

Research on the path of empowerment of artificial intelligence technology in college dance course from the perspective of digital integration

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Abstract: With the advancement of digital information technology, universities should fully utilize information-based teaching equipment and online resources to enrich dance curriculum content and classroom effectiveness. The adoption of platforms like Xuetong Smart Platform and AI technology serves as crucial approaches to smart education. Digitalized smart classrooms for dance education innovate traditional teaching methods, effectively stimulating students' interest while improving teaching quality and talent development. This paper explores innovative pathways for AI-powered art courses in preschool education under digitalization, examining course fundamentals, the role of AI empowerment, and practical implementation strategies.

Keywords: AI; digitalization; preschool education major; dance curriculum

1 Introduction

"Fundamentals of Dance" serves as a cornerstone course in teacher education for early childhood education majors. Designed for first-year undergraduates, this curriculum aligns with the educational reform principle of "enhancing students' holistic development while fostering innovation and practical skills". Tailored to the program's requirements and students' developmental needs, the course emphasizes the seamless integration of foundational dance training and artistic literacy. As a required course, it benchmarks against top-tier programs through interdisciplinary research, exploring digitalized dance classrooms with Huizhou cultural characteristics. By integrating AI technology, multimedia, and information systems, the course has achieved remarkable digital teaching outcomes. Student satisfaction has significantly improved, and the course successfully secured funding for the "Online-Offline Blended Teaching Program" under the Quality Engineering initiative.

2 Implementation path of the "AI + dance education" teaching model

"Fundamentals of Dance" employs a blended online-offline teaching approach, designed around learning objectives and student interests. Guided by quality education and pedagogical theories, the program adopts a "three-ring linkage" model centered on aesthetic education, enabling students to immerse themselves in dance and experience its beauty [1]. The teaching model features seamless integration across pre-class, in-class, and post-class phases, utilizing the Chaoxing Learning Platform and AI technology to update learning resources in real time, ensuring synchronization with students' progress. Through the collaborative learning of the children's dance "Forest Walk", this case study highlights the course's three key aspects.

2.1 The first step before class: Precise preview guidance

In the initial pre-class phase, teachers distribute preparatory materials for the "Forest Walk" dance routine through the Chaoxing Learning Platform, including instructional videos, step-by-step choreography diagrams, and background knowledge. AI then generates personalized preview tasks for each student based on their learning history and interests, clearly outlining objectives and key points. Students can record dance movements in advance, upload clips to the platform, and the system analyzes their movements in real time. Teachers provide immediate feedback and suggestions through video analysis, helping students identify and correct potential issues early on, thereby laying a solid foundation for in-class learning.

2.2 The second part of the class: AI technology empowering interactive teaching

Through virtual reality, students are immersed in a dance environment resembling a magical movement world. Teachers incorporate AI and multimedia imagery into their lessons. For example, in the "Forest Walk" routine, they create a "forest wonderland" where students are transported to a lush woodland, immersing them in a dynamic visual experience with birdsong, flickering shadows, and swaying flowers. The AI system replicates the forest and adjusts elements according to movements. When students jump, butterflies flutter to enhance immersion and fun. This interactive environment boosts enthusiasm, allowing students to focus on movements while enjoying the dance. In spacious classrooms, high - definition projectors fill the space. As music plays, a naturalistic experience unfolds. Virtual trees and flowers "grow" around students, with light and shadow creating a realistic forest atmosphere. They feel in the enchanted forest, interacting with the virtual world through every movement.

2.3 The third ring of post-class: Diversified evaluation, consolidation and extension

Dance skill evaluation and feedback are crucial for students' development. Online assignments, peer reviews, and discussions enhance post-class quality, supported by offline one-on-one tutoring and group assessments. This blended system helps students quickly spot choreography issues and encourages collaborative learning. Detailed reports show strengths and weaknesses and offer targeted improvement suggestions. For instance, "AI Dance Master" can identify specific problems in movements, rhythm, and emotional expression. It uses big data analysis to customize improvement plans by finding issues like insufficient force, rhythm deviations, or lack of expressiveness, and provides practical practice methods. Moreover, it dynamically adjusts evaluation criteria and recommendations according to students' progress and performance.

3 The role and value of AI-enabled university course "Fundamentals of Dance"

"Fundamentals of Dance" integrates humanistic values, prioritizing the development of students' comprehensive abilities and aesthetic sensibilities. This curriculum designs preschool dance training programs that meet societal needs, blending contemporary relevance, foundational knowledge, and elective options [2].

3.1 Meeting personalized needs

Teaching objectives and content should be established accordingly and implemented through both online and offline formats. As a dynamic art form rather than static observation, dance requires AI technology to vividly convey the essence and aesthetics of movements. Students should not only master standardized movements taught by instructors but also develop creative choreography and teaching skills. AI-assisted tools can help students quickly develop innovative ideas. Meanwhile, the Smart Learning Platform on "Xuexi Tong" can provide real-time feedback on movement accuracy and dance comprehension, enabling students to promptly identify and correct their shortcomings.

3.2 Multi-dimensional presentation to enhance students' sense of achievement

In the "Fundamentals of Dance" course for early childhood education majors, instruction is typically conducted in

school dance studios. Traditional teaching methods rely heavily on instructor demonstrations and student observation, often failing to fully capture individual movement details and provide effective guidance for post-class practice. The primary reason for this choice lies in AI's ability to overcome visual limitations, enabling precise analysis and real-time feedback on dance movements. Additionally, AI technology provides abundant learning resources, allowing students to practice anytime, anywhere. This approach better aligns with contemporary students' diverse learning needs and the practical, skill-oriented nature of early childhood education programs.

3.3 Real-time monitoring and feedback

In the "AI + Dance Education" model, AI technology uses sensors and algorithms to monitor students' dance movements in real-time. It captures both large body movements and subtle finger and ankle motions. The AI system compares actual movements with standard actions during monitoring. When deviations in amplitude, rhythm, or posture are detected, it generates detailed feedback with targeted improvement suggestions, like adjusting weight distribution or movement speed. This helps students correct shortcomings and improve dance learning outcomes.

3.4 Enhancing interactivity and fun

The "AI + Dance Education" model uses AI technology to improve the interactivity and engagement levels in dance instruction. For example, the China Dance Network APP offers dance teaching resources and action libraries for students to learn visually. The Elephant Dance APP corrects improper movements, and its intelligent interface enables real-time dialogue with students, answering their dance-learning questions and giving suggestions. Moreover, the AI system recommends suitable dance pieces and learning materials according to students' progress and interests, boosting their enthusiasm and motivation [3].

4 Conclusion

While the "AI + Dance Education" model has succeeded in practice, there are areas for reflection and improvement. Technically, current AI systems struggle to precisely recognize and analyze complex dance movements. For high-difficulty or uniquely styled sequences, AI may give biased feedback. Future work should optimize AI algorithms to improve recognition accuracy. Moreover, AI can't fully replace teachers' emotional guidance and artistic cultivation. In dance education, teachers' instruction, demonstration, and nurturing of emotional expression are still crucial. The advancement of AI is opening new possibilities for the "Fundamentals of Dance" course in early childhood education. Although AI-enhanced courses have great potential, their application needs continuous refinement. By leveraging advantages and addressing limitations, these technologies can better serve students' learning and development.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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