Research on Classroom Remodeling of Artificial Intelligence-enabled Dance Teaching

Chuwen Chen

China West Normal University, Nanchong, Sichuan 637000

Abstract: Dance teaching is undergoing digital transformation, and artificial intelligence technology brings innovation opportunities to traditional classrooms. This study focuses on the practical application of artificial intelligence in dance teaching, analyzes from three dimensions : application scenario, teaching mode and implementation path, puts forward innovative strategies such as personalized learning, mixed teaching and data-driven evaluation, and constructs an implementation system including technical platform, teacher development and continuous guarantee. The research shows that artificial intelligence can effectively improve the teaching accuracy and promote individualized teaching, but it is necessary to reasonably balance the relationship between the application of technology and the essence of art, so as to provide reference value for the modernization of dance education.

Keywords: artificial intelligence, dance teaching, classroom remodeling, personalized learning

Dance art has the dual attributes of physical skills and emotional expression. Its teaching has long relied on the face-to-face teaching of teachers and students. However, the traditional model has limitations such as lagging feedback, difficulty in balancing individual differences, and difficulty in accurately grasping the details of movements. In recent years, the mature application of motion recognition, posture analysis, intelligent recommendation and other technologies has made it possible for dance teaching to shift from experience-oriented to data-supported and from unified teaching to precise teaching. At present, the academic research on the integration of artificial intelligence and art education is gradually increasing, but the systematic discussion on the classroom level of dance teaching is still insufficient. Based on teaching practice, this study systematically combs the technical application, model innovation and implementation strategies of artificial intelligence-enabled dance classrooms, explores the balance between technology and art, instrumental rationality and humanistic care, and promotes the high-quality development of dance teaching in the intelligent era.

1 The application scenarios of artificial intelligence technology in dance teaching

1.1 Application of motion capture and intelligent error correction system

The accuracy of dance movements directly affects the learning effect. In traditional teaching, it is difficult for teachers to pay attention to the details of all students' movements at the same time. Visual recognition technology based on deep learning can capture learners' body movements in real time. A three-dimensional model is established by locating key points of bones. The learner's movements are compared with the standard demonstration in multiple dimensions, and the deviation values of parameters such as joint angle, body center of gravity and movement amplitude are accurately calculated. The intelligent error correction module generates personalized improvement suggestions based on deviation data and feeds back to learners in the form of visual charts or voice prompts. This instant and accurate feedback mechanism makes up for the lack of teachers' limited energy, so that every student can get' one-on-one' guidance experience, and significantly improve the efficiency and accuracy of action learning.

1.2 Virtual Teaching Assistant and Intelligent Arrangement System

The virtual teaching assistant is presented through animated characters or holographic projection technology, which can show the decomposition steps of complex dance movements from multiple angles. Students can adjust the playback speed and switch the observation perspective on demand, which solves the problem that the teacher's demonstration times are limited and some angles are difficult to observe. The intelligent choreography system provides a new tool for creative teaching. After teachers input parameters such as music style and emotional tone, the system can generate multiple choreography schemes for selection. The system has a classic action library of different dance types, and realizes the smooth connection and style unification of the action combination through the algorithm, which expands the creative thinking and reduces the threshold of choreography[1]. Multimodal interaction technology enables students to talk to the system through gesture control, voice interaction, etc., which improves the interest and participation of learning.

2 Artificial intelligence reshapes the teaching mode of dance classroom

2.1 Intelligent generation of personalized learning path

The traditional class teaching system is difficult to take into account the needs of students with different foundations, and artificial intelligence technology makes differentiated teaching a reality. The system establishes learner portraits through entrance tests and daily practice data collection, and evaluates their multi-dimensional abilities such as flexibility, coordination, rhythm and expressiveness. The algorithm automatically matches the adapted learning content and schedule. Students with weak foundations receive more basic skills training, and those with outstanding abilities can access more difficult combination movements. The system continuously tracks students' progress and dynamically adjusts teaching strategies. This adaptive mechanism enables each student to learn at the most suitable rhythm, avoiding the dilemma of "not learning enough" or "not keeping up". Teachers are liberated from heavy repetitive explanations, have more energy to focus on students' emotional expression and artistic perception, and shift the focus of teaching from technical instruction to aesthetic guidance, so as to truly teach students in accordance with their aptitude.

2.2 Innovative practice of blended teaching mode

Artificial intelligence technology promotes the deep integration of online and offline teaching and forms a new classroom organization form. In the pre-class stage, students watch the basic action essentials of micro-course video learning through the intelligent platform, and the system initially evaluates the mastery and generates a data report. According to the report, teachers understand the overall learning situation and individual problems of the class, and accurately design the key points of classroom teaching. The link in the lesson is transformed into problem solving and in-depth practice. Teachers focus on common difficulties, and use intelligent mirrors and other equipment to allow students to compare their differences with standard actions in real time. Human-computer collaboration has become the norm in the classroom. Teachers are responsible for artistic guidance and emotional motivation, and artificial intelligence undertakes action monitoring and data analysis. In the after-school stage, students carry out personalized consolidation training through mobile applications. This model breaks the limitation of time and space, extends the learning time, improves the pertinence of classroom interaction, makes students change from passive acceptance to active inquiry, and teachers change from knowledge porters to learning designers and guides[2].

2.3 Data-driven teaching evaluation system

The traditional dance teaching evaluation is subjective and focuses on the result assessment, which is difficult to fully reflect the learning process and individual progress. Artificial intelligence technology has constructed a multi-dimensional and whole-process evaluation system. The system automatically records various data indicators of students ' each practice, including action completion, practice duration, error type, improvement speed, etc., forming personal learning files. The evaluation dimension covers the normative action at the technical level, the expressive force and creativity at the artistic level, and the learning engagement at the attitude level, avoiding the one-sidedness of a single standard. Process evaluation runs through the whole process, the system tracks students' progress trajectory in real time, and presents the improvement of ability with growth curve. The result evaluation is combined with the final display, work creation and other comprehensive assessment, artificial intelligence assisted scoring but ultimately by the teacher to make professional

judgments, retaining the humanistic temperature of art evaluation[3]. The visual feedback system transforms complex data into easy-to-understand charts. Students clearly know their strengths and weaknesses. Teachers obtain the overall data portrait of the class for teaching reflection, forming a home-school collaborative education mechanism.

3 The implementation path and guarantee mechanism of artificial intelligence empowering dance teaching

3.1 Technology platform construction and resource integration

To realize the deep integration of artificial intelligence and dance teaching requires perfect infrastructure support. The school should establish a comprehensive teaching platform that integrates motion capture, data analysis, content management, and interactive communication. Hardware devices such as smart cameras and sensors need to cover the main practice sites. Software development should conform to the characteristics of dance teaching, the interface is intuitive and friendly, and the operation is easy to learn. The digital resource library should systematically include teaching videos, action maps, music materials and other resources of different dance types and difficulties, and establish a scientific classification and labeling system. The platform needs to have good scalability and compatibility, and can continuously upgrade functions with technological progress. It is recommended to implement in stages, prioritize core functions, and explore multiple financing channels such as government support, corporate sponsorship, and school-enterprise cooperation to ensure sustainability.

3.2 Teachers' ability improvement and role transformation

The introduction of artificial intelligence technology puts forward new requirements for teachers. The primary task is to improve teachers ' digital literacy, master the operation methods of intelligent teaching tools and the basic principles of data analysis through systematic training, and learn to integrate technical means into teaching design. The deeper transformation lies in the teaching concept and role positioning. Teachers need to realize that they are the organizers of learning activities, resource integrators, and problem guides, and play the irreplaceable advantages of artificial intelligence such as emotional care, aesthetic judgment, and creative stimulation in human-machine collaborative teaching[4]. Training should help teachers establish a correct view of technology and regard technology as an enabling tool rather than an alternative threat. Establish a teacher learning community, promote mutual learning through observation and exchange, case studies, etc., and form a cultural atmosphere for continuous improvement.

3.3 Guarantee strategy of sustainable development

Artificial intelligence empowering dance teaching is a long-term systematic project, which needs to establish supporting mechanisms to ensure stable operation and continuous optimization. Regularly evaluate the applicability of existing systems and introduce new technologies in time to make up for shortcomings. Establish a two-way feedback mechanism for technology and teaching, and the problems found by teachers should be fed back to the technology developers in time to promote product improvement. The evaluation of teaching effect should become a normal work, and the actual benefits should be verified by comparative experiments, questionnaires and other methods. Ethical norms and data security should not be ignored. We should clarify the principles of student privacy protection and standardize the whole process management of data collection, storage and use. The application of technology should abide by the principle of educational equity, avoid the new educational gap caused by the difference of equipment conditions, and make technology benefit every learner.

Conclusion

Artificial intelligence technology injects new vitality into dance teaching, and significantly improves the accuracy and efficiency of teaching through action capture, intelligent analysis, personality recommendation and other means. This study proves that artificial intelligence can effectively solve the pain points of traditional teaching, promote individualized teaching and deep learning; however, technology is a means rather than a purpose, and the core of dance education is to cultivate artistic accomplishment and creative ability. In the future, the classroom should be a space for the integration of technology empowerment and humanistic care, so that technology can truly become the light to brighten students' artistic dreams.

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