained and educated to understand AIGC technology better and apply it, enabling them to innovate while preserving traditional aesthetics. This approach not only leverages the advantages of AIGC technology but also

avoids its adverse impacts on traditional craftsmanship, thereby promoting the modernization and diversification of Yixing Zisha's design. Additionally, experts suggested that designers should be better trained in using AIGC technology to create while respecting and protecting traditional culture and craftsmanship.

3.4 Future Development Trends and Predictions of AIGC Technology in Yixing Zisha Design

AIGC technology is changing traditional design methods and thinking, significantly improving design efficiency and the speed of creative realization. Experts pointed out that AIGC has become an essential tool for assisting design, but its best role is in human-machine collaboration, where designers' creativity and expertise remain indispensable. In the future, the interaction between designers and AIGC will become closer and more efficient. With technological progress, the application of AR (Augmented Reality) and VR (Virtual Reality) technologies will further enhance the user experience. For example, customers can virtually experience the design and functionality of Zisha teapots before ordering, enhancing engagement and providing new platforms for designers to showcase and interact.

Currently, most AIGC models are general models; in the future, there will be a need to focus on developing domain-specific models to meet the needs of specific fields better, providing more precise and professional design solutions. Optimizing domain-specific models will address the limitations of general models, making the application of AIGC in Zisha design more professional and refined. In terms of technology dissemination and intelligent innovation, promoting AIGC technology will enable more designers and artisans to master and apply it, making it an indispensable part of the design work. Intelligent extraction of the elements and creative products of Yixing Zisha, a non-material cultural heritage, will achieve intelligent innovation at the design end, improving design efficiency and preserving cultural heritage, promoting the modernization and diversification of Zisha design. The cross-disciplinary collaboration will also become a future trend; the integration of AIGC technology across different fields will bring more creativity and opportunities, injecting new vitality into Zisha's design.

In the long term, AIGC technology will become more intelligent and human-centered, providing a better understanding of and realizing designers' creativity. This technological advancement will improve design quality and make AI applications in design more widespread and convenient. As technology develops, more industry standards and regulations will emerge to guide the application of AIGC technology in Zisha design, ensuring its rationality and effectiveness. AIGC technology will continue to advance through sustained innovation, expanding its application scope in Zisha design. Globally, explorations of computational aesthetics and emotional computing, although currently immature, are expected to become highly advanced in the future, further enhancing AI applications in art design. By continuously optimizing technology and enhancing designers' application capabilities, promoting cross-disciplinary collaboration and intelligent innovation, AIGC technology will bring new creativity and development directions to Yixing Zisha's design.

4. Conclusion

Based on focus group discussions, this study utilized the Nvivo 12 qualitative analysis software to encode and analyze expert interviews, exploring the application, advantages, disadvantages, impacts, and future trends of AIGC technology in Yixing Zisha design. Xue Zhengyang and Tang Ke (2023) suggested that the integration and continuous development of the ceramics

industry and intelligent technology represent the ongoing fusion of science and art in the context of the AI era. During the development of science, there is an artistic touch and scientific elements also blend into the development of art. The research findings indicate that AIGC technology has significant advantages in improving design efficiency, optimizing design processes, promoting creative innovation, providing powerful assistance to designers, and redefining design workflows. However, its application still faces many challenges, especially in integrating traditional craftsmanship and cultural values. Experts have proposed a series of improvement measures in response to these issues.

In the future, the development of AIGC technology will become more intelligent and human-centered, further enhancing user experience. Optimizing domain-specific models will enable AIGC technology to meet specific fields' needs better, providing more precise and professional design solutions. Additionally, promoting AIGC technology will enable more designers and artisans to master and apply this technology, achieving intelligent innovation and cross-disciplinary cooperation, thus advancing the modernization and diversification of Zisha design. Only through continuous optimization of technology and enhancement of designers' application capabilities can AIGC technology bring new creativity and development directions to Yixing Zisha's design. Designers must utilize AIGC technology to achieve modernization and diversification while preserving traditional aesthetics and promoting innovation and progress in Zisha design. This not only injects new vitality into Zisha design but also paves new paths for the inheritance and innovation of traditional craftsmanship. Future research should explore the potential and application of AIGC technology in art design, ensuring the dual goals of technological advancement and cultural preservation are achieved.

Acknowledgement

I would like to thank my two supervisors for their valuable and constructive comments and suggestions on my thesis, which helped us to greatly improve the article. I am also immensely grateful to the ten experts who participated in the focus group discussions. Their willingness to share their knowledge and experiences provided essential perspectives and enriched the findings of this research. Without their contributions, this study would not have been possible.

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