Application of Intangible Cultural Heritage in the Teaching of Visual Communication Design in Vocational Colleges Under the Background of Digital Intelligence

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ABSTRACT
Intangible cultural heritage embodies profound humanistic history and cultural accumulation, reflecting the national spirit and traditional values. On the other hand, digital intelligence technology represents the forefront of contemporary scientific and technological development, characterized by high practicality and innovation. Studying the application of intangible cultural heritage in visual communication design teaching under the context of digital intelligence not only promotes the development of visual communication design but also opens new fields and chapters for the discipline, fostering interdisciplinary and diverse development. Moreover, it plays a significant role in preserving historical continuity, driving the prosperity of the cultural and creative industries, and contributing to the building of a strong socialist cultural nation.

Keywords: *Digital intelligence, Intangible cultural heritage, Visual communication design, Teaching.*

1. INTRODUCTION

Intangible cultural heritage (ICH) refers to various forms of traditional culture closely related to people's lives, passed down through generations in non-material forms, along with related objects and places. It holds sociological, anthropological, aesthetic, and historical value, representing the wisdom of the Chinese nation. As an essential part of traditional culture, it also serves as a valuable resource for higher education institutions to highlight their unique educational approaches, fulfill the goal of character building, and innovate talent cultivation. In recent years, some educators in visual communication design have recognized the significance of ICH and integrated it into the curriculum by incorporating ICH elements and culture. For example, the Lu Xun Academy of Fine Arts at Yan'an University has established ICH training bases on and off-campus, organized regular ICH experience activities for students, and combined ICH with professional courses. They have also adjusted regular teaching methods based on the advantages of ICH, leading to rapid improvement in students' comprehensive skills and abilities in visual communication design. At the Art College of Suzhou University of Science and Technology, local ICH such as Suzhou embroidery, Taohuawu woodblock prints, Kesi weaving, Suzhou lanterns, and Wuzhong stone carving have been integrated into teaching philosophy, course content, teaching methods, and assessment. By empowering Suzhou's urban development through the concept of "ICH + Design," the university also provides talent support for the preservation and transmission of local ICH. The Hunan Arts and Crafts Vocational College has incorporated Hunan’s ICH into both foundational and professional courses in visual communication design. In basic sketching courses, for example,

Projects: Key topics of the "14th Five-Year Plan" for Education Science of Jiangsu Province in 2024“Innovative Practices in Integrating Intangible Cultural Heritage into Higher Vocational Art and Design Education in the Context of Digital Intelligence”(B-b/2024/02/89); The Ministry of Education's Industry-Education Partnership Employment Program(2023122205198); 2024 Jiangsu University “Qing Lan Project”; Special Project on Digital Transformation of Higher Education and Practice of Education Modernization in 2024; Nanjing colleges "14th Five-Year" key construction projects; 2024 Nanjing City Vocational College teacher Teaching Innovation team project.

batik patterns from Xiangxi are taught and practiced, while in professional courses, a collaborative teaching model is adopted, where ICH inheritors teach traditional techniques and processes, and in-house faculty members instruct on design composition and aesthetic principles. This collaboration enhances students' understanding of ICH and strengthens their design skills.

These scientific educational models have cultivated high-quality and highly skilled visual communication design talents, while also playing a crucial role in the preservation and transmission of intangible cultural heritage (ICH). However, with the rapid development of advanced technologies such as digitalization and intelligence, and the evolving societal demand for new types of talents, it has become urgent and essential to train more design professionals with digital literacy and technical skills in order to meet the demands of the new productive forces in society, while still maintaining the quality of visual communication design education. From the current educational models in visual communication design in China, it is evident that the focus remains largely on incorporating ICH culture and elements into the curriculum, using methods such as research, special topics, and case studies to improve the teaching system. While this exploration has indeed contributed to the development of the discipline and the enhancement of talent cultivation quality, there is still a lack of emphasis on mastering technological innovation and practical skills, particularly in terms of how digital intelligence technologies drive visual communication design and reshape the space for ICH dissemination.

It is widely recognized that digital intelligence technologies are playing a transformative role in design creation and cultural communication, unlocking new interactive scenarios where humans and machines coexist and virtual and real worlds merge. Over the past year, many scholars have recognized the importance of digital intelligence technologies and explored their impact on ICH transmission and visual communication design education from the perspectives of cultural preservation and educational innovation. For instance, Dr. Chen Beibei from Guangxi Arts University elaborated on the application and effectiveness of digital intelligence technologies in the protection and transmission of ICH in Guangxi, and proposed a "digital community" development strategy for ICH transmission. Scholars from Guangxi Vocational and Technical College of Construction have explored the iterative upgrade paths of ICH presentation driven by digital technologies such as the metaverse, the Internet of Things, cloud computing, and virtual digital humans, enabling ICH to serve multiple functions, including display, experience, design, and education. Professor Duan Peng from Beijing Language and Culture University emphasized that digital empowerment of traditional culture manifests in the multidimensional interaction between technology, culture, and people. He highlighted how cultural dissemination can expand across physical, virtual, and symbolic spaces. Using the example of "Chinese Traditional Cultural Clothing Design and Digital Art Creative Talent Cultivation," he demonstrated how technologies such as 3D cloud scanning, virtual reality, and augmented reality can translate design concepts into tangible, viewable, and experiential digital clothing creations. It is evident that the integration of intangible cultural heritage (ICH) and digital intelligence technology has become a significant trend and focus in the current development of visual communication design. This fusion provides abundant resources and strong technical support for the deepening and expansion of teaching content in visual communication design courses. However, most existing research primarily focuses on the application methods of ICH in visual communication design education and the pathways for combining ICH with digital intelligence technologies. Few studies have systematically explored innovative strategies for integrating ICH into visual communication design education from the perspective of digital intelligence. Although some literature mentions this topic, it is often in brief sections. For example, Chen Changzu introduced generative artificial intelligence into the classroom to innovate traditional clothing culture education and briefly outlined the paths for integrating ICH with talent cultivation in the context of digital intelligence. Still, these are mainly short, introductory discussions. There is an urgent need for further exploration of the innovative application of ICH in vocational visual communication design education under the backdrop of digital intelligence. This includes a deeper analysis of the profound impacts of the "ICH + Digital Intelligence" model on program development, curriculum systems, teaching content, and talent cultivation, as well as its role in enhancing students' cultural literacy and digital skills. Currently, research in these areas remains limited, making it imperative to systematically explore and establish pathways for the integration

of ICH and digital intelligence technology in vocational visual communication design education.

2. THE ROLE OF INTANGIBLE CULTURAL HERITAGE AND DIGITAL INTELLIGENCE TECHNOLOGY IN VOCATIONAL VISUAL COMMUNICATION DESIGN EDUCATION

2.1 Integrating ICH and Digital Intelligence Technology into Visual Communication Design Education is Essential for Cultivating Students' Humanistic Awareness

First, ICH carries a wealth of history and tradition, and incorporating it into visual communication design education can help students understand and respect diverse cultural backgrounds. This understanding not only allows them to integrate more humanistic elements into their designs but also inspires creativity and fosters innovative design. Second, the application of digital intelligence technologies can present ICH in more modern and interactive ways. For instance, with technologies like virtual reality (VR) and augmented reality (AR), students can vividly showcase the charm of ICH in their design works, enhancing the audience's experience and engagement. This combination of technology and culture not only increases the appeal of the designs but also helps students develop their ability to utilize modern technologies. Lastly, the integration of ICH and digital intelligence fosters interdisciplinary learning. In the design process, students need to consider factors related to culture, technology, and the market. This comprehensive thinking approach helps develop their critical thinking and problem-solving skills. Integrating ICH and digital intelligence into visual communication design education is not only essential for enhancing students' professional skills but also plays a critical role in cultivating their humanistic awareness and innovative abilities. It is worth noting that design is not just a technical activity but also a form of cultural expression. Combining ICH with digital intelligence helps students develop cultural sensitivity and a sense of responsibility. Through the study and understanding of traditional culture in design education, students can reflect on the issues of cultural loss in the context of globalization and use design as a tool to promote cultural preservation and innovation.

2.2 Integrating Intangible Cultural Heritage and Digital Intelligence Technology into Visual Communication Design Education Is Essential for Enhancing the Cultural Depth of Design Works

Intangible cultural heritage (ICH) encompasses a rich array of cultural symbols, traditional techniques, and artistic forms, embodying local and ethnic cultural characteristics. For example, Chinese ICH items such as paper-cutting, embroidery, and shadow puppetry contain unique aesthetic and artistic value. These elements can serve as inspiration and resources for visual communication design. Incorporating ICH into design education not only helps students develop respect and understanding for traditional culture but also encourages them to use distinctive cultural elements in their designs, thereby enhancing the cultural depth and recognizability of their works. Through the study and creative reinterpretation of ICH, designers can preserve the uniqueness of local culture within a globalized context, creating visual expressions with profound cultural significance. Moreover, with the rapid development of digital technology, traditional ICH faces challenges in both preservation and innovation. Digital intelligence technologies (such as virtual reality, augmented reality, artificial intelligence, and 3D modeling) offer new forms of expression for ICH. For instance, digital technologies can accurately replicate the processes of traditional craftsmanship or simulate cultural scenes, making ICH more intuitive, interactive, and engaging. This helps students better understand and apply ICH in their designs. Students can use 3D modeling to recreate traditional architecture, clothing, or artifacts, and then reinterpret this using modern design language. AR technology can breathe new life into traditional art forms, allowing them to be presented and disseminated on digital platforms. This combination not only increases the visibility of ICH but also injects new vitality into traditional culture. In the global market, design works with strong cultural symbolism often stand out and attract more attention from consumers.

2.3 Integrating Intangible Cultural Heritage and Digital Intelligence Technology into Visual Communication Design Education Is Essential for Enhancing Students' Practical Innovation Skills

ICH reflects the essence of ethnic culture, embodying profound historical, cultural, and artistic value. In visual communication design education, incorporating ICH can provide students with a rich source of design materials and inspiration. By deeply studying and exploring ICH, students can master traditional techniques and creatively apply them, merging these with modern design languages. For example, students can learn to use ICH techniques such as embroidery, weaving, and paper-cutting in their creative practice and give these traditional arts new forms through modern design methods. This practice not only enhances their understanding of traditional culture but also enables them to combine traditional and modern design concepts, fostering innovative expression in their work. Digital intelligence technologies (including virtual reality, augmented reality, artificial intelligence, and 3D printing) are rapidly transforming design practice. Integrating these technologies into visual communication design education offers students new creative tools and design methods, greatly expanding their potential for innovation. For instance, students can use VR technology to construct digital spaces and experiment with visual effects, or apply 3D printing to turn abstract design ideas into tangible products. AI tools can assist in generating complex patterns or optimizing design solutions automatically. The integration of these technologies not only improves design efficiency but also brings creative ideas into reality that would have been impossible with traditional methods, significantly enhancing students' practical skills and room for innovation. The combination of ICH and digital intelligence offers students more hands-on practice opportunities and challenges. For example, students can gain a deep understanding of ICH techniques and processes by personally experiencing traditional crafts. At the same time, digital intelligence technologies enable them to conduct design experiments on digital platforms, quickly validating their ideas. This dual practice pathway strengthens students' practical abilities and develops their adaptability to innovate with different tools and materials. Students not only cultivate patience and attention to detail through hands-on craftsmanship but also improve design efficiency and technical application skills by utilizing digital tools.

2.4 Integrating Intangible Cultural Heritage and Digital Intelligence Technology into Visual Communication Design Education Is Essential for Building a Culturally Strong Nation

ICH represents the unique historical and cultural heritage of a country and its people. Incorporating it into visual communication design education helps to promote traditional culture and enhance national cultural confidence. In the context of globalization, cultural confidence is not only reflected in the recognition and preservation of traditional culture but also in the ability to combine these cultural elements with modern technology and design concepts to create works that align with contemporary aesthetics. Through visual communication design, ICH can be reinterpreted and represented in modern, symbolic, and visual forms. For instance, students can integrate ICH elements such as paper-cutting, calligraphy, and embroidery with modern design language, applying them to brand design, packaging, advertising, and media communication. This innovative practice not only revitalizes ICH in contemporary society but also broadens and deepens cultural communication, fostering students' confidence and identification with local culture. Integrating ICH and digital intelligence technology into design education can inject new vitality into the high-quality development of the cultural industry. Through digitalization and innovative design, ICH can be incorporated into the cultural and creative industries in modern and fashionable ways, providing a continuous source of inspiration and resources for brand design, advertising, and product packaging. Many brands, for example, have introduced ICH elements into their packaging design or product promotions, increasing the cultural value and market competitiveness of their products. Through design education, students learn how to merge traditional culture with modern business needs, enabling them to create works with cultural significance while also injecting new economic momentum into the cultural industry and promoting sustainable development of the cultural economy. Moreover, modern technologies such as virtual exhibitions, digital museums, and online design platforms allow students not only to access

and disseminate ICH but also to present the uniqueness of Chinese culture to the world using international design languages. The application of digital intelligence technologies enables ICH to appear on more international design stages, thus enhancing the country's cultural soft power and global influence.

3. CONSTRUCTING CONCEPTS FOR INTEGRATING INTANGIBLE CULTURAL HERITAGE INTO HIGHER VOCATIONAL VISUAL COMMUNICATION DESIGN EDUCATION IN THE CONTEXT OF DIGITAL INTELLIGENCE

3.1 Combining Cultural Heritage and Innovation

This concept emphasizes the idea of "innovating through inheritance and inheriting through innovation." ICH is an essential part of traditional Chinese culture, rich in historical depth and artistic value. In higher vocational visual communication design education, incorporating ICH helps students gain a profound understanding of national cultural connotations, inspiring their cultural awareness in design. Traditional ICH techniques and cultural symbols can be reinterpreted through modern design languages, infusing them with new vitality. Students can extract traditional cultural symbols and integrate them into visual communication projects such as brand design, packaging design, and advertising design, thereby endowing their works with unique cultural recognition. This approach not only fosters students' cultural confidence and sense of responsibility but also enables them to blend tradition with modernity in their actual designs, resulting in creative and meaningful design works.

3.2 Digital Intelligence Empowering Design Education

In the context of digital intelligence, the widespread application of digital technologies has transformed the creative processes and mindsets within the design industry. In higher vocational visual communication design education, digital intelligence technologies offer greater possibilities for design innovation. Through modern technological means such as virtual reality (VR), augmented reality (AR), artificial intelligence (AI), big data, and 3D printing, ICH can be more comprehensively displayed and disseminated on digital platforms. This concept advocates for using digital intelligence technologies to provide students with more intuitive and interactive experiences of ICH, enhancing their technical and practical skills. For example, students can use VR technology to have an "immersive" experience of traditional craft-making processes, or utilize AI-assisted design tools to generate complex ICH patterns for application in their visual design projects. Digital intelligence technologies not only improve design efficiency but also make the inheritance and innovation of ICH easier and more convenient, providing higher vocational students with vast spaces for creativity.

3.3 Practice-Oriented Teaching Model

Higher vocational education emphasizes practical skills, so integrating ICH and digital intelligence technology into visual communication design education requires a teaching model centered on "project-oriented, practice-led" principles. This means that students' learning extends beyond theoretical knowledge; they engage in the design and production of actual projects, incorporating elements of ICH in the process to enhance their design and technical abilities. Teachers can employ a project-based teaching model that combines specific ICH techniques (such as woodblock printing) with modern design needs (like product packaging) to create works that align with market demands. Students not only learn the essence of ICH through hands-on experience but also improve the quality of their designs by utilizing digital intelligence tools. This practice-oriented teaching model encourages students to combine their learned skills with practical applications, cultivating their innovative abilities and professional qualities.

3.4 Interdisciplinary Fusion Thinking

In the context of digital intelligence, design education increasingly emphasizes interdisciplinary integration. The incorporation of ICH is not only a deepening of visual communication design itself but also involves the intersection of multiple disciplines, including culture, history, craftsmanship, and technology. Higher vocational visual communication design education should guide students to understand and apply ICH from multidimensional and multidisciplinary perspectives. This constructivist approach advocates for "cross-disciplinary thinking,"

meaning students should not only possess design skills but also understand the social significance and aesthetic value behind ICH. Moreover, students need to master modern digital tools, integrating knowledge from different disciplines. Through interdisciplinary integration, students can develop a wider range of solutions when facing design problems, cultivating comprehensive talents with innovation, cultural depth, and technical proficiency.

3.5 Diversified Evaluation and Feedback Mechanism

In traditional visual communication design education, the evaluation of students' works is typically based on aesthetic or technical standards. However, in the context of digital intelligence and the integration of ICH into design education, the evaluation system needs to diversify. When constructing this educational philosophy, it is essential to assess not only students' design skills and creative expressions but also their depth of understanding of ICH, the rational use of cultural elements, and the effectiveness of the technological applications. Students' design works should reflect cultural connotations while also demonstrating innovation in visual communication effects and technical realization. Teachers can employ multiple channels for comprehensive evaluation of students' works, including expert reviews, public feedback, and market testing, thereby guiding students to improve their design levels through continuous reflection and enhancement.

4. IMPLEMENTATION PATHWAYS FOR INTEGRATING ICH INTO HIGHER VOCATIONAL VISUAL COMMUNICATION DESIGN EDUCATION IN THE CONTEXT OF DIGITAL INTELLIGENCE

In the context of digital intelligence, integrating intangible cultural heritage (ICH) into higher vocational visual communication design education requires a focus on both the combination of cultural inheritance and innovation, as well as leveraging the application potential of digital intelligence technology in design teaching. The following are specific implementation pathways aimed at promoting the application of ICH in higher vocational visual communication design education through effective teaching models, technological methods, project practice, and interdisciplinary collaboration.

4.1 Constructing a "ICH + Design + Digital Intelligence" Curriculum System

To effectively integrate ICH into higher vocational visual communication design education, it is essential to establish a curriculum system centered on "ICH + Design + Digital Intelligence." This curriculum should comprehensively cover three levels: cultural theory, design practice, and technology application. First, courses related to ICH should be offered to help students systematically learn about the history, cultural value, and techniques of ICH. The curriculum content can include traditional Chinese arts and crafts, folk arts, and traditional design elements, enabling students to gain a profound understanding of the cultural connotations of ICH in their designs. Second, the curriculum should integrate ICH with visual communication design teaching by offering specialized design courses or workshops focused on the visual expression of ICH elements, graphic design, brand promotion, and other creative practices. These courses can guide students to apply ICH in various visual communication design fields such as advertising design, brand image design, and packaging design. Third, the curriculum should incorporate teachings on technologies such as virtual reality (VR), augmented reality (AR), artificial intelligence (AI), and 3D printing to help students master modern design tools and innovate in expressing ICH through digital means. For example, students could use 3D modeling and printing to transform traditional handcrafted works into modern products or utilize AI technology to generate graphics and design solutions based on ICH elements. The integration of ICH and digital intelligence technologies into visual communication design education provides students with a rich platform for creative practice, helping them enhance their practical abilities and innovative thinking through interdisciplinary integration. This educational model not only improves students' cultural literacy and technical application skills but also equips them with a wealth of tools and inspiration for their future design practices, enabling them to create designs with profound cultural connotations and modern innovative value.

4.2 Project-Driven Teaching Model in Design Education

In higher vocational education, a project-driven teaching model is an important approach to cultivate students' practical abilities. By combining intangible cultural heritage (ICH) with digital intelligence technology and driving teaching through design projects, students' practical skills and innovative awareness can be enhanced. This can be achieved through the following pathways:

- Real Project Integration: This means to collaborate with local ICH inheritors, cultural enterprises, or government agencies to design real project tasks, such as visual identity design for traditional crafts, brand packaging for ICH techniques, and digital presentation of cultural heritage. Through this approach, students not only gain in-depth exposure to ICH techniques but also apply their learning outcomes to real-world problems.
- Cross-Disciplinary Collaborative Projects: This requires to design comprehensive projects themed around ICH through cross-disciplinary cooperation. For example, students can collaborate with peers from digital media, animation, photography, and other disciplines to complete short films, exhibitions, or interactive installations themed on ICH. These cross-disciplinary projects can enhance students' collaboration skills and encourage them to examine the visual communication of ICH from multiple perspectives. Additionally, in the context of digital intelligence, the inheritance and innovation of ICH increasingly rely on support from digital technology platforms. Higher vocational institutions can introduce digital platforms to help students achieve a combination of the virtual and the real in ICH. For instance, students can use VR technology to recreate the production process of traditional crafts or employ AR technology to design virtual interactive experiences for ICH. They can also create digital museums and virtual exhibition spaces, allowing students to learn how to use digital technology to preserve and present ICH. This kind of display not only expands the avenues for cultural dissemination but also enables students to engage in creation and interaction within a virtual environment.

4.3 Dual-Teacher Teaching Model Integrating ICH Inheritors and Digital Technology Experts

It is necessary to invite ICH inheritors into the classroom to personally impart the methods and philosophies behind traditional craft techniques. For example, inheritors of traditional crafts such as paper-cutting, embroidery, and wood carving can demonstrate their skills live and interact with students, allowing them to experience the essence of ICH through hands-on practice. This approach not only enhances students' emotional connection to ICH but also inspires them with design ideas drawn from these craft traditions. Meanwhile, digital technology experts can teach students how to use modern tools and techniques to digitize ICH elements, guiding them to integrate these elements into visual communication design. For instance, students might use AI-assisted design to generate graphics based on ICH patterns or employ VR technology to create interactive cultural displays. The dual-teacher model enables students to discover new pathways for the innovative development of ICH at the intersection of traditional and modern technologies.

4.4 Constructing a Diverse Evaluation Mechanism

In the context of vocational education in visual communication design, the evaluation system for design works that integrate ICH and digital technology needs to be diversified, encompassing multiple dimensions such as design ability, cultural understanding, and technical application.

- Evaluation of Design Innovation: It is to assess students' innovative application of ICH elements in their designs, including how they integrate traditional cultural symbols with modern design language and how they express the unique connotations of ICH through visual design.
- Evaluation of Cultural Understanding Depth: It is to evaluate the depth of students' understanding of ICH, particularly whether they can respect the cultural background and spiritual essence of traditional crafts during the creative process, avoiding simplistic symbolism or superficial treatment.
- Evaluation of Technical Application Level: It is to assess students' proficiency with digital technology, especially how they use digital tools for innovative expression in

their designs, and how they enhance the visual impact and interactivity of their works through these technologies.

- Market and Social Feedback Evaluation: It is to display students' works in the market or to the public to gather feedback, understanding the effectiveness and impact of their designs in real-world applications. For instance, students' designs for ICH cultural brand packaging can be sold through online platforms to gauge consumer recognition and market response.

5. CONCLUSION

Cultural heritage and technological innovation are crucial components of visual communication design education. By integrating ICH elements with modern technological methods, a curriculum that is both innovative and systematic can be developed, encompassing course frameworks, teaching activities, and evaluation methods. This approach not only enhances students' cultural awareness and humanistic qualities but also provides them with broader platforms for expression and creativity, helping to improve their design capabilities and increase their employability. Additionally, it plays a significant role in boosting students' confidence and promoting their overall physical and mental development. The combination of ICH and digital technology not only facilitates the dissemination and promotion of ICH culture but also cultivates design talents who are proficient in digital technology and possess innovative ideas. This synergy is beneficial for fostering interdisciplinary integration and can serve as a reference for visual communication design education in other vocational colleges.

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