

Research on the Current Application Status and Optimization Strategies of Digital Media Technology in Dance Education

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Abstract: Digital media technology serves as a pivotal driving force in advancing dance education toward modernization. It enhances classroom teaching efficiency and deepens students' immersive learning experience, steering dance education toward integration of technological elements, redefinition of aesthetic standards, and development of professional skill training. This paper examines the role of this technology in dance education, identifying current shortcomings in teaching practices: insufficient alignment between digital resources and curriculum requirements, and a lack of effective mechanisms for integrating in-class and extracurricular activities. Additionally, technical approaches often remain superficial without thoroughly exploring the relationship between technology and art. Addressing these issues, the paper proposes corresponding improvement recommendations.

Keywords: Digital media technology; Dance education; Current application status; Optimization strategies

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1. Introduction

The Chinese government has formulated new strategies for educational digitalization, requiring the integration of digital media technologies into all aspects of dance education under policy guidance and strategic initiatives. Higher education institutions should move beyond outdated teaching models and embrace the dual mission of enhancing artistic expression through technological innovation and elevating aesthetic quality via digital solutions. While the industry widely recognizes the value of digital media technologies in dance education, existing research remains biased—primarily offering broad interpretations of technological applications or focusing on undergraduate-level pedagogy, with limited practical studies targeting vocational dance education. Current teaching practices face challenges such as insufficient digital resources, fragmented collaboration between curriculum design, technical instruction, and performance practice, and superficial technical explanations—all issues that remain unresolved. This study examines

technology-driven empowerment as a starting point to clarify the intrinsic value of integrating digital media technologies into dance education, establish actionable pathways from technical implementation to aesthetic transformation, address gaps in existing research, and promote synergistic advancements in instructional effectiveness and technological integration ^[1,2].

2. Current status of digital media technology applications in dance education

Digital media technology has been fully integrated into dance education classrooms, with techniques such as motion capture, virtual reality, and interactive projection gradually becoming teaching aids that have enriched instructional approaches to some extent. Taking the “Dunhuang” course at the Beijing Dance Academy as an example, instructors utilize digital projection technology to recreate mural scenes, while students learn the dance movements of flying apsaras within virtual caves. These technological methods significantly enhance the authenticity of cultural context reproduction. However, overall, technology application remains in its early stages; most institutions merely employ digital media as presentation tools for course materials without achieving a deep integration between technology and dance artistry, and both the breadth and depth of its application require further refinement.

3. Issues of digital media technology in dance education

3.1. Insufficient resource alignment: a mismatch between digital resources and teaching requirements

Current systematic digital media teaching resources designed for dance education exhibit several distinct and identifiable shortcomings, primarily stemming from a mismatch between resource availability and students’ professional needs as well as their cognitive foundations. These issues manifest in three key aspects: First, digital resources are disconnected from actual learning contexts. Most existing materials were developed specifically for specialized art institutions and undergraduate dance programs, relying heavily on high-precision motion capture data and abstract technical parameters. This severely conflicts with the characteristics of vocational dance students—whose foundational skills are limited, training periods are short, and practical application is paramount. Students struggle to master these materials, let alone apply them effectively in stage performances. Second, teachers’ digital literacy remains fragmented. While most dance instructors possess solid professional skills, they often lack proficiency in operating digital media tools or adapting content for instructional use. Consequently, while they can demonstrate technical techniques, they fail to explain the underlying pedagogical principles or design tailored digital teaching activities, resulting in superficial technology integration. Third, online resources are highly fragmented. Most available digital materials consist of performance videos or technical demonstrations rather than standardized course packages containing structured lesson designs, detailed movement breakdowns, or real-world application examples, significantly increasing the cost burden for educators when selecting and integrating resources ^[3].

3.2. Inadequate coordination mechanisms: Insufficient collaboration among multiple stakeholders in the “course–skill–performance” framework

The application of digital media technology in education must be grounded in the deep integration of classroom instruction, technical teams, and stage performances—it cannot rely solely on classroom

teaching. Consequently, the current “classroom-technology-performance” framework has yet to establish a truly standardized and efficient collaborative education system. Specifically: First, there exists a supply-demand mismatch between academic classrooms and technical teams. Teaching reforms often prioritize their own pedagogical logic without adequately aligning with technical development capabilities or practical performance requirements, resulting in digital media dance teaching solutions being inadequately communicated to technical departments, thereby causing talent cultivation to diverge from actual job demands. Second, sustained collaboration between educational institutions and digital tech companies remains lacking. Current partnerships typically involve short-term projects or temporary events rather than systematic integration of technologies like virtual reality and motion capture into curricula. As a result, technical expertise rarely becomes part of regular classroom practice, and digital resources struggle to transform into effective teaching materials naturally.

3.3. Superficial application of technology: The transition from formal presentation to artistic integration faces significant challenges

This represents the most prominent and fundamental bottleneck in leveraging digital media technology for dance education: teaching remains confined to superficial adoption of technical symbols, failing to achieve genuine integration of technology with artistic spirit or practical implementation in educational practice. This issue can be summarized into three aspects. First, teaching prioritizes form over substance—relying predominantly on digital projections and virtual scene simulations while inadequately exploring the deeper contexts behind these technologies, such as aesthetic logic, creative concepts, and pedagogical methodologies. As a result, students merely master technical operations without understanding the artistic essence, lacking a spiritual foundation for integration. Second, students struggle to align knowledge with practice, leading to a disconnect between learning outcomes and application. While they may demonstrate proficiency in digital media techniques, they often fail to apply them appropriately in dance instruction, hindering their transition from “learners” to “educators”. Current evaluation systems emphasize technical skills over holistic integration, focusing primarily on metrics like movement accuracy and technical mastery without establishing specific standards for technological comprehension, instructional application, or artistic innovation. Consequently, a skill-oriented teaching approach becomes increasingly dominant, making it impossible to achieve the goal of cultivating talent through technology.

3.4. Lack of technical ethics: Insufficient humanistic consideration in digital teaching

When applying digital media technology to dance education, a profound yet often overlooked issue emerges: technological rationality may subtly undermine artistic sensibility. Firstly, excessive reliance on technology can dull bodily perception—students frequently mimic standardized movements while staring at screens, neglecting their intuitive sense of rhythm, dynamics, and breath control. This undermines the essential physical presence required in dance education, which is fundamentally undermined by technological tools. Secondly, data-driven evaluations ignore individual differences; motion capture systems assess performances through standardized metrics while overlooking qualitative aspects of dance art such as emotional expression and stylistic interpretation that cannot be quantified. This narrows the scope of dance education assessment. Take the piece “Above Heaven and Earth” from Minzu University of China as an example: the dancers’ improvisation and emotional depth in Tibetan Guozhuang dance are difficult for data to capture fully. Replacing aesthetic judgment with technical parameters risks losing the work’s most valuable artistic vitality ^[4].

4. Optimization strategies for digital media technology in dance education

4.1. Precisely aligning with demands to enhance the efficiency of digital resource adaptation

4.1.1. Create a school-based digital resource library to achieve precise matching between resources and student learning needs

The fundamental solution to the mismatch between digital resource supply and students' learning needs lies in transforming raw digital technological materials into curriculum-based teaching resources that align with students' cognitive development patterns. This requires establishing a school-specific digital resource repository with well-defined hierarchies and clear modules, and mobilizing professional educators, technical experts, and key performance personnel to deconstruct and reorganize digital media materials for dance education purposes, thereby forming three-tiered course modules: basic technical awareness, core tool mastery, and instructional innovation transformation. The foundational module utilizes technical demonstration videos and operational tutorials as carriers to establish technical connections; leveraging virtual reality technology enables students to "step into" the Mogao Caves of Dunhuang, experiencing firsthand the spatial dimensionality conveyed by the flying celestial figures within immersive environments, thus fostering an intuitive understanding of the relationship between technology and dance culture.

4.1.2. Focus on core tools and instructional transformation to enable digital resources to serve the classroom directly

The core module should select 2 to 3 representative technical tools and extract practical core functions and operational methods from them. Taking the motion capture system as an example, understanding how joint data feedback is used to adjust body posture enables students to develop their ability to correct errors through continuous comparison. The transformation module includes practical tasks such as "Using Digital Technology for Dance Movement Analysis". For instance, students are guided to employ digital techniques like slow-motion playback and mirror imaging to analyze the mechanical principles underlying arm extension movements in the dance piece "Thousand-Armed Guanyin", thereby comprehending the sequence of force application and its aesthetic significance. This approach transforms digital tools from mere visual aids into cognitive tools, ensuring that school-developed digital resources are effectively integrated into teaching practice.

4.2. Establish a collaborative education mechanism integrating "course-skill-performance" to create a closed-loop teaching system

4.2.1. Establish a collaborative curriculum development mechanism to bridge classroom learning with stage performance

Overcoming the limitations of a single teaching entity, we have established an educational ecosystem centered on talent development that deeply integrates institutional classrooms, technical teams, and stage performances, fostering a virtuous cycle of resources, needs, and evaluation. A demand-driven, dynamically updated course co-development mechanism has been implemented, with a Course Development Committee jointly established with partner technical teams. The practical requirements of classroom instruction and stage performances serve as the core basis for updating digital content, enabling collaborative development of dance teaching resource packages that include technical case studies, lesson plans, music, and digital props to achieve seamless integration between classroom teaching and stage practice. For example, when preparing

the digital dance segment for the production “Dunhuang”, instructors first complete movement choreography within virtual environments while the technical team simultaneously develops projection mapping solutions, ultimately achieving real-time interaction between digital imagery and live dancers on stage^[5].

4.2.2. Establish a project-driven practical model to create a complete closed-loop teaching system

Establish a collaborative application model characterized by continuous immersion and project-driven engagement, actively collaborating with digital technology companies and performing arts troupes to establish dedicated practice bases. Institutionalize students’ technical internships and practical application experiences, using various “digital dance creation” projects as entry points for students to develop small-scale digital dance teaching plans and conduct trial performances under the guidance of technical teams, with evaluations conducted jointly by performance groups and technical experts. Through this process, students not only gain hands-on proficiency in digital tools but also assess their ability to translate knowledge into teaching practices within real-stage environments, thereby establishing a comprehensive teaching cycle from classroom to stage that effectively bridges the gap between technical learning and artistic application.

4.3. Deepen the integration of technology and art, achieving a leap from “technological demonstration” to “artistic immersion”

4.3.1. Reengineer the immersive teaching process to achieve deep integration of technology and art

Since the fundamental goal of education is to cultivate students’ digital literacy and foster innovative teaching approaches, it is essential to restructure instructional processes to steer learning toward substantive depth and practical application. Implementing an immersive technology-based teaching model follows a clear, deliberate progression: technological origin exploration → bodily engagement → artistic transformation. Before technical instruction, create digital art and technological aesthetics contexts—for instance, showcase interactive digital artworks to demonstrate the interplay between light, shadow, and physical movement. During motion learning sessions, guide students to understand how technology interacts with bodily sensations, emotions, and aesthetic perception. For example, utilize motion capture data to compare students’ arm movements with those in the classic work. “The Spirit of the Sparrow” by Yang Liping, revealing previously overlooked breathing rhythms. At the end of lessons, seamlessly transition to dance instruction, encouraging students to explore how digital technologies can be integrated into early childhood dance education—a pivotal shift from technical demonstration to artistic immersion.

4.3.2. Establish a comprehensive evaluation system to guide teaching toward substantive integration

To establish a comprehensive, performance-oriented and creative evaluation system, it is essential first to reform the traditional single-end-of-term skills assessment model by systematically incorporating various indicators such as technical comprehension and interpretation, instructional design, and micro-teaching practice. For instance, when evaluating students’ dance works created using digital projection technology, the focus should extend beyond assessing synchronization accuracy between projection and movement to examining students’ accurate grasp of the work’s emotional tone, thereby shifting the evaluation emphasis from technical proficiency to artistic literacy and teaching innovation capabilities. Additionally, qualitative evaluation dimensions—including aesthetic expression, emotional conveyance, and stylistic interpretation—

should be introduced to prevent technical parameters from narrowing the aesthetic dimension of dance education, thus naturally guiding teaching practices toward artistic integration rather than mere formal presentation.

4.4. Uphold a human-centered approach and establish a technical ethics safeguard mechanism

4.4.1. Establish a “non-technical” perception phase to safeguard bodily presence

To address the issue of insufficient emphasis on technical ethics, it is essential to clearly establish the principle that “technology serves art” in teaching practices. Each lesson should include dedicated time for purely physical exercises free from technological intervention—such as a ten-minute mirror-based improvisation session—where students perform movements according to their internal rhythm and bodily memory, thereby enhancing their intuitive understanding of rhythm, breath control, and force application. This approach does not negate technology itself but rather preserves indispensable space for bodily perception. Prolonged reliance on screen feedback may lead students to develop a habit of focusing on numerical data rather than sensing bodily sensations, resulting in mechanical and rigid expressions devoid of individuality. Therefore, foundational bodily awareness must first be established before employing technology to expand expressive possibilities, ensuring that technology remains supportive rather than substitutive to dance education.

4.4.2. Establish a dual-dimensional evaluation standard to prevent technological narrowing of aesthetics

Establish a dual evaluation standard that equally values both technology and artistry, incorporating qualitative dimensions such as aesthetic expression, emotional conveyance, and stylistic interpretation alongside quantitative data metrics. This approach aims to ensure technology serves the fundamental purpose of artistic expression through its evaluation mechanism. For instance, when assessing digital projection dance performances, evaluators should consider not only the precision of technical synchronization but also the mastery of emotional tone. Additionally, two equally weighted scoring categories— “Technical Implementation” and “Artistic Expression” —can be established to evaluate, respectively, the appropriateness of tool usage and operation, as well as the effectiveness of emotional communication and stylistic interpretation. Deficiencies in either aspect will negatively impact the score, thereby guiding students to balance technology and artistry, preventing the phenomenon where “more elaborate technology leads to hollow artistry”, and safeguarding the aesthetic foundation of dance education from being compromised by technological rationality.

5. Conclusion

Digital media technology will continue to provide substantial technological support and clear developmental guidance for dance education. This paper provides a comprehensive analysis of the current integration status and optimization strategies between digital media technology and dance education: technologies such as motion capture and virtual reality enhance students’ technical literacy, improve teaching efficiency, and foster artistic innovation, thereby elevating classroom instruction quality. Educators should proactively optimize the adaptability of digital resources and systematically establish a collaborative education framework integrating

“curriculum, skills development, and performance”, ensuring that technological elements are effectively implemented in teaching practice to address challenges including inadequate resource alignment, weak collaboration, limited application potential, and ethical considerations. Educational reform ultimately aims to cultivate high-caliber dance educators who possess both solid technical expertise and digital literacy along with innovative thinking, thereby strengthening confidence in the integration of technology and art at the educational foundation level and ensuring that digital media technology provides robust, enduring support for dance education.

Disclosure statement

The authors declare no conflict of interest.

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