

Exploration of the Feasibility and Paths of Applying Artificial Intelligence Technology in Dance Sport Teaching

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Abstract: The application of artificial intelligence (AI) technology in college dance sport teaching holds significant practical significance. This paper conducts an in-depth analysis of the feasibility and paths of applying AI technology in dance sport teaching. Firstly, it explores the feasibility of AI technology application, then deeply analyzes the important significance of AI technology in dance teaching, and finally proposes effective teaching paths. The aim is to provide valuable references for improving dance teaching effects and promoting the reform of college physical education.

Keywords: Artificial intelligence technology; Dance sport teaching; Feasibility

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1. Introduction

Currently, society has entered the era of artificial intelligence. With the rapid development and wide application of AI technology, it has brought tremendous development opportunities and changes to various fields of society, and also exerted a profound impact on higher education^[1]. As a comprehensive sport integrating art, sports, and music, dance plays an important role in enhancing students' physical fitness, cultivating aesthetic ability, and improving teamwork skills. However, there are some problems in traditional dance teaching, such as a lack of teaching resources, outdated teaching methods, and low student interest, which seriously affect the improvement of dance teaching effects^[2]. Under the background of the AI era, AI technology provides new ideas and methods to solve these problems, and its close integration with dance teaching has broad prospects and great potential. Therefore, in the new era, colleges and universities, as well as teachers, should fully recognize the advantages of AI technology, actively promote its integration with dance teaching, and, through various ways and means, improve teaching effects, more effectively cultivate students' dance literacy and comprehensive abilities, and lay a solid foundation for their all-round development.

2. Feasibility analysis of applying AI technology in dance teaching

2.1. Technical level

After years of development, AI technology has achieved remarkable results and gradually matured. Its application in dance sport teaching can provide strong technical support for improving teaching effects. Taking motion capture and motion recognition technology as examples, advanced sensor technology and visual algorithms can be used to accurately capture dancers' movements, such as motion trajectories, body postures, and joint angles. These technologies can timely feed back image information to teachers and students, helping them more clearly and intuitively understand whether the dancer's posture is standardized and standard, thereby effectively improving teaching effects ^[3]. At the same time, AI algorithms can collect and analyze dancers' movement data to identify patterns and characteristics. Applying this to dance teaching can not only help students understand the characteristics of different dance styles and strengthen their cognition, but also lay a foundation for targeted teaching. In addition, virtual reality (VR) and augmented reality (AR) technologies can be introduced into dance teaching to create immersive teaching scenarios according to teaching content and students' learning conditions, allowing students to practice their dance skills in a virtual and realistic environment and more intuitively feel the charm of dance.

2.2. Economic level

With the deepening of research on AI technology, various products based on AI technology have emerged, greatly changing people's lifestyles and work patterns ^[4]. From an economic perspective, although introducing AI technology into college dance teaching requires a certain amount of initial investment, from a long-term development perspective, such "investment" can yield significant returns. Specifically, on the one hand, the introduction of AI technology can reduce costs. Teachers can use AI-based intelligent teaching platforms to collect students' learning behavior data, conduct comprehensive evaluations based on this, and automatically generate evaluation reports. This not only improves the accuracy and comprehensiveness of evaluation results but also effectively reduces teachers' labor costs and time costs, and reduces work pressure. On the other hand, the introduction of AI technology can also improve dance teaching efficiency. With the help of AI technology, teachers can teach more students at the same time, effectively improving teaching efficiency. For example, motion capture technology can be used to effectively capture students' dance movements and body shapes and conduct in-depth analysis. The intelligent system can provide targeted guidance and education to multiple students, thereby effectively improving teaching efficiency ^[5]. In addition, with the continuous development and maturity of AI technology, the prices of related equipment and software will gradually decrease, making it possible for more colleges and universities to afford the cost of introducing AI technology. At the same time, with the continuous expansion of China's investment in the field of education, this provides a resource guarantee for the introduction of AI technology.

2.3. Educational level

In the field of education, the introduction of AI technology is also in line with the development trend of educational digital transformation [6]. Under the current background, digital transformation has gradually become the trend of education reform. Future education and teaching will pay more attention to intelligent, personalized, and digital development, and dance teaching is no exception. With the help of AI technology, dance sport teaching can break the limitations of teaching time and space and better meet students' diverse

needs. According to students' interests and real dance levels, personalized teaching plans can be formulated to better meet their diverse learning needs. In addition, with the deepening integration of AI technology and college dance teaching, AI technology can be used to more comprehensively understand students' learning situations, providing important data support for the reform of dance teaching.

3. Significance of applying AI technology in college dance teaching

The application of AI technology in college dance teaching has important practical significance ^[7]. This paper conducts an in-depth analysis of the following aspects.

Firstly, AI technology can significantly improve teaching effects and quality. With the help of AI technology, intelligent evaluation systems and data collection systems can be used to collect and analyze students' learning data, timely discover problems existing in students' dance learning process, and automatically generate evaluation reports, helping students adjust training methods or models in a timely manner, correct their mistakes, and thereby improve their dance levels ^[8]. Compared with traditional teachers' oral evaluation, this evaluation method is more comprehensive, timely, and accurate. It can conduct a comprehensive evaluation of students' dance movements or performances in the first place, helping students correct their mistakes and improve their dance levels. For example, motion capture systems can be used to capture students' dance movements, and through visualization, the mistakes in students' dance movements and postures can be presented, helping them intuitively find their own problems, thereby prompting them to make adjustments to improve their dance levels.

Secondly, personalized teaching can be realized. Due to various factors such as family background, educational experience, and personal acceptance ability, each student has certain differences in learning style and physical conditions ^[9]. However, in traditional dance sport teaching, teachers often adopt a "one-size-fits-all" teaching model. Under this model, students' personalized needs are difficult to be fully met, thus affecting the effective improvement of students' literacy and abilities. With the help of AI technology, teachers can use the powerful functions of this technology to collect and analyze students' learning behavior data, understand their interests and dance levels, and, based on this, formulate personalized dance teaching plans to better meet their diverse needs. For example, in specific teaching practice, teachers can use AI systems to collect and analyze students' learning data, understand their real dance levels and interests, and push the most suitable learning resources to them to improve their learning effects ^[10]. At the same time, teachers can implement personalized education and guidance for them to ensure that each student's dance literacy and comprehensive abilities can be significantly improved.

Finally, it promotes resource integration and sharing. Currently, there are obvious gaps in educational resources among colleges and universities in different regions ^[11]. Colleges and universities in some coastal and economically developed areas often obtain more educational resources, while those in inland and economically underdeveloped areas have fewer educational resources. This unbalanced distribution of educational resources limits the innovative development of dance teaching in some colleges and universities. With the help of AI technology, it can effectively promote the integration and sharing of educational resources, break the limitations of regional transportation and economy, effectively shorten the gap in educational resources between regions, and improve educational equity. For example, under the background of AI, an intelligent network platform can be built, through which students can obtain high-quality educational resources, such as teaching videos, courseware, and online courses. This can effectively shorten the educational gap between different regions.

At the same time, intelligent recommendation systems can be used to recommend the most suitable learning resources to students, better meeting their personalized needs. In addition, students from different regions and colleges and universities can communicate and exchange through intelligent teaching platforms, share learning experiences and insights, thereby creating a good dance learning atmosphere and further improving students' dance levels ^[12].

4. Application paths of AI technology in dance sport teaching

4.1. Intelligent recognition and evaluation system

The intelligent recognition and evaluation system is one of the products of the organic integration of AI technology and dance teaching ^[13]. The system is composed of cameras, dynamic sensors, feedback modules, data processing units, etc., which can accurately capture students' dance movements and conduct comprehensive analysis and evaluation using intelligent models, computer vision, machine learning, etc. The system can scientifically evaluate whether each student's dance movements are standardized, whether the rhythm is in sync, and whether the posture is standard, and automatically generate evaluation results and improvement suggestions. Students can learn in detail about their own problems and make targeted corrections, thereby continuously improving their dance levels. For example, in the dance basic training link, the system will dynamically capture and analyze students' basic dance movements, postures, and arm positions. After students complete the training, the system will automatically generate evaluation reports and improvement suggestions, and display correct dance movements and postures through visualization, enabling students to recognize their own problems and help them correct. At the same time, the system also has data functions, which can count and analyze students' learning data at various stages, and provide timely feedback on students' learning progress and the degree of improvement in dance levels to teachers, facilitating teachers to adjust teaching strategies and methods in a timely manner.

4.2. Intelligent teaching aids

The use of intelligent teaching aids can also reduce teachers' work pressure and provide them with more efficient and convenient teaching support ^[14]. For example, with the help of an intelligent class scheduling system, the system can automatically generate scientific and reasonable class schedules according to teaching arrangements and students' needs, avoiding the waste of teaching resources. At the same time, the intelligent teaching aid system can also support the intelligent recommendation of teaching resources. By analyzing each student's learning data, the system can intelligently recommend the most suitable learning resources to students, which not only can effectively improve students' learning effects but also provide personalized teaching suggestions for teachers, further improving dance teaching effects. Intelligent teaching aids also have homework correction functions, which can automatically identify and correct dance homework submitted by students and generate improvement suggestions. This can greatly reduce teachers' teaching pressure, allowing them to devote more time and energy to optimizing teaching content and innovating teaching models, thereby laying a solid foundation for promoting the reform of dance teaching.

4.3. Virtual simulation training system

The virtual simulation system based on AI technology can create a variety of virtual scenarios according to teaching content and students' learning conditions, bringing students an immersive learning experience ^[15].

Students can conduct dance training in virtual and realistic scenarios, practice their dance skills, and improve their dance levels. For example, with the help of the virtual simulation training system, students can perform movements on a virtual stage, as if they are in the center of the stage, personally feeling the audience's gaze. This can help them build self-confidence, improve adaptability, enable them to adapt to the stage faster, and avoid mistakes due to excessive tension on the stage.

At the same time, the virtual simulation training system can also simulate different dance styles and training difficulties, better meeting students' diverse training needs. Students can flexibly choose different virtual scenarios and training models according to their own dance levels and styles, thereby helping them improve training effects in a targeted manner. The system also has an intelligent evaluation function, which can collect and analyze students' training data, automatically generate evaluation reports, and feed back to teachers and students, helping them continuously understand their own dance levels and promote the improvement of dance skills.

5. Conclusion

In summary, in the new era, the integration of AI and college dance sport teaching has become the trend of education reform. From a technical perspective, the continuous development of AI technology can effectively promote the reform of dance teaching and provide strong technical support for it; from an economic perspective, although colleges and universities may invest more funds in the early stage, from the perspective of future development, the introduction of AI technology has important practical significance; from an educational perspective, it meets the needs of educational digital transformation and can effectively improve the effect and quality of dance teaching. In this regard, colleges and universities, as well as teachers, should fully recognize the value of AI technology, actively promote its in-depth integration with dance teaching, and, through various ways and means, improve dance teaching effects, laying a solid foundation for students' all-round development in the future.

Disclosure statement

The author declares no conflict of interest.

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