

# The Application of Artificial Intelligence in Aesthetic Education Courses for Non-art Majors in Chinese Colleges and Universities

Chen Guangyu<sup>1</sup>, Bi Zhuoqun<sup>2</sup>, Jin Ailong<sup>3</sup>, Tajularipin Sulaiman<sup>4,\*</sup>

<sup>1</sup>Kuala Lumpur University of Science and Technology, Jalan Ikram-Uniten, Kajang 43000, Selangor, Malaysia

<sup>2</sup>Kuala Lumpur University of Science and Technology, Jalan Ikram-Uniten, Kajang 43000, Selangor, Malaysia

<sup>3</sup>Woosuk University, Wanju-gun 55338, Jeollabuk-do, Republic of Korea

<sup>4</sup>Faculty of Educational Studies, Universiti Putra Malaysia, Serdang 43400, Selangor, Malaysia

\*Corresponding author

## Abstract

This research adopts qualitative research methods to explore the application status, practice mode and implementation path of artificial intelligence (AI) technology in non-art professional aesthetic education courses in Chinese universities. Through semi-structured interviews with the leaders of aesthetic education courses and student representatives in three universities, combined with course observation and case analysis, it is found that the application of AI technology in aesthetic education courses presents four main modes: personalized learning path design, intelligent creation assistance, interdisciplinary art experience deepening, and multi-dimensional evaluation system innovation. At the same time, the study reveals the practical challenges in the current application of AI aesthetic education, such as the imbalance between technical instrumentality and humanistic value, insufficient digital literacy of teachers, and hidden ethical risks. Based on the findings,

This study constructs a two-way integration framework of "technology empowerment - humanistic leadership", proposes a hierarchical and classified AI aesthetic education implementation strategy, and emphasizes maintaining the emotional temperature and humanistic core of aesthetic education in technology application. This study provides theoretical reference and practical guidance for the reform of aesthetic education curriculum for non-art majors in colleges and universities, and is helpful to promote the innovative development of aesthetic education in colleges and universities in the technological era.

## Keywords

Artificial Intelligence; Aesthetic Education; Non-art Majors; Application Methodology.

## 1. Introduction

As an important part of the "five educations at the same time", aesthetic education is a key link in cultivating talents with all-round development of moral, intellectual, physical, aesthetic and labor. In the context of the wave of digitalization and intelligence sweeping the global education field, the integration of artificial intelligence technology and aesthetic education courses has become a cutting-edge topic in the reform of college education. Compared with art majors, aesthetic education courses for non-art majors face practical difficulties such as limited teaching resources, weak student foundation, and tight class hours, and the intervention of AI technology provides new possibilities for solving these dilemmas.

This study focuses on the specific field of non-art majors in Chinese universities, and discusses the specific methods, practical models, and challenges of AI technology application in aesthetic

education courses. Through the perspective of qualitative research, this paper deeply analyzes the interaction between people and technology in educational practice, goes beyond the simple description of technical functions, and pays attention to the educational concept and humanistic value behind the application of technology. The research aims to answer the core question: How can AI technology substantially improve the aesthetic literacy of non-art students? While being empowered by technology, how to maintain the emotional temperature and humanistic core of aesthetic education courses? What are the structural obstacles facing the current integration of AI aesthetic education, and how to break through?

## 2. Research background and objectives

### 2.1. Research background

At the policy level, in recent years, our country has successively issued a series of documents such as the "Opinions on Comprehensively Strengthening and Improving School Aesthetic Education in the New Era", which clearly requires that aesthetic education be included in the whole process of talent training (Jin & Snook, 2022). The main points of the Ministry of Education's work in 2025 further emphasize the dual tasks of "promoting the digitalization of education" and "deepening the reform of aesthetic education teaching", providing policy support for the integration of AI technology and aesthetic education (Jiang et al., 2025).

At the technical level, the rapid development of generative artificial intelligence (AIGC), computer vision, affective computing and other technologies provides diversified tools for aesthetic education curriculum innovation (Jingxiu, 2024). Technological applications such as AI painting, intelligent music creation, and virtual reality art experience have moved from conceptual exploration to educational practice.

At the practical level, non-art professional aesthetic education courses in colleges and universities have long had a tendency of "marginalization", "skill-oriented" and "homogeneous". The traditional teaching mode is difficult to meet the learning needs of digital native students, and it cannot effectively connect professional education and general education (Reid et al., 2023). The introduction of AI technology is expected to break these dilemmas, but how to achieve the deep integration of technology and education still needs to be explored in depth.

### 2.2. Research objectives

Systematically sort out the application status and main modes of AI technology in non-art professional aesthetic education courses in colleges and universities

In-depth analysis of the subject experience, interaction process and influencing factors in AI aesthetic education applications

Reveal the contradictions, tensions and ethical issues that arise in the application of AI technology

Build an AI aesthetic education integration framework and implementation path that meets the characteristics of Chinese universities

Practical advice for university administrators, course teachers, and technology developers

## 3. Research Methods

### 3.1. Research design

This study adopts a qualitative research paradigm and explores the complexity and situationality of AI application in aesthetic education courses through multiple case in-depth analysis. The research does not pursue statistical representativeness, but focuses on the depth and richness of phenomenon understanding, and emphasizes the realistic logic of understanding technology application in specific educational situations (Kumar & Lal, 2025).

### 3.2. Research object and positioning

Three universities in Liaoning Province, China were selected as research positioning, mainly for comprehensive colleges. In colleges and universities, focus on public aesthetic education courses, interdisciplinary aesthetic education projects and second classroom aesthetic education activities for non-art majors.

The research participants include: the person in charge of the aesthetic education course (3 people): covering general courses such as art and design history and art appreciation; Student representatives (9 people): students from different majors who have taken AI integrated aesthetic education courses.

### 3.3. Data collection methods

**Semi-structured interviews:** In-depth interviews were conducted with 12 participants, each interview lasting 30-60 minutes, focusing on their cognition, experience, and reflection on the application of AI aesthetic education. Interview questions include: "How have AI tools changed your instructional design?" "What changes have occurred in students' creative thinking in the process of AI-assisted creation?" "What do you think about the relationship between technological convenience and humanistic emotional cultivation?"

**Course observation:** Observe the whole process of three aesthetic education courses integrating AI technology, record teaching interaction, technology use details and classroom atmosphere, and focus on the interweaving process of human-computer interaction and everyone's interaction (Zhang & Gao, 2024).

**Document analysis:** Collect relevant course syllabus, teaching design plans, student works, teaching logs and other text materials, and analyze the formal curriculum design and informal practice of AI aesthetic education integration (Omran Zailuddin et al., 2024).

**Focus group discussions:** Organize 3 cross-role focus group discussions for course leaders and students to discuss the ideal mode and practical obstacles of AI aesthetic education application.

### 3.4. Data analysis

The thematic analysis method is used to code and analyze the data. First, open coding is carried out to form the primary code. secondly, the category and connection are established through axial coding; Finally, selective coding is carried out to refine the core theme and theoretical framework (Alhassan et al., 2023). In the process of data analysis, member testing, triangulation and other methods are used to ensure the reliability and validity of the research.

### 3.5. Research ethics

The study obtained informed consent from all participants, personal information was anonymized, and sensitive data was strictly confidential. Respect the subjectivity of participants in the research process and establish an equal research relationship.

## 4. Research findings of applied methods

### 4.1. Four application modes of AI in non-art professional aesthetic education courses

Through cross-case analysis, this study identifies four main application modes of AI technology in aesthetic education courses:

#### 4.1.1. Personalized learning path design

AI analyzes students' learning behavior, aesthetic preferences, and creative abilities to customize personalized aesthetic education learning paths (Ruyang & Shah, 2024). For example, the "Art Appreciation" course of a university uses algorithms to recommend differentiated art learning sequences for students with different professional backgrounds, engineering students

start from geometric abstraction paintings with a strong sense of order, and communication students start from Renaissance sculptures related to the rhythm of life.

#### **4.1.2. Intelligent authoring aids**

Generative AI tools such as "Doubao" and "Stable Diffusion" have been introduced into the art creation process, lowering the technical threshold and allowing students to focus on creative expression (Batista et al., 2024). The study finds that rationally designed AI-assisted creation can stimulate the creative confidence of non-art students, but it is also necessary to be wary of the weakening of subjectivity caused by over-dependence. A computer student said, "I used to think I couldn't draw, but now I can visualize the scene in my imagination through AI, which makes me pay attention to aesthetic elements such as composition and color."

#### **4.1.3. Deepening of interdisciplinary art experience**

VR/AR technology creates an immersive art experience environment, allowing students to "enter" the interior of famous paintings and "participate" in historical and artistic events (Wang F. et al., 2024). For example, in the "Chinese Ceramics Appreciation" course, students can appreciate the details of murals from multiple angles through VR equipment, combined with AI explanations to understand the history and culture behind the art. This experience breaks the temporal and spatial limitations of traditional art appreciation and deepens interdisciplinary aesthetic understanding.

#### **4.1.4. Multi-dimensional evaluation system innovation**

AI technology has shifted the evaluation of aesthetic education from a single outcome evaluation to a procedural and multi-dimensional comprehensive evaluation. affective computing technology can identify students' emotional changes in artistic experience; The work analysis algorithm can evaluate students' creations from multiple dimensions such as innovation, technicality, and expressiveness. However, studies have also found a tension between quantitative evaluation and the incomplete quantification of aesthetic experience (Yang et al., 2024).

### **4.2. The three elements of AI aesthetic education integration**

The study finds that the application of AI technology in aesthetic education courses is not a simple technical superposition, but is accompanied by three core elements:

#### **4.2.1. Technical instrumentality and humanistic value**

As a tool, AI can improve the efficiency of aesthetic education teaching, but the core value of aesthetic education lies in emotional cultivation and value shaping (Lyu & Huang, 2024). Some course leaders reported that over-reliance on technology can lead to an "emotional vacuum", and how to maintain the emotional temperature of aesthetic education while using technology has become a key challenge.

#### **4.2.2. Standardized output and personalized expression**

AI models are trained on large-scale data, and their outputs often tend to be standardized, which contradicts the personalized and creative nature of art education (Y. Liu & Zhu, 2025). Student works are prone to the homogenization of "AI style", which weakens the uniqueness of personal artistic expression.

#### **4.2.3. Technology empowerment and the digital divide**

The application of AI technology may exacerbate educational inequalities. Students from underdeveloped areas or economically disadvantaged families are at a disadvantage in terms of technology exposure and digital literacy, which may lead to greater challenges in AI integration courses.

### 4.3. Key factors affecting the application effect of AI aesthetic education

Based on cross-case comparison, the study identifies four key factors affecting the application effect of AI aesthetic education:

#### 4.3.1. Teachers' technical integration ability and aesthetic education concept

Teachers' digital literacy and ability to organically integrate technology into teaching are at the heart of determining the effectiveness of application (Pegrum et al., 2022). At the same time, teachers' understanding of the essence of aesthetic education directly affects the direction of technology application.

#### 4.3.2. Systematic curriculum design

Successful integration of AI aesthetic education requires systematic curriculum design, including clear teaching objectives, reasonable activity arrangements, and balanced use of technology, rather than a simple stack of technology (Tong, 2024).

#### 4.3.3. Institutional support system

The support of colleges and universities in terms of infrastructure, training mechanisms, evaluation standards, etc. is the guarantee for the sustainable development of AI aesthetic education.

#### 4.3.4. Students' subjective participation

Students should not only be technology users, but also technology critics and creative adopters. Cultivating students' ability to reflect on technology is an important goal of AI aesthetic education courses.

## 5. Conclusions And Prospects

### 5.1. Main conclusions

This study deeply explores the application status and practical logic of AI technology in non-art professional aesthetic education courses in Chinese colleges and universities through qualitative research methods, and draws the following main conclusions:

First, the application of AI technology in aesthetic education courses presents diversified and hierarchical characteristics, and has shifted from initial tool assistance to deeper curriculum reconstruction (R. Liu et al., 2025). The four application modes reflect the practical exploration of different colleges and universities based on their own conditions and concepts.

Second, the essence of AI aesthetic education integration is educational innovation rather than technology transplantation. The common feature of successful cases is that they adhere to the standard of aesthetic education, with the core goal of improving students' aesthetic literacy and humanistic spirit, and technology serves this fundamental purpose (Quynh, 12).

Third, the current practice of AI aesthetic education faces multiple elements and challenges, the most fundamental of which is the coordination of technical logic and educational logic (Zhan et al., 2024). Pure technical optimism or humanistic rejection are not conducive to the innovative development of aesthetic education.

Fourth, the effective implementation of AI aesthetic education requires the construction of a four-dimensional collaborative ecosystem of "educator-learner-technology-environment", in which the role change and professional development of teachers are the key links.

### 5.2. The two-way integration model of "technology empowerment - humanistic leadership"

Based on the research findings, this paper proposes a theoretical framework for the integration of AI aesthetic education, namely the two-way model of "technology empowerment and humanistic leadership". The model emphasizes:



Humanistic guidance dimension: The educational goals, emotional value, and cultural inheritance functions of aesthetic education constitute the value guidance of technology application to ensure that technology application does not deviate from the essence of aesthetic education.

Technology empowerment dimension: AI technology empowers aesthetic education practices through resource expansion, personalized support, evaluation innovation, etc., and expands the coverage and influence of aesthetic education (L. Wang et al., 2025).

Two-way integration mechanism: The two dimensions achieve dynamic balance and deep integration through three mechanisms: "critical integration", "creative transformation" and "ethical constraints".

### 5.3. Practical suggestions

In view of the reform of aesthetic education curriculum for non-art majors in colleges and universities, this study puts forward the following layered suggestions:

At the institutional level: Formulate a development strategy for the integration of AI aesthetic education, and clarify the implementation priorities and resource investment at different stages (Dong & Hu, 2024); Establish an interdisciplinary aesthetic education technology innovation team to promote in-depth cooperation between educators, technical experts and artists; Improve digital infrastructure while paying attention to the fairness of technology popularization.

Teacher level: Develop "technology integration teaching capabilities" and rationally use AI tools on the premise of maintaining the characteristics of aesthetic education; Design "warm" AI aesthetic education activities to balance the use of technology and humanistic interaction; Guide students to develop "digital citizenship aesthetic literacy", including technology use skills, critical awareness, and ethical responsibility.

Course level: Develop a modular and scalable AI aesthetic education curriculum resource library to support the personalized needs of different professional backgrounds (Hutson & Barner, 2025); Establish a circular teaching model of "creation-reflection-dialogue" to avoid the superficiality of technology application; Innovative evaluation methods, combining AI analysis and traditional evaluation, comprehensively evaluate students' aesthetic development.

### 5.4. Research Limitations and Future Prospects

The limitations of this study are: first, the sample is mainly concentrated in public undergraduate colleges, which does not fully cover different types such as higher vocational colleges and private universities; Second, the research time span is limited, and it is difficult to track the long-term effects of AI aesthetic education applications. Third, qualitative research has more depth than breadth, and it is necessary to combine quantitative research to provide a more comprehensive picture in the future.

Future research can be conducted in the following directions: first, carry out longitudinal tracking research to explore the impact of AI aesthetic education on students' long-term development (Lively & Hutson, 2024); second, strengthen comparative research to analyze the commonalities and differences of AI aesthetic education integration in different cultural backgrounds; third, pay attention to the experience and needs of marginalized student groups in AI aesthetic education courses; Fourth, explore the possible impact of emerging technologies such as the metaverse and brain-computer interfaces on aesthetic education courses.

The integration of AI and aesthetic education is a new field full of vitality and challenges. Technology is changing with each passing day, but the fundamental mission of aesthetic education - cultivating and enriching humanity and improving the realm of life - remains unchanged (Tao & Tao, 2024). It is the common responsibility of college aesthetic education workers in the new era to maintain educational concentration while embracing technological

innovation, and to adhere to the humanistic core while expanding the boundaries of aesthetic education. Only by achieving a creative balance between technology and humanities can we cultivate all-round talents who have mastered advanced technology and profound humanistic qualities, and respond to the deep expectations of the times for higher education (Kamp, 2023).

## Statements and Declarations

No funding was received for conducting this study. The present study has no relevant financial or non-financial interests to disclose.

## Publisher's Note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

## Author Contributions

This work was carried out in collaboration among all authors. This project was conducted jointly by the authors. The authors reviewed and agreed to the final manuscript. All authors read and approved the final manuscript.

## About the Authors

### **Chen Guangyu**

Kuala Lumpur University of Science and Technology, Malaysia

### **Bi Zhuoqun**

Kuala Lumpur University of Science and Technology, Malaysia

### **Jin Ailong**

Woosuk University, Korea

### **Tajularipin Sulaiman**

Faculty of Educational Studies, Universiti Putra Malaysia

## References

- [1] Alhassan, I., Sammon, D., Daly, M., Wibisono, A., Kasraian, L., Nagle, T., Heavin, C., Dennehy, D., Zamani, E., & Qaffas, A. (2023). THE USE OF OPEN, AXIAL AND SELECTIVE CODING TECHNIQUES: A LITERATURE ANALYSIS OF IS RESEARCH. UK Academy for Information Systems Conference Proceedings 2023. <https://aisel.aisnet.org/ukais2023/20>
- [2] Batista, P., Li, M., Briel, H., & Feng, Y. (2024). Proceedings of the 2024 International Conference on Humanities, Arts, Education and Social Development (HAESD 2024). Springer Nature.
- [3] Dong, G., & Hu, L. (2024). Exploring the Pathways of Intelligent Media Technology Intervention in the Reform of Aesthetic Education in Higher Education. Transactions on Economics, Business and Management Research, 8, 139–144. <https://doi.org/10.62051/gg1y2q77>
- [4] Hutson, J., & Barner, T. (2025). Development and evaluation of the Da Vinci AI Tutor: Enhancing accessibility and personalized learning in art history education. Design, X(X). <https://dx.doi.org/10.36922/dp.8365>
- [5] Jiang, Y., Wang, R., & Li, Y. (2025). Research on the Innovative Path of Aesthetic Education in Universities Enabled by Artificial Intelligence. Educational Innovation Research, 3(2), 40–45. <https://doi.org/10.18063/eir.v3i2.745>

- [6] Jin, J., & Snook, B. (2022). Comprehensively strengthening and improving aesthetic education in a new era: An examination of the dance education major at the Beijing dance academy. *International Journal of Chinese Education*, 11(3), 2212585X221127451. <https://doi.org/10.1177/2212585X221127451>
- [7] Jingxiu, H. (2024). Breaking boundaries and reshaping: An exploration of aesthetic competence development in university students in the era of artificial intelligence. *International Journal of Social Science, Management and Economics Research*, 3(2), 1–23. <https://doi.org/10.22004/ag.econ.355400>
- [8] Kamp, A. (2023). Navigating the Landscape of Higher Engineering Education: Coping with decades of accelerating change ahead. TU Delft OPEN Publishing.
- [9] Kumar, D. R., & Lal, K. (2025). BASIC RESEARCH AND STATISTICS IN SPECIAL EDUCATION. Crown Publishing.
- [10] Liu, R., Pang, W., Chen, J., Balakrishnan, V. A. P., & Chin, H. L. (2025). The application of scaffolding instruction and AI-driven diffusion models in children's aesthetic education: A case study on teaching traditional chinese painting of the twenty-four solar terms in chinese culture. *Education and Information Technologies*, 30(7), 9129–9160. <https://doi.org/10.1007/s10639-024-13135-7>
- [11] Liu, Y., & Zhu, C. (2025). The use of deep learning and artificial intelligence-based digital technologies in art education. *Scientific Reports*, 15(1), 15859. <https://doi.org/10.1038/s41598-025-00892-9>
- [12] Lively, J., & Hutson, J. (2024). The role of student motivation in integrating AI into web design education: A longitudinal study. *Forum for Education Studies*. <https://digitalcommons.lindenwood.edu/faculty-research-papers/636>
- [13] Lyu, H., & Huang, S. (2024). Aesthetic Education in the Age of Artificial Intelligence: Challenges, Opportunities, and Prospects. *Journal of Intelligence and Knowledge Engineering*, 2(2), 103–109. <https://doi.org/10.62517/jike.202404218>
- [14] Omran Zailuddin, M. F. N., Nik Harun, N. A., Abdul Rahim, H. A., Kamaruzaman, A. F., Berahim, M. H., Harun, M. H., & Ibrahim, Y. (2024). Redefining creative education: A case study analysis of AI in design courses. *Journal of Research in Innovative Teaching & Learning*, 17(2), 282–296. <https://doi.org/10.1108/JRIT-01-2024-0019>
- [15] Pegrum, M., Hockly, N., & Dudeney, G. (2022). *Digital Literacies* (2nd ed.). Routledge. <https://doi.org/10.4324/9781003262541>
- [16] Quynh, M. T. T. X. (12). Aesthetic competence education for shaping and developing qualities and competence in upper secondary school students according to the 2018 general education curriculum. *International Journal of Social Science, Management and Economics Research*. <https://doi.org/10.22004/ag.econ.355393>
- [17] Reid, L., Button, D., & Brommeyer, M. (2023). Challenging the Myth of the Digital Native: A Narrative Review. *Nursing Reports*, 13(2), 573–600. <https://doi.org/10.3390/nursrep13020052>
- [18] Ruyang, L., & Shah, M. I. A. (2024). Integrating Aesthetic and Cultural Education for Personality Development in University Courses. *Asia Pacific Journal of Business, Humanities and Education*, 9(1), 74–89.
- [19] Tao, Y., & Tao, Y. (2024). Integrating Aesthetic Education in Quality Education: A Bibliometric Analysis of Sustainable Development Perspectives. *Sustainability*, 16(2), 855. <https://doi.org/10.3390/su16020855>
- [20] Tong, Y. (2024). INTEGRATION OF ARTIFICIAL INTELLIGENCE INTO THE GENERAL EDUCATION CURRICULUM: IMPORTANCE, APPROACHES, CHALLENGES, AND A CONCEPTUAL FRAMEWORK FOR LIBERAL ARTS UNIVERSITIES. *INTED2024 Proceedings*, 7582–7589. 18th International Technology, Education and Development Conference. <https://doi.org/10.21125/inted.2024.2010>
- [21] Wang F., Zhang Z., Li L., & Long S. (2024). Virtual Reality and Augmented Reality in Artistic Expression: A Comprehensive Study of Innovative Technologies. *International Journal of Advanced Computer Science & Applications*, 15(3), 641. <https://doi.org/10.14569/ijacsa.2024.0150365>



- [22] Wang, L., Li, B., Fan, X., & Ji, Y. (2025). A review of AI-driven art education: Enhancing creativity through deep learning and digital image processing. *International Journal of Information and Communication Technology*, 26(23), 56–90. <https://doi.org/10.1504/IJICT.2025.147129>
- [23] Yang, L., Yin, X., Yang, L., & Yin, X. (2024). An Analysis of the Aesthetic Characteristics of College Students in the Age of Digital Art and Visualization in History Education. *Herança*, 7(3), 53–67. <https://doi.org/10.52152/heranca.v7i3.800>
- [24] Zhan, Z., Liu, J., Elshenawi, D. M., & Duester, E. (2024). *Proceedings of the 2024 10th International Conference on Humanities and Social Science Research (ICHSSR 2024)*. Springer Nature.
- [25] Zhang, S., & Gao, W. (2024). Influencing Factors of Aesthetic Education Class Co-constructed by School and Museum under Human-Computer Interaction Background. *2024 13th International Conference on Educational and Information Technology (ICEIT)*, 228–234. <https://doi.org/10.1109/ICEIT61397.2024.10540610>