The Impact of AIGC on the Design Process of Cultural and Creative Education Products and Its Management Implications

Suzhen Bai[*]

Northwest Normal University, Lanzhou, Gansu, 730070, China

ABSTRACT

Cultural and creative education products play a crucial role in modern education, as they can enhance students' creativity and cultural understanding. In the field of cultural and creative product development, Artificial Intelligence Generated Content (AIGC) has not yet been maturely applied, while data-driven design methods can achieve personalized and efficient design outputs, thus facilitating the creative generation and rapid iteration of AIGC. This study aims to explore the application of AIGC in the development of cultural and creative education products, and to form a future-oriented design process transformation in combination with rapid output of data analysis. By building a database of cultural elements and user preferences related to educational aspects in cultural and creative education products, training the AIGC system using machine learning technology, and submitting the design drafts formed in the near term to designers for further optimization, the product is finally subjected to user feedback and market testing, with products that are highly accepted by users as the final output. The research results show that the use of AIGC can not only promote innovation in cultural and creative education products, improve design efficiency and product diversity, but also inspire more creative inspiration for designers. The advantage of data analysis further enhances the accuracy of product development and market response speed, achieving effective transformation of the design process. Moreover, this research provides valuable references for educational management in terms of resource allocation and curriculum design.

1. Introduction

AIGC is both a category of content classified from the perspective of content producers and a method of content production. It involves generating text, images, music, videos, etc., automatically or semi-automatically through artificial intelligence, gradually changing the landscape of cultural and creative product development. With rapid progress in fields such as deep learning, natural language processing, and computer vision, AIGC technology has achieved significant accomplishments in text generation, image creation, music production, and video generation. Especially in cultural and creative product development, AIGC not only provides designers with innovative design tools, accelerating the generation and iteration of creative drafts, but also further broadens new paths for cultural dissemination.

Corresponding Author:
Suzhen Bai,
Female, Associate Professor, Doctor;
Research direction : Art Design;
Email: 419622639@qq.com

2. Application of AIGC in Cultural and Creative Product Development

Introducing AIGC technology into the development process of cultural and creative products covers a wide database of cultural elements and user preferences, precise training of the AIGC system, and the use of this system for the preliminary generation and subsequent optimization of design drafts. This process not only significantly improves the efficiency and personalization of design work but also injects deeper levels of innovation and diversity into the development of cultural and creative products. Through these operations, the automation and semi-automation of the design process are realized, not only improving design efficiency but also promoting the generation of personalized design products, reflecting the intelligent transformation of the design process. At the same time, it further broadens the development boundaries of the cultural and creative industries, bringing fundamental changes to traditional design methods.

2.1 Building a Database of Cultural Elements and User Preferences

At the initial stage of cultural and creative product development, building a database containing rich cultural elements and user preferences is key. This database can collect data from multiple channels, including historical documents, artworks, popular culture, and user research data. The cultural elements part focuses on recording representative symbols, patterns, colors, shapes, etc., while the user preferences part is based on market research, collecting the likes and needs of different user groups for cultural products. The database construction method usually involves data mining and machine learning technologies to ensure the accuracy and diversity of the data. Moreover, by regularly updating and maintaining the database, the AIGC system can capture the latest cultural trends and changes in user preferences.

2.2 Training and Application of the AIGC System

After building the database of cultural elements and user preferences, the next step is to use these data to train the AIGC system. This process usually involves choosing the right machine learning model, such as deep learning networks, and then training these models with the collected data. The training goal is to enable the AIGC system to understand different cultural elements and user preferences and learn how to integrate these elements into creative designs. The practical application of the AIGC system widely covers various fields of cultural and creative products, including but not limited to the creation of visual artworks, the design of personalized goods, and the generation of interactive media content. In these applications, the AIGC system can not only quickly generate a large number of design drafts but also learn and optimize itself based on user feedback, further improving design quality and innovation.

2.3 Generation and Optimization of Design Drafts

After the AIGC system generates preliminary design drafts, these drafts usually need to go through manual review and optimization. Designers play a crucial role in this process, based on their professional knowledge and experience, as well as their understanding of the target market, to adjust the details, correct the style, and deepen the cultural elements of the AIGC-generated drafts. The optimization process also includes user testing, collecting feedback from the target user group on the drafts, which is used to further adjust the design. In addition, designers and market analysts can use user feedback data to update the user preference database, allowing the AIGC system to more accurately meet user needs in future design tasks.

3. Data Analysis and Design Process Transformation

3.1 Application of Data Analysis in Creative Generation

The application of data analysis in the design process, especially in the creative generation stage, provides designers with a rich source of creative inspiration by deeply mining data on user preferences, market trends, and cultural elements. By analyzing a large amount of user data through algorithms, subtle changes in user needs can be identified, and future design trends can be predicted, thereby guiding the direction of creative design. In addition, data analysis can also help the design team assess the potential impact of different design solutions, choosing more attractive or innovative design solutions for iteration and optimization through comparative analysis.

3.2 Panoramic Transformation of Cultural and Creative Design Process

In the rapidly changing creative field, technological progress is not only an innovation of tools and methods but also a profound transformation of design thinking and creative methods. The combination of data analysis and Artificial Intelligence Generated Content (AIGC) technology reshapes the landscape of cultural and creative product development, constructing a more efficient, personalized, and innovative design process (as shown in Figure 1).
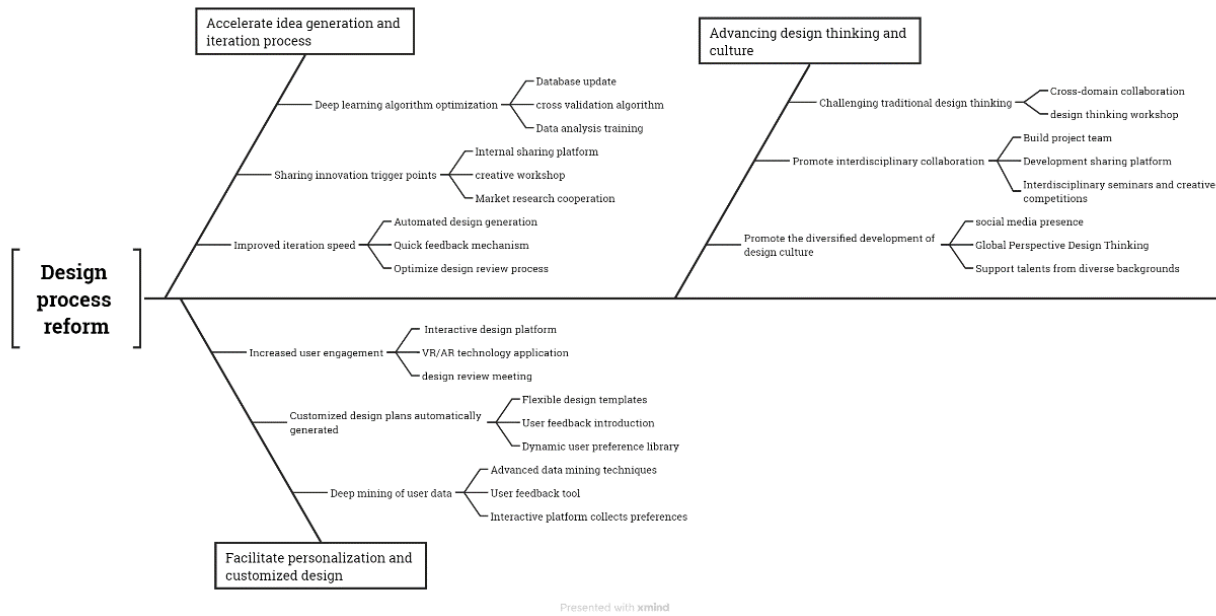
Figure 1. Cultural and Creative Product Design Process Changes

(1) Accelerate the creative generation and iteration process

By utilizing deep learning algorithms to analyze historical data, market trends, and user behavior, data analysis can reveal hidden user needs and preferences, providing designers with new creative triggers. These insights prompt designers to think from multiple perspectives, inspiring innovative design thinking. Combined with AIGC technology, a large number of design variants can be generated in a very short time, significantly improving the speed and accuracy of iteration.

(2) Promote personalized and customized design

The application of data analysis makes personalized design for specific market segments and individual users possible. By deeply analyzing user data, the design team can accurately capture the unique needs and preferences of each user, and AIGC technology generates personalized custom design solutions based on this information, enhancing user engagement and satisfaction, forming a more interactive and participatory design process.

(3) Drive the advancement of design thinking and culture

Data analysis and AIGC technology challenge traditional design thinking models together, prompting designers to explore a data-driven creative process. This new design thinking model not only values intuition and experience but also emphasizes the importance of data insights and technological support. In addition, this transformation promotes interdisciplinary cooperation, such as close collaboration between data scientists, AI engineers, and designers, bringing new perspectives and solutions to design problems and pushing design culture towards diversification and inclusiveness.

This study explores the integration of Artificial Intelligence Generated Content (AIGC) technology and data analysis in cultural and creative product development, demonstrating how this technology combination can drive innovation in the design process. By establishing a database covering a wide range of cultural elements and user preferences, and applying machine learning technology to train the AIGC system, the effectiveness of AIGC technology in improving design efficiency, accelerating the creative generation and iteration process, and promoting personalized and customized design development is further demonstrated. This finding emphasizes the importance of combining AIGC technology and data analysis to promote the advancement of design thinking and cultural innovation, providing a new development path for cultural and creative product development and challenging traditional design methods. As AI technology continues to advance, AIGC will play an increasingly critical role in cultural and creative product development. Therefore, further exploration is needed on how to effectively integrate these technologies, strengthen user participation, and promote interdisciplinary cooperation to drive innovative development in the cultural and creative industry.

4. Conclusion

In conclusion, this study on the application of AIGC in cultural and creative education product design process

transformation holds significant implications for the field of education. It highlights the potential of integrating advanced technologies with educational practices to enhance learning experiences. As educational institutions strive to adapt to the digital age, understanding such design process transformations becomes crucial for effective curriculum development and resource management. Future research should focus on further exploring the long-term impact of AIGC on students' learning outcomes and how educational management can be optimized to fully leverage these technological advancements. This will ensure that cultural and creative education products not only meet the aesthetic and functional requirements but also contribute to the holistic development of students in an increasingly technology-driven educational landscape.

Fund Project

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