Research on the Intelligent Transformation Path of Dance Aesthetic Education in Universities from the Perspective of Digital-intelligent Integration: An Empirical Investigation Based on University X in Chengdu

Wei Wang[1], Xue Chen[2,*]
[1]Dance College, Sichuan Normal University, Chengdu 610101, China
[2]Tianfu College of Southwestern University of Finance and Economics, Chengdu 610052, China
*Corresponding email: 1830778640@qq.com

Abstract

This study focuses on the paradigm innovation of dance aesthetic education in colleges and universities in the digital - intelligent era, with emphasis on exploring how to construct a new teaching mode that integrates aesthetic education classrooms in colleges and universities with intelligent technologies. Taking the dance aesthetic education classroom of a university in Chengdu as the research object, this paper systematically diagnoses the existing predicaments of the traditional teaching mode through questionnaire surveys and data analysis. The results reveal the core problems in several aspects, including the single classroom teaching method, insufficient intelligent teaching resources, delayed response to students' individual differences, and strong subjectivity in process - oriented evaluation. Furthermore, this study demonstrates the enabling value of artificial intelligence (AI) technology from the perspective of the teaching supply side, which is specifically manifested in the three-in-one intelligent transformation path of college dance aesthetic education: "Teaching" of dance aesthetic education integrated with digital intelligence, "learning" of dance aesthetic education integrated with digital intelligence, and "evaluation" of dance aesthetic education integrated with digital intelligence. Aiming at the core obstacles in the process of practical promotion, such as high equipment costs and uneven digital literacy of teachers, this study puts forward a three - level progressive solution strategy. At the government level, special funds should be established to support the sharing of equipment among institutions and reduce the cost of hardware investment. At the university level, a systematic training system should be improved to focus on cultivating teachers' digital teaching capabilities. At the teacher level, it is necessary to actively change the traditional teaching concepts and innovate teaching methods and practical modes. Through the aforementioned multiparty collaborative measures, this study aims to provide a replicable and promotable transformation path for the innovative development of dance aesthetic education in colleges and universities in the digital-intelligent era.

Keywords

Digital-intelligent integration, College dance aesthetic education, Intelligent transformation, Artificial intelligence

Introduction

In August 2025, the *Opinions of the State Council on Further Implementing the "Artificial Intelligence Plus" Initiative* was officially issued. At the national level, it has formulated top-level design for the innovative development of artificial intelligence (AI) applications across various industries and fields. It clearly proposes to promote the extensive and in-depth integration of AI with all sectors of the economy and society. This integration is expected to reshape the paradigm of human production and life, drive a revolutionary leap in productive forces, and facilitate in-depth transformation of production relations. It will also accelerate the formation of a new form of intelligent economy and intelligent society characterized by human-machine collaboration, cross-border integration, and co-creation and sharing [1]. The powerful data processing and analysis capabilities of AI have brought new development opportunities for education [2]. Dance aesthetic education is a kind of aesthetic education that recognizes the world, conveys emotions and shapes values through body language. Its

educational process emphasizes the subjectivity, perceptibility and openness of the body, and it is an important carrier to promote the physical and mental development of students [3]. As an important part of aesthetic education in colleges and universities, dance aesthetic education shoulders the mission of inheriting and carrying forward the excellent traditional Chinese culture, and has important value for shaping students' sound personality.

Theoretical interpretation of digital-intelligent empowerment for college dance aesthetic education

Artificial intelligence

AI is a new technological science that researches and develops theories, methods, technologies and application systems for simulating, extending and expanding human intelligence. It is a branch of computer science. It seeks to understand the essence of intelligence and create new intelligent machines that can respond in ways similar to human intelligence. Research in this field includes robotics, speech recognition, image recognition, natural language processing and expert systems [4].

College dance aesthetic education

Aesthetic education is an important way to inherit the Chinese civilization. As early as the Spring and Autumn and Warring States Periods, Confucius, the renowned educator, put forward the proposition of "perfect in both virtue and art". Having stood the test of time, it still embodies its unique educational value in the contemporary era. Aesthetic education refers to aesthetic-oriented education, which integrates the core connotation of "truth, goodness and beauty" into the forms of beauty and brings people unique emotional resonance and life perception [5].

The exploration of aesthetic education in China's institutions of higher education can be traced back to the promulgation and implementation of the *Interim Regulations of Beijing Normal University* in 1950. In 2006, the *Guidelines for Public Art Courses in General Institutions of Higher Education* was issued, which clearly states that public art courses are the key approach for institutions of higher education to implement aesthetic education work. In 2020, the General Office of the Communist Party of China Central Committee and the General Office of the State Council issued the *Opinions on Comprehensively Strengthening and Improving School Aesthetic Education in the New Era*. This document delineates the core direction of school aesthetic education in the new era, with the fundamental purpose of promoting students' aesthetic and humanistic accomplishments. It emphasizes carrying forward the spirit of Chinese aesthetic education, practicing the educational philosophy of "cultivating people through beauty, nurturing people through beauty, and fostering the foundation through beauty", and fully integrating this philosophy into the entire process of talent cultivation across all types and levels of schools [6].

In 2022, the *Guidelines for Public Art Courses in Institutions of Higher Education* issued by the Ministry of Education was officially released. It provides detailed and clear guidance for institutions of higher education on the development of public art courses from multiple dimensions, including curriculum objective setting, curriculum system construction, education and teaching implementation, textbook system development and credit management system [7].

College dance aesthetic education is a form of aesthetic education implemented in the higher education stage with dance art as the medium. It aims to improve students' aesthetic accomplishment, humanistic accomplishment and comprehensive abilities through dance practice, work appreciation and theoretical study, so as to cultivate all-round developed high-quality talents [8]. Its core value lies in conveying the true meaning of beauty through vivid body language, inspiring students' innovative inspiration and promoting the harmonious development of physical and mental health. What is more, it undertakes the important mission of inheriting and innovating culture.

Based on this, the dance aesthetic education work in general institutions of higher education should closely align with the development needs of the times and firmly establish the concept of cultural confidence. It is necessary to fully unleash the unique advantages of dance aesthetic education in cultural inheritance, enable students to enhance their recognition and love for local culture through in-depth exposure to the Chinese culture, and deepen their understanding of the Chinese culture at the same time, so that they can become faithful inheritors and active innovators of the excellent traditional Chinese culture.

Dance aesthetic education with digital-intelligent integration

The *New Generation Artificial Intelligence*

Development Plan clearly puts forward the requirement of "promoting the in-depth integration of AI and education". Subsequently, the Ministry of Education formulated the *Action Plan for Artificial Intelligence Innovation in Institutions of Higher Education*, which promotes colleges and universities to optimize the disciplinary layout of AI and strengthen the construction of talent training systems [9]. In addition, the *Circular of the Ministry of Education on the Full Implementation of the Immersion Action of School Aesthetic Education* points out the need to "empower school aesthetic education with digital technologies" [10]. At present, AI technology, as an important engine of new productive forces, is driving the innovation of aesthetic education work through technological empowerment [11]. The policy coupling of the two provides a policy basis for the empowerment of college dance aesthetic education by AI technology.

Current situation of dance aesthetic education in a university in Chengdu

Questionnaire distribution

To conduct an in-depth analysis of college students' behavioral attitudes toward traditional dance aesthetic education teaching and its influencing factors, this study adopted a questionnaire survey to investigate students from a university in Chengdu. A total of 115 questionnaires were distributed, with 108 valid questionnaires recovered. The questionnaire was designed around two modules: The first module focused on students' basic information, covering three dimensions of gender, grade and major type. The second module centered on teaching behavioral attitudes, including teaching content, teaching methods, teaching resources, teaching staff and students' classroom participation. This study adopted a dual-dimensional evaluation framework to systematically deconstruct the current implementation status of traditional dance aesthetic education teaching, and conduct a synchronous quantitative analysis of college students' behavioral attitudes and demand characteristics toward the course.

Survey results

The data collection and analysis results of this survey are shown in Figures 1, 2 and 3, which reveal that among college students who completed the questionnaire, 48.15% were female and 51.85% were male. Among them, junior students accounted for the highest proportion, reaching 92.59%, and non-dance majors accounted for an overwhelming proportion of 98.15%. These data characteristics indicate that the research sample of this study is mainly concentrated in the group of senior non-dance major students.

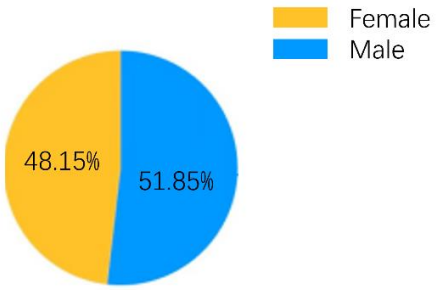

Figure 1. Gender distribution of survey respondents.

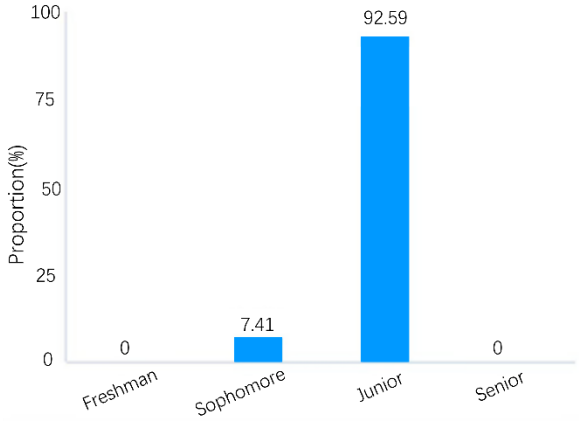

Figure 2. Grade distribution of survey respondents.

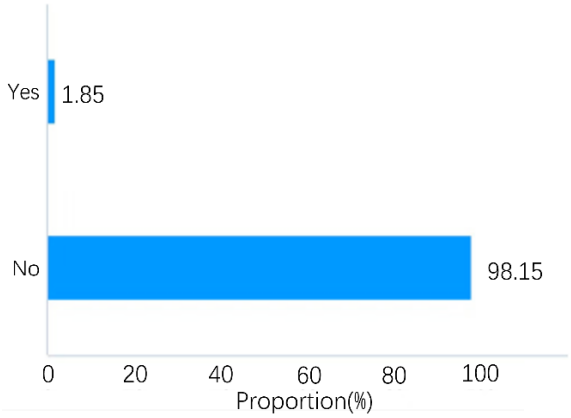

Figure 3. Proportion of dance major and non-dance major respondents.

(1) In the dimension of teaching content

As shown in Figure 4, the survey results indicate that students' frequency of participation in dance courses exhibits a significant concentration characteristic. A total of 75.93% of the students maintain a stable learning rhythm once a week, which reflects the adaptability of curriculum arrangement to students' learning habits. From the perspective of the teaching content structure,

the curriculum system covers six modules. Among them, 80.56% of the students reported that dance work appreciation courses account for the largest proportion, followed by dance history and culture courses at 56.48% (see Figure 5). These two modules constitute the core teaching content, with their proportions significantly higher than that of basic dance training courses at 35.19%. Such a curriculum design that attaches equal importance to "appreciation and analysis + theory" has been recognized by students. In addition, 60.19% of the students hold the view that the teaching content is "very rich and able to meet their learning needs" (as shown in Figure 6). Notably, the low participation frequency (e.g., 0.93% for once a month) aligns with students' satisfaction with content richness, suggesting that the stable weekly schedule and well-structured modules reduce irregular engagement.

This synergistic effect between curriculum arrangement and content design not only enhances students' learning continuity but also lays a solid foundation for the effective implementation of dance aesthetic education.

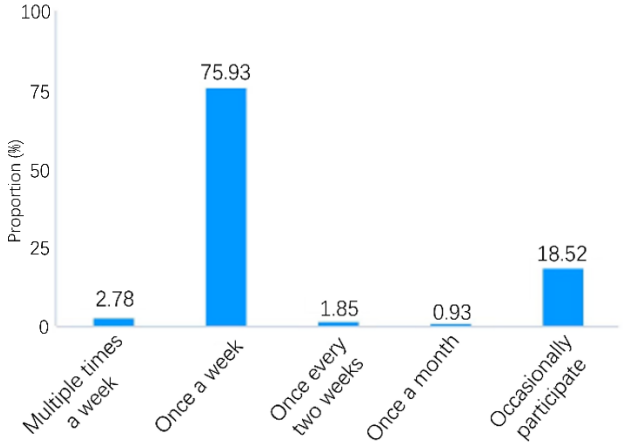

Figure 4. Distribution of dance class participation frequency.

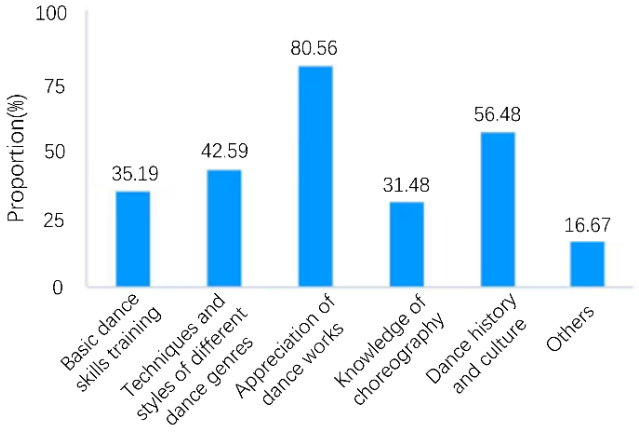

Figure 5. Distribution of teaching contents in participated dance courses.

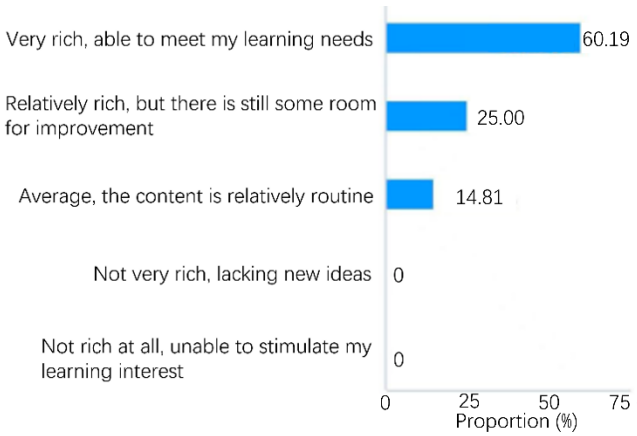

Figure 6. Evaluation of the richness of current dance course teaching content.

(2) In the aspect of teaching methods

As shown in Figure 7, data analysis indicates that 85.19% of the students stated that teachers most frequently adopt the "explanatory teaching method" in teaching, and 81.48% of the students perceived the frequent use of the "demonstrative teaching method". In contrast, interactive teaching forms such as the group discussion method and the case analysis method are applied relatively infrequently. From the perspective of learning effect evaluation (Figure 8), only half of the students considered the current teaching methods "very effective", which reflects the limitations of the traditional teaching mode. Notably, 61.11% of the students in the survey expected the adoption of the "blended online and offline teaching mode", and 47.22% of the students looked forward to learning with the assistance of AI technology (as shown in Figure 9). Such a strong demand for digital teaching tools demonstrates that the traditional demonstrative teaching method can no longer fully meet the learning expectations of contemporary college students. In this regard, it is suggested that the subsequent teaching reform should focus on constructing a three-dimensional teaching mode of "offline practical operation + online resources + AI assistance", on the basis of retaining the advantages of technical skill inheritance.

This discrepancy between the prevalence of traditional teaching methods and students' demand for digital-integrated approaches further underscores the urgency of balancing skill inheritance with pedagogical innovation in dance education. Specifically, integrating AI-assisted teaching tools (e.g., motion-capture feedback systems) into the blended online-offline framework could enhance

both the interactivity of demonstration-based sessions and the personalized support for individual learning needs.

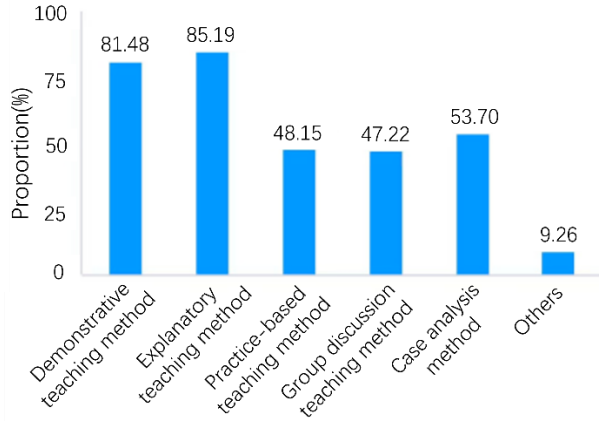

Figure 7. Frequency of teaching methods commonly used by dance teachers.

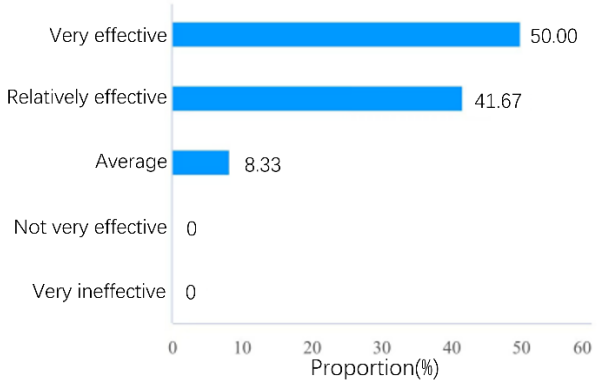

Figure 8. Students feedback on the effectiveness of dance teaching methods.

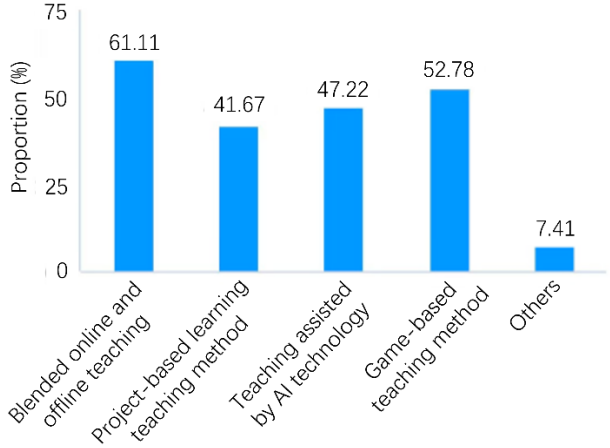

Figure 9. The survey on demand for innovative dance teaching methods.

(3) In terms of the user's experience of teaching resources

As shown in Figure 10, the data analysis reveals that video-based dance materials dominate the existing teaching resources, accounting for 72.22%. Students' evaluations of resource adequacy present a polarized characteristic: 50.00% of the students considered the existing resources "relatively sufficient", while 4.63% of the students still regarded the resources as "insufficient" and "extremely insufficient" (see Figure 11). Such cognitive differences may stem from the hierarchical nature of resource demands at different learning stages.

Notably, students' expectations for intelligent teaching resources far exceed those for traditional resources (see Figure 12). 62.96% of students hoped that AI motion capture equipment would be introduced to correct movement errors, and 57.41% expected AI teaching software to realize the personalized planning of learning paths. In addition, 53.70% preferred to break time and space constraints through online AI courses, and 46.30% hoped that universities could provide AI-generated materials for dance practice. This set of data indicates that the current construction of teaching resources needs to be upgraded from the orientation of "sufficient quantity" to "intelligent empowerment", with a focus on building a three-dimensional resource support system of "physical space + digital resources + AI tools". This shift to intelligent resource allocation not only aligns with students' personalized learning needs but also boosts teaching resources' practical value for dance skill refinement and aesthetic cultivation.

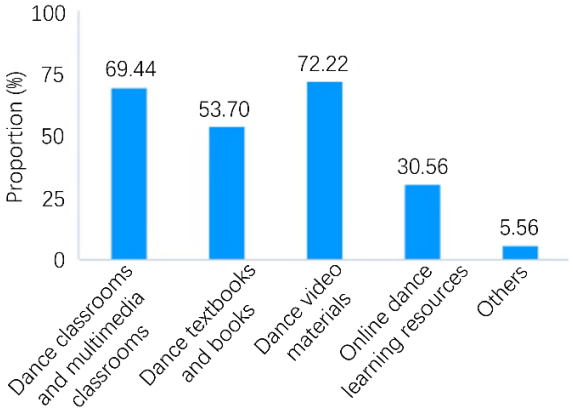

Figure 10. Composition of existing teaching resources in dance courses.

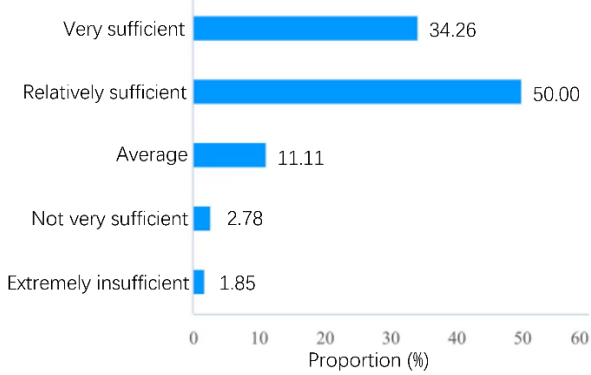

Figure 11. The students' feedback on the sufficiency of dance teaching resources.

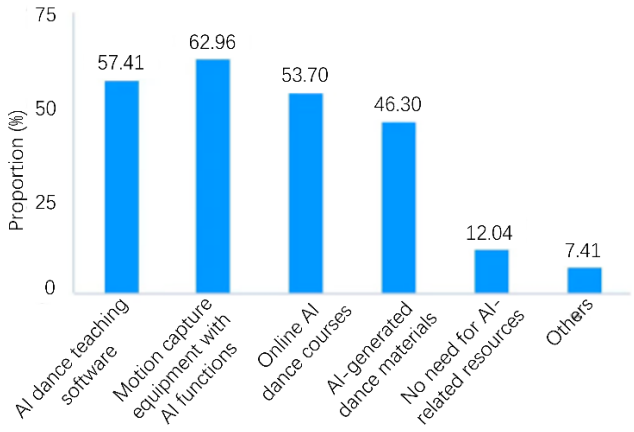

Figure 12. Distribution of types of ai-related teaching resources expected by students.

(4) In the aspect of teaching staff evaluation

The feedback from the survey data presents distinct characteristics: 70.37% of the students rated dance teachers' professional competence with "very satisfied" (as shown in Figure 13), which indicates that the current teaching staff has a solid foundation in the imparting of traditional artistic skills. However, evaluations of technology-empowered teaching show a polarized trend: only 41.67% of the students believed that teachers are "very knowledgeable" about the application of emerging technologies in teaching (Figure 14). This figure echoes the demand for innovation in teaching methods and reveals the competency deficiencies of the teaching staff in the process of digital transformation. Notably, students' expectations for technology-integrated teaching have gone beyond simple knowledge transmission. As shown in Figure 15, a total of 45.37% of the students explicitly required teachers to innovate teaching methods, with their core demand being the realization of personalized teaching through technical means. This set of data demonstrates that the construction of teaching staff needs to transform from the orientation of "professional excellence" to the dual excellence of "professional competence + technical proficiency", with a focus on improving teachers' teaching capabilities to integrate and innovate dance art with digital technologies.

For example, targeted training programs on emerging technologies (e.g., AI motion capture tools) could address the 41.67% "very knowledgeable" rate, equipping teachers to align their technical proficiency with students' demand for innovative teaching methods. This dual-development framework for teachers not only reinforces their traditional professional strengths but also enables the effective integration of digital tools into dance instruction, thereby bridging the gap between current competency levels and students' expectations.

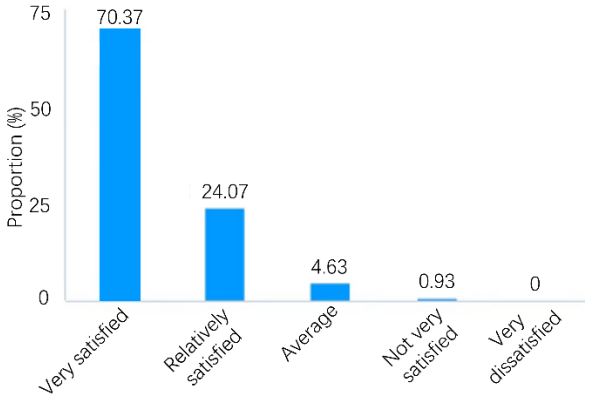

Figure 13. Evaluation of students' satisfaction with dance teachers' professional competence.

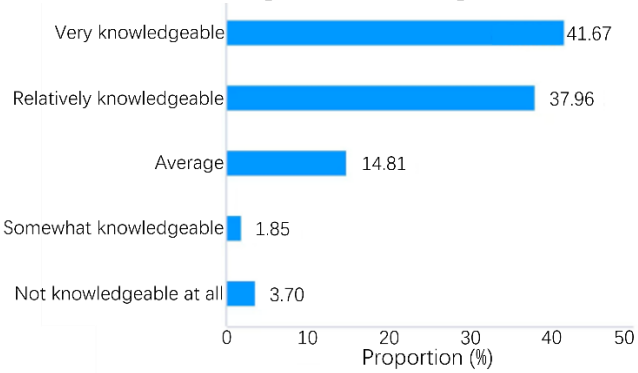

Figure 14. Students' feedback on dance teachers' proficiency in emerging technology applications (e.g., AI).

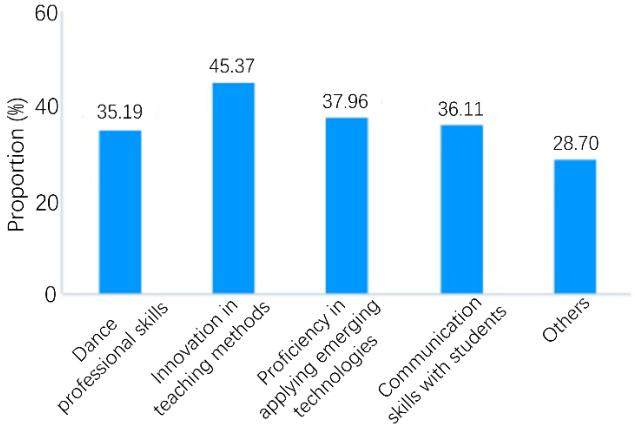

Figure 15. Distribution of students' expectations for competence improvement of dance teachers.

(5) In the aspect of students' classroom participation evaluation

The feedback from the relevant data shows structural characteristics: 42.59% of the students self-evaluated their participation as relatively high (see Figure 16). Nevertheless, an analysis of participation barriers reveals that 62.96% of the students identified "weak basic dance

skills and lack of confidence" as the primary restrictive factor. Notably, there is a significant correlation between the supply of teaching resources and students' participation: 22.22% of the students explicitly pointed out that "insufficient teaching resources" have weakened their learning engagement (see Figure 17). In terms of technology empowerment, students have reached a clear consensus on the expectation of AI technology being integrated into classrooms. As shown in Figure 18, a total of 52.78% of the students believed that the application of AI technology "may improve classroom participation", and 27.78% firmly believed that it "will definitely improve classroom participation", with the two proportions adding up to 80.56% [12]. This set of data indicates that the improvement of current classroom participation needs to construct a three-dimensional intervention system of "basic competence enhancement - optimal resource allocation - technology-empowered innovation". Among them, the personalized support provided by AI technology is expected to become a key path to break through the bottleneck of students' participation.

For example, AI-powered adaptive training modules could target students with weak foundational skills by providing personalized movement tutorials, thereby mitigating the confidence gap that undermines participation (consistent with the 62.96% of learners citing this as a barrier). This targeted, technology-driven approach not only addresses the core restrictive factor of participation but also aligns with students' strong positive expectations (80.56%) for AI integration in dance classrooms.

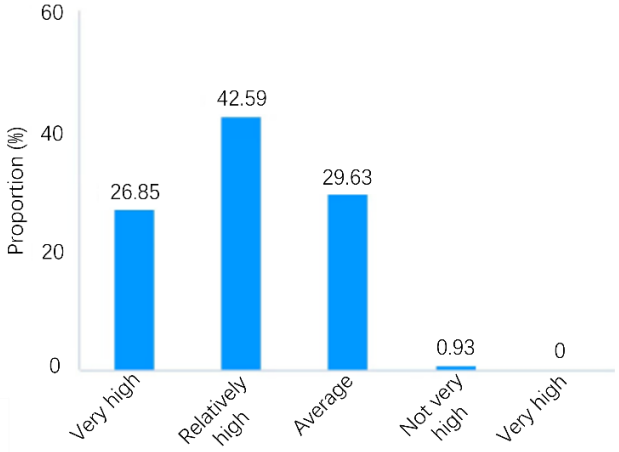

Figure 16. Student feedback on participation in dance classes.

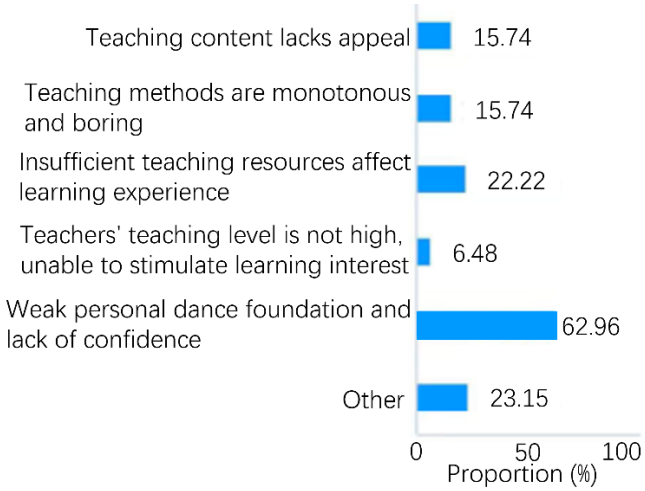

Figure 17. Distribution of main factors affecting students' participation in dance courses.

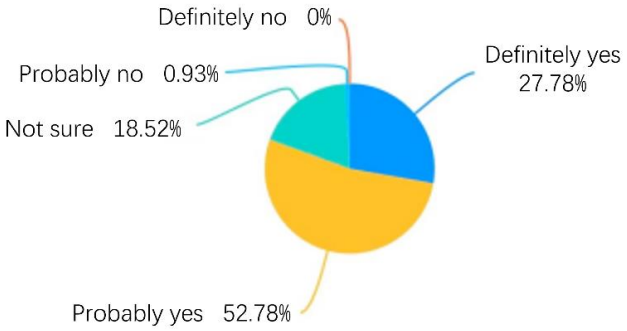

Figure 18. Evaluation of AI technology's expected impact on dance course participation.

The path of intelligent transformation for college dance aesthetic education

Dance aesthetic education with digital-intelligent integration - "teaching"

(1) Artificial intelligence technology can streamline teachers' pre-class preparation

Against the backdrop of the rapid development of information technology, data-driven approaches have become the core driving force for enhancing the intelligence of digital collective lesson preparation platforms. Existing digital collective lesson preparation platforms are not merely tools for teachers to share resources and collaborate. Rather, they should serve as a key carrier for optimizing teaching quality and advancing platform intelligence through big data analysis and artificial intelligence technology [13]. In the teaching of traditional college dance appreciation courses, teachers face an enormous burden of lesson preparation involving a multitude of tasks: they need to carefully select dance works, and collect extensive materials including historical documents of relevant

dynasties, dance performance videos and dance theoretical knowledge. Each step consumes a great deal of time and energy. The powerful intervention of generative artificial intelligence can significantly improve the efficiency and accuracy of teachers' lesson preparation, among which the construction of an intelligent dance knowledge graph stands out as a typical application of artificial intelligence in empowering teaching.

In terms of specific operation, Figure 19 displays the comprehensive knowledge graph of Chinese Tibetan dance automatically generated by DeepSeek. Teachers first enter the theme of the desired knowledge graph in the software's search box and request the generation of an AI-generated multidimensionalknowledge graph of Chinese Tibetan Dance. They then add a supplementary instruction: Generate the knowledge graph in the Mermaid mindmap format. After that, they activate the deep thinking mode and the online search function, and send the complete prompt to DeepSeek. Once the code is generated, teachers click the copy button in the upper right corner, search for a Mermaid online editor in any browser and access the tool. By pasting the copied code into the editor, an exquisite knowledge graph is automatically generated. At this point, teachers can revise and adjust the content of the graph according to actual teaching needs. Upon completion, they can click the download button to save the graph in PNG format or copy the image directly, thus obtaining a systematic dance knowledge graph.

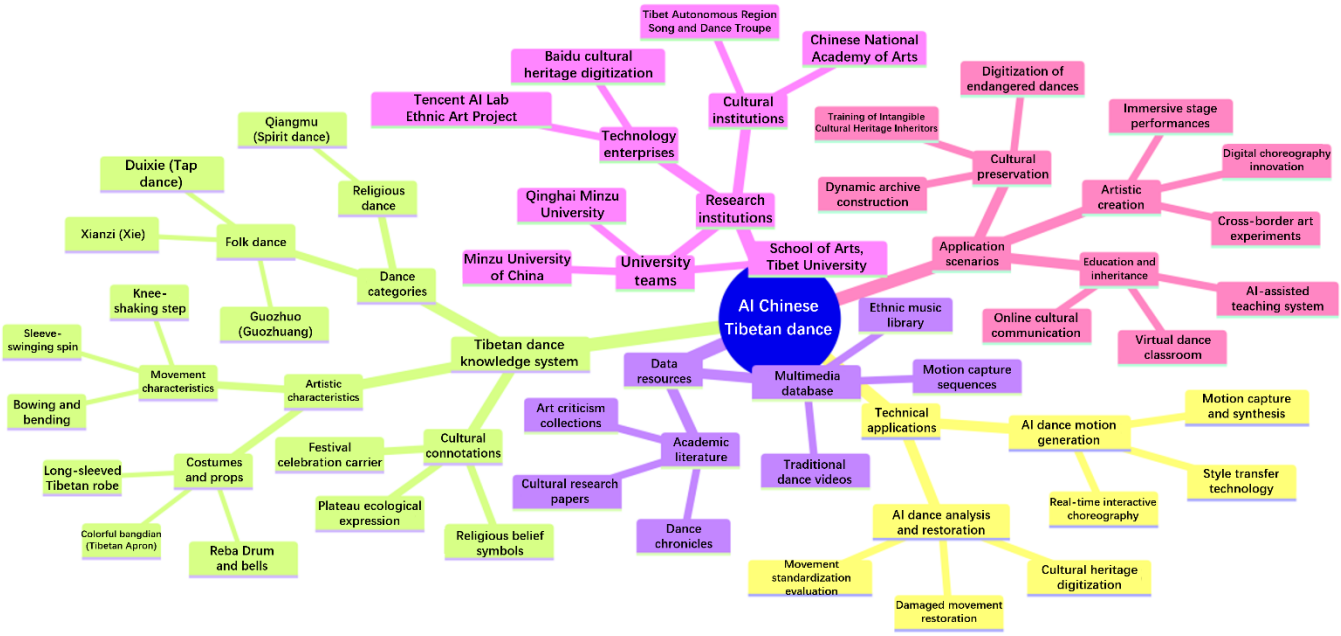

Figure 19. The knowledge graph of Chinese Tibetan dance automatically generated by DeepSeek.

(2) AI technology can enhance the efficiency of classroom teaching

The biggest challenge in college dance aesthetic education teaching lies in the poor foundational skills of most students, which leads to significant deviations in their learning process. Furthermore, some teachers adopt a one-size-fits-all teaching approach. Owing to individual differences such as weak foundational skills and inadequate comprehension abilities, students may experience considerable discrepancies in learning outcomes.

The above problems can be resolved by introducing AI technology to implement data-driven quantitative management of students' learning process in dance aesthetic education. Real-time posture correction through comparison can be achieved by virtue of motion capture and posture analysis functions. The posture estimation algorithm based on deep neural networks can capture the joint movement trajectories of students in real time. It then generates a heatmap of posture errors through comparison with a standard movement database and provides visual feedback to students, enabling them to adjust their movements in a timely manner [14]. Teachers can also formulate targeted training plans for students based on the long-term movement training data recorded by the system, thus realizing the dynamic matching of learning situation analysis and teaching plans. Analyzing big data including students' dance videos and in-class performance records can accurately identify their strengths and weaknesses, thereby greatly

improving the efficiency of dance aesthetic education classrooms.

Dance aesthetic education with digital-intelligent integration - "learning"

Dance aesthetic education courses aim to attach equal importance to practice and theory, take imitation and creation as opportunities to develop students' imagination and creativity, and lay emphasis on the cultivation of thinking abilities [15]. Digital-intelligent integrated dance aesthetic education courses in colleges and universities play numerous positive roles in theoretical courses, practical courses and students' independent learning respectively.

(1) Theoretical courses - greater intuitiveness

The theoretical courses of college dance aesthetic education are a key component for cultivating students' dance cognition, aesthetic taste and cultural literacy. However, traditional dance theoretical courses have limitations in teaching methods, content presentation and interactive experience, which result in suboptimal teaching effects and unsatisfactory classroom experience for students. The integration of AI technology brings new development opportunities for dance theoretical courses and effectively addresses these problems.

First, AI technology enables intelligent interactive teaching through various approaches, thus increasing students' classroom participation. For instance, AI virtual dance digital humans can serve as a carrier for interactive communication with students, creating scenarios for students to ask and answer questions about dance theoretical knowledge. AI technology can also be applied in the form of games to arouse students' strong curiosity and thirst for knowledge, helping them master the teaching content more firmly during practical exercises. The aforementioned questionnaire survey shows that in response to the question "What new teaching methods do you hope teachers will adopt?", the "game-based teaching method" received a selection rate of 52.78%, ranking second. This indicates that the game-based teaching method is extremely popular among students. If AI is used to develop dance knowledge quiz games, and relevant knowledge such as the history of dance development or dance language - including dance terminology and dance techniques - is integrated into such games, students can experience, perceive and absorb dance theoretical knowledge in the process of playing games, which is highly conducive to motivating students' learning initiative.

Second, AI technology supports visualized teaching presentation. Dance theory involves many abstract concepts and theories, such as the spatial composition of dance and rhythmic changes, which are relatively difficult for students to understand. By virtue of AI-based virtual reality (VR) or augmented reality (AR) technology, these abstract concepts can be transformed into intuitive and perceptible content and presented to students in an animated form, facilitating their understanding and memory. For example, VR technology can immerse students in realistic scenarios, allowing them to experience the expressive effects of dance in different spatial layouts and understand the role of stage space in dance; the same applies to the explanation of dance rhythm. AR technology can present rhythmic changes to students in the form of dynamic graphics or dynamic sounds, enabling them to perceive such changes intuitively.

Third, AI technology can provide students with a large number of dance cases for reference and analysis, and dance theoretical knowledge can be interpreted in combination with specific dance works. When explaining content related to dance choreography theory, for example, teachers can select classic dance choreography works, conduct detailed interpretation and analysis from the perspectives of theme, movement and space, and help students understand how choreography theory guides the creation of actual dance works. Meanwhile, teachers can make a comparative analysis of the differences between different dance choreography works, so as to inspire students' thinking and broaden their horizons.

(2) Practical courses - greater immersion

Practical courses of college dance aesthetic education mainly aim to train students' skills in dance movements, as well as their performing and creative abilities. The in-depth integration of AI technology has enhanced the richness of experience in dance classrooms. Traditional teaching in dance practical courses is primarily characterized by teachers' on-site demonstrations and students' mechanical imitation. This single teaching mode is inevitably lacking in novelty and creativity, with extremely limited interactivity. It is prone to making students feel bored with dance learning, thereby reducing their learning initiative and impairing learning effects.

Driven precisely by AI, VR technology can bring students authentic dance performance scenarios. Students feel as if they are personally on the scene and can be fully immersed in the space of dance performance, which improves their learning initiative. AR technology, as an auxiliary tool for dance teaching, combines virtual information with real scenes, thus providing students with more diversified resources and learning approaches. At present, some universities have already made such attempts. A typical example is the optional course *Digital Dance Creation* offered for dance postgraduates at the Beijing Dance Academy. In this course, students wear VR headsets to enter a creative and visualized virtual stage created by AI, which provides various visual materials such as virtual characters and virtual storylines for students to explore and create. This innovative and creative teaching approach can greatly enhance students' visual perception and strengthen their innovative and creative capabilities.

(3) Students' learning - greater autonomy

Digital-intelligent integrated dance aesthetic education courses in colleges and universities can enhance the autonomy of students' learning. First, motion capture technology is used to collect and record students' dance movements, as well as information such as the torso rotation, flexion and extension degree, movement range and movement speed of various body parts. AI algorithms conduct in-depth analysis of students' movements to determine whether their movements are standardized and whether problems such as bodily incoordination in movements or inaccurate grasp of movement rhythm exist. Targeted after-class training plans are formulated for students based on the standard analysis results of each indicator, enabling them to conduct specialized intensive exercises for their own deficiencies. For example, the software Coach SmartVision (see Figure 20 below) can be applied in the training of sports events. It is capable of high-speed and high-definition shooting and can clearly present movement trajectories that are invisible to the naked eye. The AI motion capture system equipped in Coach SmartVision can capture movement paths and speed changes in real time.

Taking the dance movement of kneeling back bend as an example, after students upload their movement videos shot by the software, the software uses advanced and accurate motion capture functions to measure the range of each of their joints. Specific data are as follows: The flexion angles of the left elbow and right elbow are 167.4° and 173.1° respectively; the flexion angles of the left knee and right knee are 87.7° and 84.3° respectively. Quantitative data analysis breaks the limitation of the traditional teaching mode, in which teachers only rely on verbal experience sharing and physical demonstrations for students. Instead, it makes teaching movements more precise and realizes a qualitative change based on specific quantitative data, rendering practice movements more operable and conducive to the unification of training effects and dance movements.

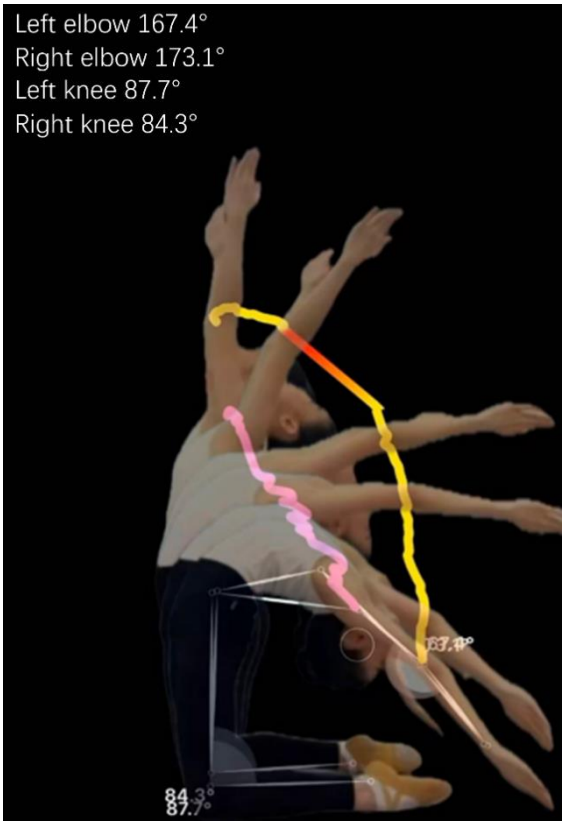

Figure 20. Action capture in the "Coach SmartVision" software.

Second, on the basis of advanced AI technology, a highly realistic virtual dance instructor avatar can be created. This avatar can be customized according to different dance styles and the aesthetic preferences of individual students. In the after-class practice phase, the virtual dance instructor can participate in the entire learning process from start to finish. On the one hand, it can demonstrate the corresponding standard movements and guide students through real-time interaction: It can dance synchronously with students to show correct postures, or perform collaborative demonstrations with students while the teacher is giving on-site demonstrations. On

the other hand, it can dynamically adjust the difficulty and rhythm of practice according to students' performance, ensuring that the practice movements for each student match their individual proficiency levels. Meanwhile, the system can fully record the interaction process between students and the virtual dance instructor, collect relevant data, and generate personalized practice suggestions and guidance plans for each student.

Concrete practical applications are already available for reference. A typical example is the virtual human dance project developed by Professor Ma Yue from Minzu University of China using AI technology (see Figure 9 and Figure 10 below). He leveraged AI to generate a virtual human and complete the corresponding dance performance, and the choreography of dance movements - including movement positioning planning - was also finished in this process, thus achieving the effects of pre-planning, visualization and pre-adjustment. This sophisticated technology and its application methods are also expected to generate virtual dance instructors, providing students with more precise and efficient movement guidance.

Figure 9. The Professor Ma Yue of the Minzu University of China uses AI technology to generate "virtual dance digital human".

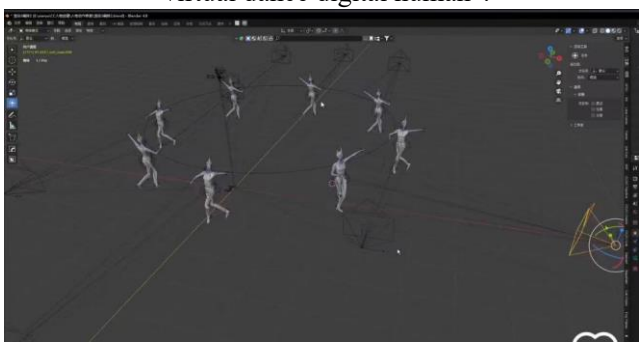

Figure 10. AI-generated virtual dance digital humans in choreography and position planning.

Dance aesthetic education with digital-intelligent integration - "evaluation"

Traditional dance evaluation relies on teachers' subjective judgment, which leads to inconsistent scoring criteria and delayed feedback. By virtue of AI's multi-dimensional data collection and algorithmic analysis, a relatively accurate and objective scoring system can be established. Timely scoring can also be achieved, thus enabling efficient feedback on students' academic performance. First is the multi-dimensional quantitative evaluation of movement quality. AI can assign scores to different movements in terms of rhythmic synchrony, spatial trajectory accuracy and force control. Second is the combination of process-oriented evaluation and developmental prediction for students. In the process of tracking students' movement data, AI can predict the progression of their competencies and formulate targeted practice plans based on their developmental status.

In conclusion, despite the evident advantages of integrating artificial intelligence into college dance aesthetic education, the fundamental laws of education must be upheld. The tendency of technological supremacy should be avoided, and AI should not be allowed to replace teachers as the dominant teaching tool. In addition, the normative application of such technology must be further strengthened.

Development proposals for the implementation of the digital-intelligent integration path in college dance aesthetic education

Policy level: Strengthening support and resource sharing

At the policy level, to effectively promote the integration of digital intelligence into college dance aesthetic education, the relevant competent departments should issue special support policies: Providing financial support, tax incentives and other policy incentives to enterprises and institutions engaged in the R&D and application of AI-based dance aesthetic education technologies. They should encourage enterprises to increase R&D investment in the field of AI-based dance aesthetic education to drive technological innovation and product upgrading, and support institutions to carry out relevant teaching reforms and research projects, so as to improve the teaching quality and research level of dance aesthetic education. Meanwhile, more resources should be opened up for college dance teaching, providing teachers and students with rich learning materials and teaching references to promote the sharing and optimal allocation of dance aesthetic education resources.

Institutional level: Upgrading hardware and technical support

At the institutional level, the top priority is to upgrade hardware and provide technical support. For example, advanced AI-assisted teaching systems should be deployed in dance training studios, including high-precision motion capture equipment, intelligent dance analysis software, VR and AR teaching equipment. Hardware upgrading will lay a solid technical foundation for the integration of digital intelligence into college dance aesthetic education.

Teacher level: Improving literacy and promoting teaching innovation

First and foremost, as practitioners of college dance aesthetic education, teachers should take the initiative to learn knowledge related to AI and actively participate in various AI technology training courses, academic seminars and workshops. Teachers should understand the current application status and development trends of AI technology in the dance field, and master the basic operation and application methods of AI tools such as motion capture, style transfer and intelligent analysis. Second, teachers should transform their traditional teaching concepts and recognize that AI technology is not a replacement for traditional dance teaching, but a powerful supplement and enhancement. They should actively explore innovative teaching models that integrate AI technology with traditional teaching methods. In addition, teachers should take an active part in practical projects of AI-empowered dance teaching, constantly attempt and apply AI technology in actual teaching, and accumulate application experience. Finally, teachers should pay attention to ethical issues, ensuring that the application of AI technology conforms to the laws of education and the characteristics of students' physical and mental development. They should avoid over-reliance on AI technology and neglect of students' emotional experience and personalized development. By focusing on ethical issues, the healthy and orderly development of digital-intelligent integrated college dance aesthetic education can be ensured, and the quality and effectiveness of dance aesthetic education can be improved.

Conclusion

Against the backdrop of the rapid development and constant evolution of science and technology, the integration of digital intelligence into college dance aesthetic education has become an inevitable choice for the current development of education. Based on an empirical investigation of the dance aesthetic education courses at a university in Chengdu, this paper identifies the problems existing in the traditional college dance aesthetic education courses, and proposes a transformation path for the digital-intelligent integration of college dance aesthetic education from the three dimensions of "Teaching", "Learning" and "Evaluation", aiming to realize the innovative reform and vigorous development of dance aesthetic education courses.

Nevertheless, it is also necessary to recognize the various difficulties in the application of AI technology to college dance aesthetic education courses at the current stage. Prominent problems have emerged in practical implementation, including high technical costs, uneven digital literacy among teachers, and the security of data information. Therefore, joint efforts are required from three parties: The formulation of relevant policies by the competent departments, the active implementation of teaching reforms by universities, and the professional development of individual teachers. It is expected to realize the reform and development of college dance aesthetic education courses in the digital-intelligent era, improve the effectiveness of college dance aesthetic education classrooms, and cultivate a large number of talents who meet the requirements of the development trend of the times and possess innovative thinking and excellent aesthetic literacy.

Funding

This work was not supported by any funds.

Acknowledgements

The authors would like to show sincere thanks to those techniques who have contributed to this research.

Conflicts of Interest

The authors declare no conflict of interest.

References

[1] Yıkılmaz, I. (2020) New era: the transformation from the information society to super smart society (society 5.0). *Data, Information and Knowledge Management*, 85-112.

[2] Yang, Y., Qin, J., Lei, J., Liu, Y. (2023) Research

status and challenges on the sustainable development of artificial intelligence courses from a global perspective. *Sustainability*, 15(12), 9335.

[3] Mattsson, T., Larsson, H. (2021) "There is no right or wrong way": Exploring expressive dance assignments in physical education. *Physical Education and Sport Pedagogy*, 26(2), 123-136.

[4] Wang, Y., Zheng, G. (2020) Application of artificial intelligence in college dance teaching and its performance analysis. *International Journal of Emerging Technologies in Learning (iJET)*, 15(16), 178-190.

[5] Wen, X. (2023) Study on the Effective Integration Path of "Aesthetic Education + Ideological and Political Education". *International Journal of New Developments in Education*, 5(9), 6-10.

[6] Guo, Y. (2023) The connotation and philosophical thinking of aesthetic education. *Philosophy Journal*, 2(1), 83-88.

[7] Yu, Y. (2022) Evaluating teaching quality in colleges and universities of public art education using the AHP fuzzy comprehensive method. *Scientific Programming*, 2022(1), 3529311.

[8] 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), 1-13.

[9] Huang, R., Zhang, L., Li, Y. (2025) Transforming dance education in China: enhancing sustainable development and cultural preservation. *Research in Dance Education*, 1-29.

[10] Tao, Y, H., Tao, Y, Y. (2024) Integrating aesthetic education in quality education: a bibliometric analysis of sustainable development perspectives. *Sustainability*, 16(2), 855.

[11] Huang, J. (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.

[12] Li, Y., Cheng, H., Qin, Q. (2025) Evaluations and improvement methods of deep learning ability in blended learning. *International Journal of e-Collaboration (IJeC)*, 21(1), 1-17.

[13] Luan, H., Geczy, P., Lai, H., Gobert, J., Yang, S. J., Ogata, H., Baltes, J., Guerra, R., Li, P., Tsai, C. C. (2020) Challenges and future directions of big data and artificial intelligence in education. *Frontiers in Psychology*, 11, 580820.

[14] Wang, Z., Cheng, H., Qin, Q. (2025) The research on video analysis of key motion positions based on deep learning technology. *International Journal of e-Collaboration (IJeC)*, 21(1), 1-16.

[15] Dou, X., Li, H., Jia, L. (2021) The linkage cultivation of creative thinking and innovative thinking in dance choreography. *Thinking Skills and Creativity*, 41, 100896.