



AI Empowers Intangible Cultural Heritage Art Classes

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Abstract. This study focuses on the numerous crises faced by the inheritance of intangible cultural heritage in the context of the current digital wave and the environment of innovation and cultural inheritance in the new era. Oral transmission is the main mode of inheritance for most intangible cultural heritages. When directly applied to the classroom in the large-scale primary education stage, it leads to the long-term stagnation of intangible cultural heritage courses at the observation stage. This study takes the China National Knowledge Infrastructure (CNKI) database as the source of literature and conducts a literature review of recent articles. It starts from the mechanism and path of AI empowering intangible cultural heritage courses and conducts research on the reconstruction of the research paradigm of the entire educational process by applying AI. Empowering intangible cultural heritage art classes with AI optimizes digital classroom interaction through technical means, reconstructs immersive teaching, and forms a practical community. This is conducive to the inheritance and innovation of intangible cultural heritage, thereby strengthening students' cultural identity and enabling intangible cultural heritage to achieve a virtuous development of "passing on the torch and sprouting new buds".

Keywords: Intangible Cultural Heritage; Digital Communication; Art Classroom; Situational Learning.

1 Introduction

The necessary prerequisite for AI to empower traditional intangible cultural heritage (ICH) art classes is to have a correct understanding of ICH. According to China's "ICH Law", ICH is defined as "various traditional cultural expressions passed down from generation to generation by various ethnic groups and regarded as part of their cultural heritage, as well as the physical objects and places related to traditional cultural expressions." Considering China's national conditions and cultural historical characteristics, in primary education art classes, the ICH integrated with the class content is mostly traditional art, traditional skills, and folk customs [1]. Currently, the inheritance of ICH is facing a crisis and predicament. Students' understanding of ICH mostly remains at the primary stage and they can only learn fragmented ICH knowledge through online digital platforms such as short video platforms. The oral transmission mode and the special nature of being in an active state make the dissemination of ICH challenging and difficult to personally participate in the practice of ICH. Therefore, under the digital

wave, the development of ICH as an important part of cultural dissemination is urgent to find new models to integrate ICH culture healthily and sustainably into ICH art classes [2]. Under the AI empowerment, primary education art classes are conducive to improving students' ICH literacy. AI empowers ICH courses by integrating VR and AIGC into the teaching process, forming visual language and precise call-up of material resource libraries, so that ICH is no longer an empty and abstract legend or formula.

This research is highly significant for the application of AI in contemporary courses and the utilization of AI in intangible cultural heritage courses. It specifically conducts research on the application of AI in various parts of the courses. The research employs the literature analysis method to search and read relevant materials and literature. This method has the advantage of being able to effectively analyze the mechanism and path of AI empowering intangible cultural heritage courses, which is conducive to the progress of the research. The ultimate research goal of this study is to explore the possibility of improving the process of intangible cultural heritage courses under the empowerment of AI, enabling students to transform from observers of intangible cultural heritage to inheritors and innovators of it. Students will no longer passively accept culture but complete their identity cultural recognition through practice. To achieve this goal, this study uses the China National Knowledge Infrastructure (CNKI) database as the source of literature and screened and conducted a literature review around keywords such as "AI empowerment education" and "AI empowerment intangible cultural heritage".

2 Literature Review

With the explosive emergence of generative AI from the end of 2022 and the inclusion of "artificial intelligence +" in the government work report and its elevation to a national strategy, the AI education ecosystem under the strategy of building an educational power is undergoing a reconfiguration. AI-enabled courses have become an irreversible trend of the times [3]. This study uses the China National Knowledge Infrastructure (CNKI) database as the source of literature, conducts screening around keywords such as "AI enabling education" and "AI enabling intangible cultural heritage", and conducts a review from three levels: the overall research trend, the distribution of core issues, and existing limitations, with the aim of providing a reference for subsequent research. From the innovative design of education for AI-enabled intangible cultural heritage courses, the protection of intangible cultural heritage by intangible cultural heritage courses, the formation of digital transformation in higher education enabled by AI technology, and the intelligent narrative dissemination of intangible cultural heritage under AI technology, four different perspectives jointly depict the multi-dimensional picture of AI enabling culture and education. AI-enabled intangible cultural heritage courses are a three-dimensional framework of cross-research on "technology - education - culture", promoting and driving each other.

In the article "Exploration of Innovation and Entrepreneurship in Integrating Local Intangible Cultural Heritage into College Design Courses with AI Empowerment",

Fang Zemin et al. studied and discussed how AI technology can be effectively integrated into the teaching of intangible cultural heritage in college design courses in terms of teaching empowerment, thinking empowerment, and specialized creation empowerment. They used AI databases to cross disciplines and compensate for teachers' personal knowledge limitations, systematically summarizing and integrating intangible cultural heritage knowledge; Using AI to generate attributes to assist students in expanding their design ideas. I have made contributions to the AI empowered teaching process in this study, but there is not much content to be supplemented in terms of intangible cultural heritage inheritance and students' cultural identity. Regarding the necessity of AI in the protection of cultural heritage, Dou Jinhua et al. found through bibliometric analysis in their article "A Review of Research on AI Empowering Cultural Heritage Field - Visualization Analysis Based on CiteSpace" that there is relatively little research on AI empowering cultural heritage both domestically and internationally, but the overall research quantity is increasing [4]. AI technology will be further closely integrated with the protection of intangible cultural heritage, and the application of AI technology for the protection and inheritance of intangible cultural heritage is of great significance. AI has made contributions to the digital processing of cultural heritage in this study. AI can empower the digital processing of intangible cultural heritage through deep learning, knowledge graph, AIGC technology, and other aspects, thereby enabling innovative transformation and intelligent generation. In terms of AI empowering higher education to form digital transformation, Xu Ying conducted research in the article "Research on the Path of AI Empowering Education Research Paradigm Transformation" on the rapid development of AI promoting the enhancement of the tension between education and technology, as well as the application of AI as an "intelligent mentor" infiltrating the teaching process, AI forming an immersive environment infiltrating the educational environment, AI as a "teaching medium" infiltrating the teacher workflow, and other identity empowering education fields. The mechanism and path methods of AI empowering intangible cultural heritage courses have contributed to this study, but the discussion on how AI conducts deep learning, how big model technology empowers courses is relatively macro, and the description of specific path suggestions is relatively abstract [5]. In the article "Research on the Intelligent Narrative Mechanism of AI Empowering the Digital Active Inheritance of Intangible Cultural Heritage", Zhang Yuan et al. studied how AI technology can solve the problems of situational deficiency and fragmentation in the active inheritance of intangible cultural heritage through the "intelligent narrative" mechanism. Digital storytelling has been proposed to enable multi-modal interaction through text to image and video conversion, while AI empowers virtual avatars such as digital humans in intangible cultural heritage courses to enhance students' embodied experiences. The intelligent narrative dissemination of intangible cultural heritage under AI technology has made contributions to this study, enriching the interactive methods of digital classrooms and facilitating the reconstruction of immersive teaching [6]. This article will start with the mechanism and path of AI empowering intangible cultural heritage courses, and conduct research on the application of AI in the entire education process to reconstruct curriculum research paradigms, filling existing research gaps.

3 The Mechanism and Path of AI Empowering Intangible Cultural Heritage Courses

Situational learning theory is the process of transmitting knowledge to students through situational interaction. Knowledge is a component of the context, and the process of students learning knowledge is a gradual development process of mutual game and interaction with the context. In the process, students form a process from understanding knowledge to applying, inheriting, and innovating[7]. Empowering situational learning with AI technology, transforming the role of teachers, and guiding students to better participate in intangible cultural heritage art classes through AI technology.

3.1 Technological Optimization of Digital Classroom Interaction

At present, the introduction of digitalization into the classroom is mostly used in the teaching process, while the reverse classroom is commonly used in the teaching process. By using artificial intelligence models to create student portraits and personalize teaching based on students' learning needs, teaching efficiency can be improved [8]. However, AI technology can also empower classroom interaction and optimize digital classroom interaction models. Scaffolding teaching is a constructivist teaching model that takes students as the main body and fully utilizes their subjective initiative. It is generally divided into five parts: scaffolding - entering the context - independent exploration - collaborative learning - effectiveness evaluation [9]. Introducing AI into scaffolding based teaching, guiding students to explore intangible cultural heritage art classrooms independently in a step-by-step manner, with students as the main body, using AI technology to compensate for the uniqueness of intangible cultural heritage. Providing targeted assistance and promoting internalization and independence are the two pillars of scaffolding based teaching. In traditional classrooms, it is difficult for teachers to design different levels of scaffolding and evacuation rhythms for different students. And AI systems can simultaneously maintain an independent learning trajectory for each learner, initially breaking down the problem into sub steps and providing keyword prompts to provide students with a basic framework. When students correctly complete a certain task, AI automatically reduces the clarity of the prompts, gradually transitioning to only providing metacognitive level reminders, and finally completely withdrawing from the framework when they reach the preset mastery standard[10]. Scaffolding teaching emphasizes "giving feedback" and "controlling frustration and risk" [11]. In classroom interaction, the intervention of digital humans can enable the teaching of intangible cultural heritage art beyond the limitations of classroom duration and school space, and provide real-time answers to students' questions and solve their problems. This cross temporal pattern breaks down the barriers of time and space, making the dissemination of intangible cultural heritage more efficient.

3.2 Technology Refactoring Immersive Teaching

Students only receive intangible cultural heritage knowledge in the classroom, and even with the teacher's emotional speeches and vivid multimedia images, it is difficult for students to enter a state of flow. Students entering the flow state mostly occur when the task difficulty they face matches their skill abilities. In the process of intangible cultural

heritage art classroom, AI digital humans are introduced to participate in teaching, and big data algorithms are used to evaluate students' abilities and interests. Different teaching designs for the same intangible cultural heritage theme are designed according to students' aptitude. After teachers complete collective teaching, the personalized teaching content provided by AI helps students induce the flow state. Recently, the development zone has defined an optimal learning interval where the task is slightly higher than the current level of independent completion by students without giving up due to helplessness. AI enabled scaffolding teaching can ensure that different students find the optimal learning interval, thereby maximizing the induction of flow state in students. AI immersive intangible cultural heritage teaching can help students enhance their learning goals, maintain their enthusiasm for intangible cultural heritage, gain a sense of achievement and satisfaction, improve self-efficacy, and promote comprehensive development [12].

3.3 Technology Forms a Community of Practice

Learning is not simply a process of teachers inputting knowledge, but essentially a process of students actively participating in social practice, learning knowledge through practice, and applying knowledge. Therefore, "community of practice" is a very clear and weighty concept in situational learning theory. Intangible cultural heritage learners acquire skills and construct cultural confidence through interaction with intangible cultural heritage inheritors and teachers. However, it is undeniable that the development of the times has also brought about new problems of scarcity and uneven distribution of inheritors of intangible cultural heritage projects, and due to the limitations of physical space, learners find it difficult to directly communicate with masters. Therefore, the introduction of AI technology has broken down the barriers of time and space in a timely manner. Learners can directly engage in dialogue and questioning with the digital figures of intangible cultural heritage inheritors, communicate efficiently, and connect with each other. A true community of practice is naturally formed from this. At the same time, the intangible cultural heritage stories of inheritors will be incorporated into digital human images, and values will be conveyed through animation to strengthen students' identity recognition.

4 Inheritance and Innovation of Intangible Cultural Heritage

The core of inheriting intangible cultural heritage is to protect it. AI empowers the use of digital technology in intangible cultural heritage art courses, injecting new vitality into the protection and inheritance of intangible cultural heritage. As an excellent traditional culture in China, intangible cultural heritage should not be lost or disappeared in history. Non heritage culture should be incorporated into art education at the primary education stage, and AI should be used to give new life to intangible cultural heritage classrooms. Secondly, the purpose of inheriting intangible cultural heritage is to strengthen students' cultural identity. As cultural identity theory clearly and explicitly points out that cultural identity is not a fixed essence, but a continuous positioning process in practice, the transformation of students' identity from "observers" to "innova-

tors" in AI empowered intangible cultural heritage art classrooms can be seen as a reconstruction process of cultural identity under the mediation of technology. This transformation is not only conducive to establishing students' subject status, but also conducive to strengthening their cultural identity. Innovation is the fundamental essence of dynamic inheritance, and it is also the most prominent and essential characteristic that distinguishes intangible cultural heritage education from traditional skill transmission. Therefore, contemporary intangible cultural heritage art education should not stop at enabling students to master traditional skills themselves. Instead, it should consciously and systematically break down disciplinary barriers, dissolve media boundaries, and empower traditional skills with modern design language and diverse technological means. Only then can intangible cultural heritage truly radiate vitality in creative transformation, and cultivate students to become inheritors and innovators of intangible cultural heritage. Digital technology has opened up new tool spaces for the creative transformation of intangible cultural heritage and created richer possibilities for imagination. Therefore, it is natural to introduce various technologies such as AI drawing, 3D modeling, and laser engraving in classroom teaching, allowing students to create cross disciplinary creations with layers and connections. For example, students can first input regional cultural symbols such as pandas and Sanxingdui bronze masks into AI drawing software to generate patterns with traditional meanings, and then use laser engraving technology to make solid cultural and creative products of woodcut New Year paintings from the obtained patterns. This approach is actually a modern expression of traditional artistic language, and it is also an excellent opportunity for students to reflect on technological ethics and cultural authenticity.

5 Conclusion

In summary, the research conclusion of this study is to integrate artificial intelligence into traditional classrooms and traditional culture, and to use AI technology throughout the entire curriculum to provide a systematic and hierarchical training path for intangible cultural heritage art classrooms. This will make intangible cultural heritage courses more standardized and perfect, and more conducive to the inheritance and innovation of intangible cultural heritage. Students will no longer be simply recipients of traditional skills, but will naturally grow into the true subjects who actively participate, interpret, disseminate, promote, and create value in the life process of intangible cultural heritage. Therefore, ancient skills will be effectively connected with contemporary life in the hands of young people, and intangible cultural heritage will achieve a healthy development of "passing on the torch and giving birth to new shoots". This study provides valuable reference for the future research on AI empowering intangible cultural heritage courses, mainly affecting the standardization of the entire process of combining artificial intelligence technology with intangible cultural heritage classrooms. Future research should focus more on the ethical issues of the deep integration of AI and intangible cultural heritage courses.

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