

# AI-enabled Non-legacy: Research on The Integration Strategy of Jingchu Textile Cultural Resources in Art Education in The New Era

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**Abstract:** This paper discusses the application strategy of artificial intelligence (AI) technology in the protection and inheritance of Jingchu textile cultural resources and art education innovation. In the new era, the rapid development of AI technology, which shows great potential in the field of art education, not only revolutionizes the traditional teaching mode but also opens up a new path for the inheritance of intangible cultural heritage. As a treasure of Chinese culture, Jingchu textile culture faces challenges such as the loss of skills. Through the methods of literature review and case study, this paper analyzes the current situation of the application of AI technology in art education in depth and proposes a series of fusion strategies. These strategies are aimed at realizing the effective protection and inheritance of Jingchu textile cultural resources through the empowerment of AI technology and promoting its innovative application in art education, promoting students' cognition and inheritance of traditional culture, and renewing the vitality of Jingchu textile culture in the new era.

**Keywords:** Artificial Intelligence (AI); Jingchu Textile Culture; Digital Conservation; Art Education

With the rapid development of AI technology, its application in the field of art education has become more and more extensive, bringing innovation to the traditional teaching mode and opening up new ways for cultural heritage inheritance and innovation. Jingchu textile culture, as an important part of China's cultural heritage, shows rich historical information and regional characteristics but faces challenges

such as the loss of skills and the marginalization of cultural values. Therefore, how to use AI technology to effectively protect and pass on Jingchu textile cultural resources and promote their innovative application in art education has become an important research topic. This study aims to explore the integration strategy of AI-enabled Jingchu textile cultural resources in art education in the new era and to analyze in depth the current status of the application of AI technology in art education and its facilitating effect on the inheritance of Jingchu textile culture using literature review, case study, and empirical research. At the same time, drawing on relevant research progress at home and abroad, practical integration strategies are proposed, aiming to contribute to the inheritance and development of Jingchu textile culture, promote the protection and innovation of cultural diversity, and enhance students' interest and participation in traditional culture.

## 1. Basic Analysis of Jingchu Textile Culture and AI Technology Empowerment

### 1.1 In-Depth Analysis of Jingchu Textile Cultural Resources

Jingchu textile cultural resources, as an important part of Jingchu culture, carry a deep historical heritage and unique regional characteristics. It is not only the crystallization of the wisdom and skills of the ancient Chu people but also a treasure of the intangible cultural heritage of the Chinese nation. These resources cover the whole process from the collection of textile raw materials, spinning, and weaving to the production of costumes, showing the unique aesthetic pursuit and craftsmanship level of the Jingchu region. In the context of the new era, Jingchu textile cultural resources not only have precious

historical research value but also become an important content of art education because of their uniqueness and innovation. Integrating it into the modern art education system, can not only enrich the teaching content and improve students' cultural literacy and aesthetic ability but also promote the inheritance and innovative development of traditional culture.

#### 1.1.1 Historical Background and Cultural Connotations

Since ancient times, the Jingchu region has been famous for its well-developed textile industry and unique style of dress. From the primitive textile techniques of the Stone Age to the silk and linen textile technology of the Shang and Zhou Dynasties to the exquisite embroidery of the Warring States Period, the textile culture of Jingchu carries the aspirations and pursuit of a better life of the Chu people [1]! Jingchu textile culture is rooted in the Jingchu land in the middle reaches of the Yangtze River Basin, which has been fertile land since ancient times, providing a rich material foundation for the development of the textile industry. From the ancient Qujialing cultural site to the No. 1 ancient tomb of Mashan in Jiangling, a large number of unearthed textile tools, silk fabrics, and embroideries bear witness to the long history of Jingchu textiles and their brilliant achievements. As an important part of this culture, Jingchu embroidery has won wide acclaim for its unique artistic style and high level of skill.

Jingchu textile culture not only embodies the unique charm of Chu culture but also contains a wealth of folk wisdom. Jingchu folk embroidery work stresses the human-centered, "self-centered" idea and expresses people's pursuit of and yearning for a better life through embroidery and other forms of art. These embroideries not only have practical value but also carry deep cultural connotations and historical memories.

#### 1.1.2 Artistic features and educational value

The textile culture of Jingchu is known for its unique artistic characteristics. Since ancient times, the textile technology of the Jingchu region has been famous for its exquisite and delicate craftsmanship. Especially in the Warring States period, Jingchu embroidery reached its peak; the works are magnificent and rich in momentum. the designs of Jingchu textiles are rich and varied, often using

deformation and exaggeration, showing a strong artistic influence. At the same time, Jingchu textile culture in the use of color is also unique, especially the use of red, which not only reflects the Ch'u people's still red custom but also creates a lively, festive atmosphere.

Jingchu textile culture not only has artistic value but also contains rich educational value. It is an important part of the traditional culture of the Chinese nation, and by learning about Jingchu textile culture, we can gain a deeper understanding of the history and cultural traditions of the Chinese nation and enhance our national pride and cultural self-confidence. At the same time, the inheritance and development of Jingchu textile skills also need a large number of professionals, so the inclusion of Jingchu textile culture in the education system can cultivate more talents and inject new vitality into the inheritance and development of Jingchu textile culture ![2]

## 1.2 Overview of the Development of AI Technology in the Field of Arts Education

The application of AI technology in the field of art education is becoming more and more widespread, providing a new way of teaching and learning for art education using image recognition, natural language processing, machine learning, etc. AI can not only assist in artistic creation but also conduct in-depth analysis of artworks, helping students better understand and appreciate art. In addition, AI technology can also recommend learning resources in a personalized way to meet the learning needs of different students and promote the personalization and precision of art education. With the continuous development of AI technology, the prospect of its application in art education will be even broader and is expected to bring more innovation and change to art education.

#### 1.2.1 Main types and characteristics of AI technologies

The main types of AI technologies mainly cover a wide range of machine learning, natural language processing, image and video analysis, virtual reality (VR) and augmented reality (AR), intelligent authoring tools, and intelligent evaluation systems. [3]

These technologies are notable for their characteristics: machine learning enables computers to automatically learn from data and

improve algorithms without the need for explicit programming; deep learning can process complex data by building multi-layer neural networks with powerful modeling and generalization capabilities; computer vision focuses on image and video analysis for accurate recognition and classification; and natural language processing allows computers to understand, generate, and process human language. These technologies not only improve the efficiency of data processing but also have a high level of automation and intelligence, providing solid technical support for the fusion of Jingchu textile and cultural resources in art education in the new era.

### 1.2.2 Success Stories and Implications of AI Technology in the Art Education Field

The application of AI technology in the field of art education shows great potential and provides new ideas for the integration of traditional and modern education models. Through personalized learning experiences, AI can provide customized art education content based on students' learning behaviors and preferences, thus enhancing learning efficiency and creative quality. In terms of digital preservation of cultural heritage, for example, the "Mocap Action Butler" project of Yunnan University's School of Information Technology. [4] AI combines with motion capture technology to digitally record folk dances in three dimensions, which not only enhances the accuracy of the recordings but also expands the scope of cultural dissemination. In addition, AI-assisted design tools, such as Adobe Sensei, use machine learning technology to analyze in-depth the elements of non-legacy, provide innovative inspiration for students and designers, and promote the combination of traditional culture and modern design. These successful cases show that AI technology can bring a personalized and precise teaching experience to art education while promoting the inheritance and innovation of non-traditional culture and providing strong support for cultivating artistic talents with innovative spirit and cultural confidence.

## 2. AI Technology Empowered Jingchu Textile Culture and Art Education Status Quo

### 2.1 Potential of AI Technology in the Inheritance of Jingchu Textile Culture

With the rapid development of artificial intelligence technology, AI technology shows great potential in the inheritance of Jingchu textile culture. Technology can analyze and learn the patterns, colors, textures, and other elements of Jingchu textile culture through deep learning algorithms, to achieve the digital protection and reproduction of traditional textile art. For example, through machine vision technology, AI can identify and simulate the traditional patterns of Jingchu textiles, inspiring designing new textiles. [5] In the field of education, the application of AI technology can greatly enrich teaching means and methods. By building a virtual textile craft experience platform, students can learn and master textile skills without physical equipment, which not only lowers the threshold of learning but also makes textile education more widespread. [6] AI technology not only explores a new path for the inheritance and innovation of Jingchu textile culture but also adds unlimited possibilities for art education in the new era.

### 2.2 The Dilemma of AI Technology Enabling Textile Culture and Art Education in Jingchu

In the context of the new era, AI technology-empowered Jingchu textile culture and art education is facing a multifaceted dilemma. It is specifically manifested in the following aspects: (1) Insufficient protection of Jingchu textile cultural resources. the lack of digital protection means of Jingchu textile culture and the lack of systematic research on traditional textile techniques, not only affects the dissemination effect of Jingchu textile culture in modern society but also restricts its application and development in art education in the new era. [7] (2) the lack of interactive teaching platforms for cultural and artistic education. Especially in the inheritance and promotion of Jingchu textile cultural resources, the platform often lacks an effective interactive mechanism and personalized teaching strategies, making it difficult to meet the needs of learners for in-depth understanding and experience of Jingchu textile culture. (3) the cultural and artistic education mode and curriculum system are not perfect. At present, the teaching content of non-heritage culture in art education is fragmented, lacking systematic structure, and the curriculum, fails to fully

reflect the unique value and connotation of Jingchu textile culture. (4) Cultural and artistic teaching content and methods of innovation are not enough. the current Jingchu textile culture in the field of art education is not timely enough to update the teaching content, not fully integrated into AI and other elements of modern science and technology, resulting in a single means of teaching, the lack of interactivity and interest. This lag not only limits the opportunity for students to have a deep understanding of Jingchu textile culture but also affects the dissemination and popularization of non-heritage culture among young groups.

### 3. AI-Enabled Fusion Strategy of Jingchu Textile Culture in Art Education

#### 3.1 Digitalization of Jingchu Textile Cultural Resources

The introduction of AI technology has opened up new ways for the digital transformation of Jingchu textile non-heritage cultural resources. It not only provides a wider dissemination platform for these cultural heritages but also makes the learning experience of traditional culture more vivid and intuitive through virtual reality, augmented reality, and other technologies. the digital display platform presents the patterns, colors, techniques, and other elements of Jingchu textile culture in a

new form, enhancing interactivity and education. the construction of a digital resource base for Jingchu textile culture provides rich teaching and research materials for art education and promotes the in-depth integration and innovation of that culture in art education in the new era. Taking the construction of the Jingchu embroidery art digital museum of Wuhan Textile University as an example, the digital museum uses computer virtual technology and the Internet to closely integrate, realizing the various functions of the physical museum in a virtual way. [8] the construction of this platform can not only use the advantages of visual digital technology in auxiliary design, digging out the technical indicators of Jingchu textile culture, exploring the commercial R&D auxiliary design concept combining digital technology and traditional crafts, but also attract the inheritors, scholars, educational institutions, and the industry to carry out academic exchanges, and even more, so that the public can participate in the more low-cost, to amplify the social value of the Museum of Jingchu Embroidery Art, promote the recognition and popularity of Jingchu textile culture, and enhance the inheritance and influence of Jingchu textile culture. Combined with the above dilemma, we targeted some suggestions (such as Table 1) and analyzed them.

**Table 1. AI-Enabled Jingchu Textile Culture and Art Education Status and Rongchuang Strategy**

Serial Number	Status Quo	Sunac Strategy
1	Insufficient protection of Jingchu textile cultural resources	Building a Digital Resource Library of Jingchu Textile Culture
2	Lack of interactive teaching platforms	Personalised interactive teaching platform
3	Inadequate education model and curriculum	Digital Teaching System Construction
4	Insufficient innovation in teaching content and methods	Innovative customisation of learning routes

3.1.1 AI technology empowers the digitization of Jingchu textile cultural resources.

Digitization can not only provide more reliable technical means for the preservation of traditional culture but also broaden the path of its inheritance and innovation so that it can be revitalized in the new era. Digital construction can be virtual reality (VR), augmented reality (AR), and other technical means, the Jing Chu textile culture in a more vivid, intuitive form to the public. For example, the use of VR technology allows the user to "immerse"

themselves in the production process of Jingchu textile and feel its unique artistic charm. AR technology can be used to superimpose Jingchu textile patterns and elements in the real world, enhancing the user's interactive experience. In addition, digital construction should also focus on the creative transformation and innovative development of Jingchu textile cultural resources. Through AI technology, traditional cultural elements can be combined with modern design concepts to create new artworks and products. For example,

AI-assisted design systems can generate new patterns based on the traditional patterns of Jingchu textiles, inspiring modern clothing design, home decoration, and other areas. [9] However, the digitization of Jingchu textile cultural resources also faces some challenges. How to ensure that cultural elements are accurately conveyed and retained in their original form during the digitization process, and avoid the loss and misinterpretation of cultural information, are key issues that need to be addressed. Finally, digitization construction also needs to take into account legal and ethical issues such as copyright protection and technical security. In conclusion, the digitization construction of Jingchu textile cultural resources is a systematic project that requires the integration of multidisciplinary knowledge, the application of multi technological means, and the cooperation and support of many aspects. Through digital construction, Jingchu textile culture can not only be effectively preserved and inherited but also achieve innovative development in the new era, providing richer and more diversified teaching resources for art education.

### 3.1.2 Constructing a digital resource base of Jingchu textile culture

In the concept of deepening the protection and inheritance of Jingchu textile cultural resources, the idea of a digital resource library integrating teaching, scientific research, and the display is particularly important. the construction of a digital resource bank of Jingchu textile culture can not only achieve a comprehensive record and storage of this intangible cultural heritage but also enhance its dissemination and influence in art education through digital means. the construction of the digital resource base of Jingchu textile culture first requires an exhaustive collection and organization of information on traditional handicrafts such as Jingchu embroidery. As Professor Liu Hongqin said, "Jingchu embroidery is a traditional textile technique rooted in the developed Yangtze River basin, " and its rich craft characteristics and regional cultural features provide valuable original samples for the digital resource library. Through high-precision digital acquisition and three-dimensional imaging technology, these samples can be transformed into digital materials for permanent storage. In addition, the construction of the digital resource library

should also focus on interactivity and experience. Using virtual reality (VR) and augmented reality (AR) technology, digital virtual transmission scenarios can be created to provide the public with an off-site, real-time online, highly interactive viewing environment. This not only enhances public awareness and participation but also provides a new learning path for the inheritance of Jingchu textile culture. Finally, the construction of the Jingchu textile culture digital resource base should also consider the development of its commercial value. Through the wide dissemination of new media, combined with animation, pictures, video, and other multimedia forms, it can show the unique charm of Jingchu textile culture, and at the same time, realize its commercial value and promote the development of the local cultural economy. the construction of the digital resource library of Jingchu textile culture not only helps to protect and pass on this precious cultural heritage but also provides strong support for the integration and innovation of Jingchu textile culture in the new era of art education.

### 3.2 Construction of AI Interactive Teaching Platform of Jingchu Textile Culture

According to Ye Lan, teaching mode is not only a teaching tool but also a whole and systematic operation style from teaching principle, teaching content, teaching objectives and tasks, and teaching process, to the form of a teaching organization. the introduction of AI technology provides new ideas and methods for building the Jingchu textile culture AI interactive teaching platform. According to Feldwick, "The network teaching platform consists of three parts: management, teaching, and student use. Among them, 'management' includes the establishment and maintenance of online courses, registration, login control, use tracking, etc.; 'teaching' includes interface view teaching tools, assessment tools, course management, etc. 'student use' includes self-programming, self-assessment, etc. "[10] Constructing an interactive teaching platform for AI of Jingchu textile culture not only improves the efficiency and quality of teaching but also helps to stimulate students' interest in learning and innovative thinking. Through the application of AI technology, students can understand and learn more deeply about Jingchu textile culture and, at the same time,

inject new vitality into the inheritance and development of traditional culture.

### 3.2.1 Strategies for building an interactive teaching platform

The construction of the AI interactive teaching platform for Jingchu textile culture can enable students to interact in-depth with teachers or intelligent teaching assistants through novel human-computer interaction design. In teaching and research activities, teachers can use the AI database for curriculum design to enhance the flexibility and interest of teaching activities. For example, accurate teaching and research can be achieved through the establishment of an artificial intelligence teaching and research room and interactive teaching platform for art courses. [11] At the same time, the platform simulates the traditional process of Jingchu textiles, allowing students to gain a deeper understanding of textile skills through interactive experiences. the novelty and innovation of AI-assisted teaching not only enhance the fun and immersion of learning but also promote their exploration and understanding of traditional culture. This interactive teaching mode will greatly enhance the interactivity and fun of art education and provide new impetus for the inheritance and innovation of Jingchu textile culture! [12] In the results of the practical construction of network teaching platforms, the teaching platform developed by the United States Blackboard Company is the most representative, which includes a teaching management platform, a resource management platform, and a portal community platform, which can be used to provide network teaching or assist in classroom teaching and provide interactive communication. [13] We can refer to and learn from related models, analyze specific problems specifically, and build a unique interactive teaching platform of Jingchu textile cultural resources.

### 3.2.2 Sound educational models and curricula

In the new era of art education, it is crucial to build a student-centered education model by integrating artificial intelligence technology and Jingchu textile culture. We can build an innovative education model based on artificial intelligence to enhance students' creative thinking skills through human-computer interaction. the curriculum system should focus on the combination of practice and theory and use AI technology to simulate the

process of Jingchu textile so that students can deeply experience and understand the essence of traditional culture in the process of design and production. At the same time, the curriculum should also include interdisciplinary content, such as history, art history, and technical knowledge, to develop students' comprehensive literacy. Through this mode of education, students can not only learn traditional textile techniques but also explore and innovate with the assistance of AI to develop unique artistic expressions. [14] At the same time, the development of teachers with professional artistic knowledge, but also digital skills and digital thinking that match the degree of specialization, is a guarantee of sound digital education models and systems. Not only should teachers be provided with popularization of cutting-edge knowledge of digital technology and skills training, but also schools should synchronize the introduction of industry elites with strong digital technology skills and rich project experience from enterprises and industries to carry out teaching guidance for teachers regularly at schools in the form of part-time teachers and sharing sessions with master teachers, to continuously enhance the comprehensive ability of the school's teaching team in digital practice. [15]

### 3.2.3 Innovative teaching content and methods

Firstly, through AI technology, we can create personalized learning experiences, tailoring learning pathways for each student to ensure they can develop according to their interests and abilities. Secondly, using AI-assisted analysis tools, students can delve into the patterns, colors, and textures of Jingchu textiles to better understand the culture and history behind them. Such analyses not only enhance students' knowledge of traditional art but also stimulate their interest in innovative design. In addition, the course content should include a practical component that allows students to create new artworks by combining the traditional elements of Jingchu textiles with modern design concepts through the use of AI-assisted design software and tools. This kind of practice not only exercises students' technical ability but also cultivates their innovative thinking. Finally, the teaching method should adopt project-based learning, which encourages students to work together in teams to complete art projects related to Jingchu textile culture. This cooperative

learning mode helps to develop students' teamwork and ability to solve complex problems. Through these innovative teaching contents and methods, we can provide students with a comprehensive, interactive, and creative learning environment, enabling them to acquire deeper understanding and skills in the new era of art education![16]

#### 4. Conclusion

This study explores the application of AI technology in the art education integration strategy of Jingchu textile cultural resources and witnesses that AI brings a new teaching mode to art education through image recognition, natural language processing, and other technologies and enhances students' interest and participation in traditional culture. Based on this, we propose the following strategies: (1) Use AI deep learning capabilities to build a digital resource library of Jingchu textile culture to strengthen cultural inheritance and protection. (2) Build a personalized interactive teaching platform based on AI, so that students can experience the textile skills and inspire their love for Jingchu textile culture. (3) Improve the digital teaching system and develop personalized learning routes to ensure that each student gets the best learning experience. However, there are limitations in this study, such as the data samples may not be comprehensive enough, and some AI technology applications have yet to be explored. Future research needs to further expand its horizons and explore more potentials of AI in art education and non-genetic inheritance. Looking forward, AI will play a key role in art education and non-genetic inheritance to promote the innovation of education models and cultivate innovative talents. Through AI technology, Jingchu textile culture and other non-heritage will be revitalized in the new era, contributing to the protection and development of the world's cultural diversity and promoting cultural confidence.

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