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THE APPLICATION OF AIGC TECHNOLOGY IN TRADITIONAL CRAFTS: AN NVIVO STUDY OF YIXING ZISHA CERAMICS

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Abstract:

This study explores the impact of Artificial Intelligence Generated Content (AIGC) technology on Yixing Zisha (purple clay) design. By organizing focus group interviews with ten experienced experts, the study extensively examines the application, advantages, disadvantages, impacts, and future development directions of AIGC technology in purple clay design. After analyzing the discussion content using Nvivo 12.0 software for word frequency and coding, it was found that AIGC technology significantly enhances the efficiency and creativity diversity of purple clay design while posing challenges to traditional crafts. Experts believe that the main advantages of AIGC technology include its ease of operation, rapid generation of diverse design schemes, and enhanced design efficiency; however, the technology also faces challenges such as idealizing designs, homogenization, and difficulties in integrating with traditional crafts. The study indicates that future efforts should focus on combining AIGC technology with traditional crafts more effectively, deepening the understanding and application of traditional craft features, and promoting the innovative development of purple clay design. This research provides a new perspective on the application of AIGC technology in traditional crafts and offers significant guidance for future technology application and craft innovation.

Keywords:

AIGC Technology, Nvivo, Yixing Zisha, Traditional Crafts, Ceramic Design

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Introduction

In recent years, Artificial Intelligence Generated Content (AIGC) technology has made significant progress across various fields, demonstrating great potential in art and design. Yixing Zisha, a quintessential Chinese traditional handicraft, requires high skill levels and innovation in its design and production processes. Therefore, the application of AIGC technology in this field holds exceptional value and significance.

Research on AIGC technology in ceramic design by Chinese scholars began in 2020, but the number of published documents still needs to be increased with only a few articles available. Advances in deep learning neural networks and machine learning technologies have significantly enhanced AI's model training and data processing capabilities. Transformer models such as GPT and BERT have made substantial achievements in natural language generation and comprehension, significantly propelling the development of AIGC technology. Despite the increasing number of studies in this area by Chinese scholars, there remain issues where research hotspots do not align with practical needs, the results are not effectively implemented, and theoretical research lacks depth in practical application. Liu Li (2023) emphasizes that ceramic product design requires the integration of culture, creativity, and art within the products. AI painting technology can rapidly generate precise and realistic ceramic design drawings, effectively aiding designers in quickly conveying their creative ideas. Furthermore, Yang Yuhe (2023) adds that as the functionality of AIGC software continues to improve, the technology has begun to expand the boundaries of ceramic product creation. Zhao Yue (2023) further points out that advancements in artificial intelligence, the development of new materials, and the application of new technologies are breaking through the traditional constraints of daily ceramic design and manufacturing, enabling the design of uniquely shaped ceramic products and promoting diversification of product expressions. Figure 1 presents several ceramic works designed using AIGC technology, illustrating how we can easily and quickly obtain design schemes.

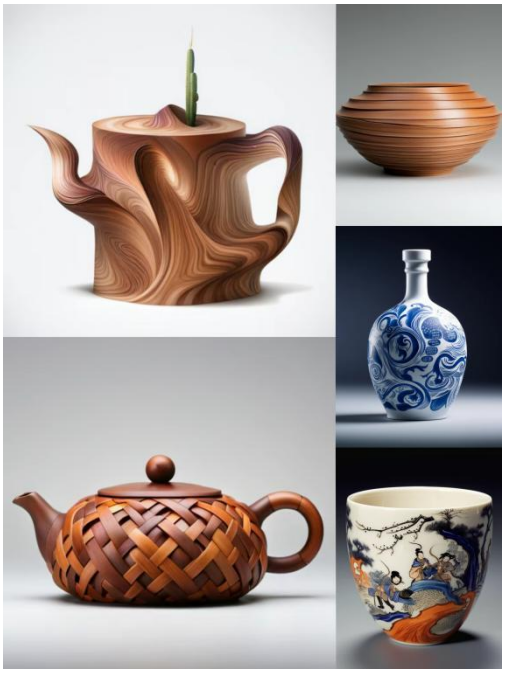

Figure 1: Ceramic Works Designed by AIGC Technology

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AIGC technology has become an essential tool for design innovation due to its efficient design capabilities and broad application prospects. Particularly, its application in Yixing Zisha design has injected new vitality into this traditional craft. It is essential to review and scrutinize the application and impact of AIGC technology in Yixing Zisha design in this context to explore future research directions and to enhance the application effects of AIGC technology in traditional crafts.

This study examines the impact of AIGC technology on Yixing Zisha design via focus group interviews with ten experts. It analyzes the application, advantages, disadvantages, impacts, and future directions of AIGC in this traditional craft using Nvivo 12.0 for word frequency and coding. Findings indicate that AIGC technology enhances design efficiency and creativity but poses challenges to traditional craftsmanship. Benefits include ease of use, rapid generation of diverse designs, and improved efficiency, while challenges involve idealized designs, homogenization, and integration with traditional methods. Future research should focus on better integrating AIGC with traditional techniques, understanding traditional features, and fostering innovation in purple clay design. This study provides new insights and guidance for the application and innovation of AIGC technology in traditional crafts.

Literature Review

In recent years, international research on AIGC technology in art design often uses keywords like "AI-generated content" and "artificial intelligence in design," covering fields such as computer science, art design, and cultural heritage protection. The research methods typically include qualitative, empirical, or integrated analysis. Research by the Chinese academic community on the application of AIGC technology in traditional crafts mainly focuses on areas like art design, computer applications, and cultural heritage protection. For example, studies on the progress and hotspots of AIGC technology based on knowledge graphs, applications of AIGC technology in traditional craft design, and the aesthetic evaluation of AI-generated content and its impact on artistic creation. To provide a comprehensive summary of past findings on this topic, the following Table 1 highlights key studies and their contributions:

Table 1: Summary of Past Findings

Author(s)	Year	Focus	Key Findings
Sara Abdoh	2024	AI and sculpture	Discusses the integration of AI in sculpture and its implications (Abdoh, 2024)
Farhana Hoque	2024	AI in design	Explores AI's impact on the role of designers (Hoque, 2024)
Mohamed Al Sawy	2024	AI in animated characters	Investigates the use of AI in developing cartoon characters (Al Sawy, 2024)
Ruicheng Zhang, Yue Zhang		3D digital modeling for ceramics	Improved design efficiency and reduced production costs (Zhang & Zhang, 2023)
Yang Hu	2023	Traditional decorative patterns design under AIGC	Explored design methods of traditional decorative patterns using AIGC technology (Yang Hu, 2023)
Xiangyu Li, Yuqing Fan, S. Cheng	2023	AIGC development in China	Analyzed China's AIGC market, policy, and future outlook (Li, Fan, & Cheng, 2023)

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Yani Wang, Yuqiang Dong	2023	AIGC assisted generation craft	Human-machine collaborative process of AIGC in digital content creation (Wang & Dong, 2023)
Jiayang Wu et al.	2023	Survey on AIGC	Overview of AIGC's definition, capabilities, and applications (Wu et al., 2023)
Zuhao Yang et al.	2023	PaCaNet for Chinese painting and calligraphy	Innovated art by fusing painting and calligraphy using AIGC (Yang et al., 2023)
Chenyu Liu et al.	2023	Risk analysis of AIGC in market regulation	Discussed potential risks of AIGC in market regulation (Liu et al., 2023)

Based on these insights, our study aims to delve into the integration of AIGC technology with traditional crafts to foster innovation in the Yixing Zisha design field. We employ qualitative analysis software Nvivo 12 to integrate and analyze text data through focus group interviews. This methodology refines practical experiences and impacts of AIGC technology in Yixing Zisha design and explores future research directions. Focus group interviews offer in-depth insights from industry experts, aiding in the promotion of AIGC technology applications in traditional crafts and furthering innovation in Yixing Zisha design.

Xie Yanming and Liao Xing (2008) pointed out that qualitative research, particularly the focus group interview method, originates from sociology and focuses on exploring human behavior, cognition, beliefs, and motivations. This study selects experts from AIGC technology and Yixing Zisha design, using group interactions to deeply understand current applications and potential future directions of AIGC technology in purple clay design. Chen Xiangming (2000) noted that this approach not only allows researchers to obtain collective insights about specific technological applications but also helps clarify the technology's critical components from both practical and theoretical perspectives. The ultimate goal of this process is to provide practical insights and theoretical frameworks for future research and applications.All experts participating in this study signed informed consent forms and the research was conducted following internationally recognized standards for reporting qualitative research—the Consolidated Criteria for Reporting Qualitative Research (COREQ) and the Standards for Reporting Qualitative Research (SRQR).

Methodology

Focus Group

Inclusion Criteria For The Focus Group

Experts must have extensive practical or theoretical experience in the field of AIGC technology or Yixing Zisha design.Participants must be aged ≥18 years.Native speakers of Chinese with good comprehension and independent expression abilities.Experts voluntarily participate in the study, are willing to share their experiences and insights on AIGC technology in Zisha design in the focus groups, and sign an informed consent form.

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Exclusion Criteria For The Study Subjects

Individuals with severe mental illnesses who are unable to express themselves autonomously.Participants who do not cooperate with researchers or withdraw midway through the study.

General Information Of Experts

Purposeful sampling was used to select experts with extensive experience in AIGC technology and Yixing Zisha design as study subjects. The focus group interviews were conducted from 7:00 PM to 9:00 PM on May 3, 2024. The sample size was determined based on data saturation, meaning the information provided by the participants began to repeat and no new relevant information emerged. Xie Ailei and Chen Jiayi (2021) suggested in their study that if the information has not reached saturation, the number of focus groups will be appropriately increased. A total of 10 experts meeting the criteria were included, identified by uppercase letters A to J. General information about the experts is shown in Table 2.

Table 2: General Information of Experts

Item	Quantity	Focus Group Members
Gender		
Male	7	A,C, D, F, G, I, J
Female	3	B, E, H
Age		
>18 and ≤44	3	D, E, J
>44 and ≤60	5	A, B, G, H, I
>60 and ≤74	2	C, F
Education		
Bachelor's	3	A, B, I
Graduate and above	7	C, D, E, F, G, H, J
Research Field		
AIGC Technology	5	A, B, D, E, I
Yixing Zisha Design	5	C, F, G, H, J
Experience with AIGC Technology		
None (0 times)	2	A, I
Few (1 to <10 times)	1	E
Many (≥10 times)	7	B, C, D, F, G, H, J

Interview Outline

The researchers preliminarily drafted the interview outline after reviewing relevant literature and conducting internal discussions. It was then revised based on feedback from preliminary

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pre-interviews. The final interview outline included guided questions and open discussions aimed at comprehensively exploring the impact of AIGC technology on Yixing Zisha's design. Table 3 describes these interview questions.

Data Collection

The principle of this study was to conduct interviews in a convenient, undisturbed setting, specifically an online meeting room free of interruptions, using the Tencent Meeting platform. Before the interviews, researchers contacted participants via email or phone to explain the study's purpose and significance and promised to protect their privacy strictly. Data collection replaced experts' names with codes, and interviews were recorded with the experts' informed consent. According to Xia Wanying, Wang Tianlin, Shan Shuxiang, and Yang Xingyue (2023), interviewers in focus groups should listen attentively during the interview process and observe and record changes in the interviewees' expressions, actions, and variations in speech speed and tone. Immediate confirmation, clarification, feedback, and verification of their feelings and views are essential to ensure data accuracy. Each interview consisted of guided questions and two rounds of open discussions among the 10 participants. During the guided question phase, participants were led through directive questions to describe their experiences with or evaluations of AIGC technology, encouraging active participation and in-depth responses. The open discussion phase allowed participants to discuss their understanding of AIGC technology in Yixing Zisha design and to delve deeper into issues not covered during the initial interview phase. Data collection continued until information saturation was achieved, without setting up repeat interviews, totaling about 120 minutes of interview time. At the end of the interview, the interviewer summarized the discussions, reiterated the confidentiality principle, and expressed gratitude to the participants.

Table 3: Interview Question List

No.	Question
1	What specific changes do you think will occur in the Yixing Zisha design process after the introduction of AIGC technology?
2	What is the most significant advantage of AIGC technology in assisting Yixing Zisha's design?
3	In what aspects does AIGC technology show apparent deficiencies compared to traditional design methods?
4	How do you think the existing AIGC technology could be improved to better serve Yixing Zisha's design?
5	What impact do you think AIGC technology has on the traditional craftsmanship of Yixing Zisha?
6	Is this impact positive or detrimental?
7	What do you think is the future direction of AIGC technology in Yixing Zisha design?
8	What do you envision as the future direction?
9	What other possible technological innovations or trends could further promote the integration of AIGC technology with Yixing Zisha design?
10	Besides the above questions, do you have any additional comments?

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Data Management Challenges And Quality Control

Managing the vast amount of qualitative data collected was challenging. Ensuring accuracy in transcription and coding required rigorous attention to detail and cross-verification by multiple researchers.To ensure the research data's reliability, two interview team members had a background in AIGC technology and preliminary research in Yixing Zisha ceramic design. They systematically received training on focus group interview methods, interview skills, and the collection and analysis of qualitative research data and conducted pre-interviews before the focus group interviews. Two team members conducted the focus group interviews: one leading the discussion and the other responsible for organization and on-site note-taking. After the interviews, the team members analyzed the recorded content and meeting notes concurrently and summarized the interview results after group discussions.

The entire research process, including research design, interview implementation, and data organization and analysis, was strictly overseen by experts with extensive experience in qualitative research to ensure research quality. The interviews were confidential, and participants in each group were strangers to each other with no conflicts of interest.

Data Organization

The focus group interviews were conducted on the evening of May 3, 2024, from 7:00 PM to 9:00 PM, and the interview recordings were transcribed within 48 hours. The data were organized using the seven-step Colaizzi analysis method recommended by Liu Ming (2019). Additionally, based on the recommendations of Xia Ganlin (2023), this study primarily employed content analysis with Nvivo 12 software as the primary research tool. Nvivo 12, developed by QSR International in Australia, is a qualitative analysis software capable of processing literature, interview records, policy texts, and videos, among other non-numerical materials. It aids researchers by coding and summarizing relevant information points, facilitating deeper thinking. Liu Wei (2014) noted that content analysis allows for the systematic analysis of material content to distill information, which is suitable for exploring policy evolution or conducting overall evaluations. To ensure the reliability of the study, expert evaluation reliability methods were used to verify data credibility. In practice, two researchers independently completed initial coding, and a third experienced qualitative researcher reviewed the codes. Discrepancies in coding were resolved by consensus within the research team. Figure 2 shows the research process. Through this systematic data organization and analysis process, this study aims to comprehensively and accurately reflect the current state and impact of AIGC technology in Yixing Zisha design, providing a solid theoretical foundation and practical guidance for future research.

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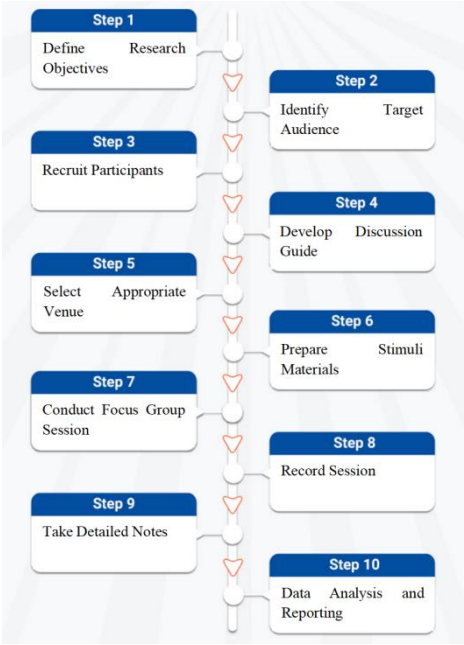
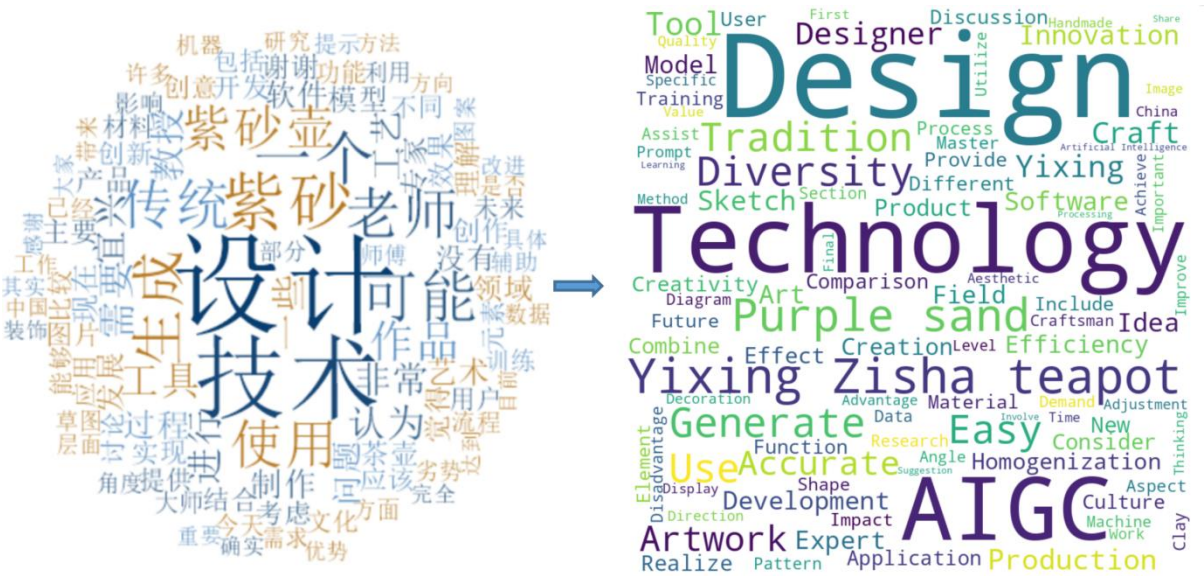


Figure 2: Flow Chart Of The Research Process



Note: This figure is created from keywords extracted from the focus group interview texts. The font size represents the frequency of word occurrence; the more significant the font, the more frequently the word is mentioned by the respondents and the greater the attention it receives.

Figure 3: Word Cloud Analysis Results Of Original Text Information From The Focus Group Interviews

Results

Word Frequency Analysis

Using the word frequency analysis feature in NVivo 12.0 software, the original text from the focus group discussions was analyzed for word frequency. The results show that the current core focus points of experts on AIGC technology in Yixing Zisha design include terms such as "design," "technology," "Zisha," and "use." These core terms revolve closely around the design

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process, the advantages and disadvantages of technology, the impact on traditional crafts, and future development directions. The words "challenges" and "opportunities" appearing in the word cloud signify the potential problems and market opportunities discussed, reflecting the participants' awareness of the difficulties that may be encountered in the technology application process and the new possibilities it brings. This understanding manifests in practical applications as in-depth discussions on how to effectively implement the technology and address issues encountered during the implementation. Specific terms like "craftsmanship," "creation," "model," "data," and "culture" also appear frequently, indicating that experts pay great attention to the details of AIGC technology's practical application and its impact on traditional culture.The detailed results of the word frequency analysis conducted using Nvivo12 and their corresponding English translations are shown in Figure 3.

Coding Composition

After conducting line-by-line coding of the transcription data from the focus group interviews, 124 codes were identified during the initial coding phase. As the relationships among codes, among themes, and between different levels of themes were continually analyzed and integrated, the researchers reviewed and analyzed these codes, ultimately defining 14 sub-themes and four main themes regarding the application of AIGC technology in Yixing Zisha design. The more reference points, the more coding points there are, indicating that the code appears more frequently in the interview texts. Table 4 provides examples of coding and corresponding node reference points for Theme 2.

Table 4: Examples of Coding and Corresponding Node Reference Points for Theme 2

Theme	Sub-theme	Code	Text Example
C2 Advantages, Disadvantages, and Improvement Measures of AIGC Technology	B8 Advantage	A50 Time-saving in design	AIGC technology can generate multiple different styles of images within a minute, significantly saving time.
		A51 Cost-saving in design	Previously, designing a pot could take one to two months, costing around 3000 yuan. If designed by Professor Cheng Zhongyao, the cost could reach 15000 yuan.
		A52 Reduces labor intensity and improves quality	AIGC reduces labor intensity while enriching the design output and even improving its quality.
		A53 Increases design efficiency and speed	AIGC technology significantly enhances design efficiency and speed.
		A54 Raises standards for designers	It's unreasonable to perform better than professional ceramic artists with AI, indicating that AI has elevated the design requirements for practitioners.
		A55 Generates conceptual design schemes	For example, innovative designs like the Peking Opera face mask Zisha pot show how AIGC can bring modern, futuristic, and culturally rich concepts to traditional crafts.
		A56 Enhances designers' capabilities	AI doesn't change designers' skills; it enhances them, making them more capable in their craft.
		A57 Rapid prototyping	One of the biggest advantages in Yixing Zisha design is the ability of AIGC technology to offer innovative design schemes and rapid prototyping.
		A58 Facilitates rapid iteration	The capability for rapid prototyping allows designers to quickly realize ideas, iterate, and experiment, thereby swiftly finding the best solutions.

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		A59 Market trend analysis for design	AI analyzes market trends and consumer preferences to create initial designs that combine modern aesthetics with traditional elements, enhancing market appeal.
	B9 Disadvantage	A60 Insufficient practicality	There might be slight deficiencies in the practicality of Zisha pots.
		A61 Unscientific design solutions	Certain design solutions may lead to small parts that are prone to dirt accumulation due to their porosity.
		A62 Mismatch with current design trends	Some AIGC designs may not align well with current fashion trends.
		A63 Manufacturing difficulties	Designs with overly strong sensations of space and dimensionality may be challenging to fire and process.
		A64 Unclear decorative significance	Many decorations look good but lack a clear explanation of their significance.
		A65 Poor stability of domestic AIGC software	The stability of domestic software is relatively poor, which may change unexpectedly.
		A66 Homogenization in AIGC designs	AIGC tends to result in homogenization; many people using the same tool might create similar designs.
		A67 Inconsistent quality of AIGC-generated designs	Although there are many creative ideas, the final quality varies significantly, showing clear defects.
		A68 Contextual differences in keywords for AIGC	Keywords or phrases input into AIGC may have contextual issues, leading to outputs that do not match expectations.
		A69 Difficulty understanding traditional elements	AIGC struggles to deeply engage with the nuances and lively expressions of traditional Chinese ink painting.
		A70 Overly technological feel in AIGC-generated decorations	The final designs of Zisha decorations carry an unrealistic technological feel.
		A71 Poor detail handling	Some images have poorly handled details, such as incorrectly placed or proportioned features.
		A72 Hand-drawn sketches	When AI does not understand your intentions, you should hand-draw sketches to maintain traditional design skills.
		A73 Personalized adjustments to AI	Designs generated by AI need manual adjustments to avoid homogenization and enhance individuality.
		A74 Master's intuitive intervention	The effectiveness of AIGC depends on our training, making intuitive intervention by masters and our multidimensional assistance crucial in realizing creative Zisha designs.
		A75 More model training and data input	More model training and bitmap input are needed due to insufficient data foundations for desired Zisha decoration effects.
		A76 Designers should establish proprietary or customized models	In the Zisha field, each designer should develop their own proprietary or customized AI models.
		A77 Increase own capabilities	Zisha designers should use saved time for creativity and enriching their knowledge in humanities and sciences.
	B10 Improvement Measure	A78 Improve algorithms and develop plugins	If existing algorithms do not meet the needs, we should improve them or develop small plugins to meet specific requirements.
		A79 Frequent training of AI	AI should be frequently trained to generate common shapes; for more biomimetic designs, more frequent training is necessary.

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		A80 Develop more AIGC applications aligned with Chinese traditional culture	Developing more AIGC applications and big data models inclined towards Chinese traditional culture is anticipated.
		A81 Add learning modules	Add modules for understanding and learning the features and techniques of traditional crafts, allowing the AI system to better understand and retain traditional elements.
		A82 Find a balance between technology and traditional protection	Finding a balance between technological development and traditional protection is crucial for the sustainable development and inheritance of Yixing Zisha craftsmanship.
		A83 Importance of writing and generating prompts for AIGC outcomes	Writing and generating effective prompts are crucial when using AIGC to create Zisha pots or other works, ensuring practical results are quickly achieved.
		A84 Close collaboration between experts and designers	Experts and designers in the Zisha field should collaborate closely, fully utilizing the multifunctionality of AI machines.
		A85 Time-saving in design	AIGC technology can generate multiple different styles of images within a minute, significantly saving time.
		A86 Cost-saving in design	Previously, designing a pot could take one to two months, costing around 3000 yuan. If designed by Professor Cheng Zhongyao, the cost could reach 15000 yuan.
		A87 Reduces labor intensity and improves quality	AIGC reduces labor intensity while enriching the design output and even improving its quality.
		A88 Increases design efficiency and speed	AIGC technology significantly enhances design efficiency and speed.
		A89 Raises standards for designers	It's unreasonable to perform better than professional ceramic artists with AI, indicating that AI has elevated the design requirements for practitioners.
		A90 Generates conceptual design schemes	For example, innovative designs like the Peking Opera face mask Zisha pot show how AIGC can bring modern, futuristic, and culturally rich concepts to traditional crafts.
		A91 Enhances designers' capabilities	AI doesn't change designers' skills; it enhances them, making them more capable in their craft.

Discussion

Application of AIGC Technology

In exploring the application of AIGC technology in the field of Yixing Zisha design, the research focused on familiarity with the technology, comprehensive assessments, and practical application cases. Expert B noted that understanding AIGC technology is foundational for its implementation, emphasizing, "AIGC technology integrates cutting-edge intelligent algorithms with the essence of traditional design, progressively revolutionizing our design practices." This view was supported by Expert C, who has applied AIGC technology in several design projects, demonstrating its effective transition from theory to practice. Further assessments show that AIGC technology significantly enhances design efficiency and creativity. Expert J commented, "AIGC technology not only accelerates the design process but also greatly promotes innovation in the design industry by enhancing the creativity and diversity of the artworks." Wang Yixian (2023) stated that in the design of crafts, the shaping and design phase is the most crucial part of all design processes, and enhancing design

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efficiency is a key issue for all designers.Ran Cuicui and Xun Ke (2024) argued that ceramic manufacturing has always relied on laborious manual operations and experience inheritance, making production relatively inefficient and susceptible to human errors.

The cases of Zisha pots designed using AIGC technology shared by the experts confirmed the technology's practicality. They demonstrated its effects in enhancing the creativity and execution efficiency of artistic works. These cases fully validate the feasibility and benefits of AIGC technology in practical operations, reflecting its profound impact on the traditional field of Yixing Zisha design.

Advantages, Disadvantages, and Improvement Measures of AIGC Technology

Through in-depth focus group interviews, this study comprehensively analyzed and evaluated the advantages, disadvantages, and improvement measures of AIGC technology. Experts unanimously recognized the significant advantages of AIGC technology in enhancing design efficiency and output diversity. They pointed out that this technology allows designers to explore a wide range of design options quickly, greatly enriching product innovation and diversity. However, with the widespread application of the technology, some significant drawbacks have emerged, such as the homogenization of creativity and neglect of details, which may undermine the uniqueness and artistic value of designs. Expert D emphasized, "As AIGC technology becomes mainstream, we have observed a trend toward style convergence in the market, posing a challenge for designers who pursue personalized and unique artistic styles."

To address these issues, experts suggested several improvement measures. Experts D and H recommended combining AIGC technology with traditional handicrafts, using the efficiency of technology while maintaining the warmth and detail of craftsmanship to ensure each piece's uniqueness and artistic value. Additionally, experts suggested regular technological assessments and updates to adapt to changing market demands and design trends, ensuring the sustainability and effectiveness of technology applications. This integrated approach helps maintain the originality and high quality of designs and fosters an organic integration of traditional art with modern technology, opening new avenues in Yixing Zisha design. Through these measures, the application of AIGC technology becomes more humanized and personalized, better serving the specific needs of designers and the market.

Positive and Negative Impacts of AIGC Technology

In a deep analysis of the impact of AIGC technology on the field of Yixing Zisha design, it is observed that the technology not only revolutionizes the design process but also poses significant challenges to traditional craftsmanship. AIGC technology, through automated design procedures, significantly enhances production efficiency and innovation capabilities, as stated by Experts C, G, and I, allowing designers to focus more on the core of artistic creation. This transformation brings unprecedented freedom and creative space to the design field, extensively promoting efficiency and design quality. However, the proliferation of this technology also raises concerns about the inheritance of traditional Yixing Zisha craftsmanship. Experts D and E pointed out that an over-reliance on AIGC technology might cause products to lose the warmth and spirit of handmade craftsmanship, threatening the art of Yixing Zisha, which is core to Chinese cultural heritage. In traditional Yixing Zisha production, each step is filled with personal creativity and a deep understanding of materials by the craftspeople, aspects that AIGC technology cannot fully replicate. While technological

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intervention has increased efficiency, it could also lead to homogenization, causing each piece to lose its unique interaction with the creator and rich cultural connotations. Facing this challenge, how to preserve and enhance the traditional artistic value of Yixing Zisha with the help of AIGC technology becomes a vital issue. Designers and technology developers are called to balance innovation and traditional crafts. This includes incorporating more handmade elements and personalized designs to ensure that each product reflects the unique artistic value of Yixing Zisha. For instance, combining preset designs with manual detailing in AIGC technology can preserve the unique tactile.Expert C suggested that the educational and training mechanisms for Yixing Zisha need to adapt to this technological change, ensuring that the new generation of designers not only masters traditional skills but also effectively utilizes modern technology. Through education and systematic professional training, designers can master AIGC technology ***while*** fostering respect and understanding for traditional materials and techniques.

Trends and Predictions

The introduction of AIGC technology, while bringing innovative possibilities to the field of Yixing Zisha design, also poses challenges to cultural heritage. Future technological development and applications must consider integrating this advanced technology with traditional Yixing Zisha crafts, ensuring that technological innovation coexists harmoniously with cultural inheritance. This deep integration of technology and culture is a requirement for technological advancement and a crucial example of traditional cultural innovation and protection in a globalized context. Experts unanimously believe that AIGC technology will gradually deepen its application in Zisha design as it matures and becomes more widespread. It may soon wholly replace specific traditional design processes. Expert G predicts, "In the coming years, AIGC technology will become the mainstream tool in design; its automation and intelligence capabilities will greatly enhance design efficiency, possibly automating the entire design process from concept to product."

Furthermore, with advancements in algorithms and hardware, AIGC is expected to provide more refined and personalized design solutions, accelerating the product development cycle and maintaining design quality while offering highly personalized solutions, thereby achieving better competitive advantages in the market. This comprehensive automation and intelligence will transform the Yixing Zisha design industry, providing designers with a one-stop solution from concept to product, enabling them to commercialize their creativity more effectively. However, experts also agree that this raises the need to redefine designers' skills and creative roles and challenges the protection of traditional crafts and cultural inheritance. Therefore, future technological development and application strategies must carefully balance technological advancement and cultural preservation, ensuring that technological progress strengthens rather than diminishes the cultural value of Yixing Zisha.

Conclusion

This study, through focus group interviews and word frequency and coding analysis using NVivo 12.0, has confirmed the significant effectiveness of AIGC technology in enhancing design efficiency and creative diversity and revealed its potential value in the innovation and heritage of traditional crafts.

Wang Yifan, Gong Xuelin, Zhu Hanqing, and Li Guang (2023) proposed that the introduction of AIGC technology has brought revolutionary changes to ceramic design,offering

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unprecedented opportunities for innovation in Yixing Zisha design. By integrating advanced intelligent algorithms, this technology significantly enhances the efficiency of the design process, allowing designers to explore a broader range of creative possibilities in less time. More importantly, the application of this technology is not limited to improving production efficiency; it also greatly enriches the innovation and artistic expressiveness of products by providing various design options. The design freedom empowered by this technology injects new vitality into Yixing Zisha's design, maintaining its competitiveness in the global art and design market. Xue Zhengyang and Tang Ke (2023) noted that ceramics, as part of the arts, must also rely on technology for faster development.Li Na and Long Hu (2023) further pointed out that future digital technologies will empower and aid the rapid development of national folk crafts truly achieving the integration of science and technology, thereby promoting the digital preservation and inheritance of national crafts.Florida (2006) said, "The extent of human intelligence and imagination determines how far it can develop." However, applying AIGC technology is not without challenges. Despite concerns about creative homogenization and the potential mechanical replication of the essence of traditional crafts, this study found that through appropriate strategies and innovative thinking, this technology can be effectively integrated with the traditional crafts of Yixing Zisha. Experts suggest that combining the efficiency of AIGC technology with the uniqueness of traditional craftsmanship can not only preserve the artistic value of handicrafts but also enhance their market adaptability and innovation capability. Through regular technological assessments and updates, the application of AIGC technology can continuously adapt to changing design needs and market dynamics, thus maintaining its relevance and effectiveness. This integrated application strategy promotes the organic fusion of traditional art and modern technology, paving a new developmental path for Yixing Zisha design.

The findings of this paper demonstrate that AIGC technology not only provides strong technical support for the modernization and internationalization of Yixing Zisha design but also offers a model for the modernization exploration of other traditional crafts. Future research should further explore the application of this technology in different traditional artistic fields and assess its long-term impact on artistic value and cultural heritage. Through these studies, we can better understand and utilize AIGC technology to promote the innovation and development of traditional crafts while respecting and protecting traditional cultures.

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