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Research on the Construction of Digital Advanced Intelligent Music Courses under the Background of Artificial Intelligence

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Abstract:

The deep application of artificial intelligence (AI) and digital technology in the education field has been reshaping the curriculum design and teaching methods of higher music education. The construction of intelligent music courses needs to be focused not only on the cultivation of music theory and practical ability but also on the integration of personalized and interactive teaching systems with AI technology. The advantages of AI in intelligent composition, real-time feedback, and virtual performance have been providing a broad space for curriculum innovation. However, challenges such as the shortage of qualified instructors and the unequal distribution of resources have been hindering the deep integration of technology and art. By analyzing the influence of AI on music courses, the core construction elements and innovative strategies are proposed, and the potential value and development prospects of digital intelligent courses in improving teaching quality and cultivating music talents are explored.

Keywords:

Artificial intelligence
Digitalization
Higher education
Intelligent music
Curriculum construction

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1. Influence of artificial intelligence and digital education on music curriculum

1.1. Overview of the application of artificial intelligence technology in music education

The rapid development of artificial intelligence (AI) technology has provided strong technical support for music education and has brought about profound changes in teaching tools and learning methods. The application of intelligent composition and music arrangement tools has injected new vitality into music creation. By analyzing the style and structure of traditional music works through algorithms, new music with artistic value is generated. These tools can not only help students understand the composition theory, but also improve their musical expression ability through a variety of creative practices. In addition, AI technology can provide structural feedback

for students' work and effectively help them optimize their creative ideas [1].

AI-assisted performance and teaching systems are also gradually popularized in music education. These systems are able to provide personalized suggestions for improvement by analyzing student performance data. Machine learning-based aided performance software can identify incorrect notes, rhythm deviations, or timbre changes and visually present detailed feedback. This can not only help students quickly correct their mistakes, but also improve their sensitivity to the details of music.

1.2. Transformation of music learning style caused by digital education

The rise of digital education has changed the teaching mode of traditional music courses and provided students with a more flexible learning experience. Independent learning and personalized teaching are possible, and students can choose their own learning content and progress through the digital platform. The intelligent music learning platform can automatically recommend suitable teaching resources according to student learning history and performance. This way can not only fully stimulate students' interest in learning, but also help them deeply master music theory and practical skills [2].

The diversity and immediacy of digital resources have brought unprecedented convenience to music learning. Digital teaching resources include high-quality teaching videos, interactive music scores, virtual musical instruments, etc., so that students can learn anytime and anywhere [3]. Through an online database, students can have easy access to classical music scores, musical works, and academic resources around the world, providing a broader vision for the course study.

2. Core elements of higher music course construction

2.1. Intelligent and quantifiable course objectives

The construction of higher music courses needs to be intelligent and quantifiable as the core orientation to adapt to the application depth of AI technology in the field of education. The integration of professional music skills and AI technology is the key to the intelligence of the course objectives. By introducing tools such as AI composition, intelligent accompaniment, and performance analysis, a high degree of combination of theory and practice can be realized in teaching [4]. In composition teaching, teachers can help students understand and imitate different styles of composition techniques through AI algorithms, so as to improve their creative ability. At the same time, the performance course can use the AI evaluation system to analyze students' intonation, rhythm, intensity, and other parameters in real time, and provide quantitative evaluation data. This not only optimizes the teaching process, but also encourages students to improve their professional skills with precise feedback.

2.2. Digital design of teaching content

The development of digital resources in music theory courses is an important part of teaching content design. In higher music education, music theory courses often involve a large number of abstract concepts and complex structures, and the traditional teaching mode can easily lead to a decline in student interest [5]. Through digital technology, multimedia teaching resources can be developed, including dynamic visual scores, interactive sound intervals, and chord practice tools. These resources can visualize abstract music theories and help students understand complex music concepts more intuitively. The application of an online course platform can break the limitation of time and space and enable students to learn music theory anytime and anywhere.

2.3. Innovation and diversification of teaching modes

The hybrid teaching mode integrating online and offline is an important feature of digital advanced intelligent music courses. By combining the traditional classroom with online teaching, the advantages of the digital platform can be fully utilized. Teachers can put the theoretical knowledge part on the online platform for students to study independently, and focus on practice and discussion in the class. This mode not only improves classroom efficiency, but also effectively meets the students' personalized learning needs [6]. By analyzing the big data of students' online learning behavior, teachers can further optimize the teaching design and align the teaching content with the actual needs.

3. Construction strategies of intelligent music course under the background of artificial intelligence

3.1. Optimizing teaching resources and promoting the intelligent transformation of music education

With the support of AI technology, optimizing teaching resources is the primary task in the construction of intelligent music courses. The establishment of an intelligent music teaching resource library is the key to realizing this goal. The resource base should cover music theory, practical skills, and music history, and integrate multimedia and interactive technology. The music teaching resource library can generate dynamic and personalized learning materials through AI technology, such as recommending suitable music scores or teaching videos according to students' learning trajectories [7]. At the same time, the resource library should integrate the audio analysis technology and decompose the classical music works into melody, harmony, rhythm, and other elements, for students' in-depth analysis. The construction of a resource database needs to pay attention to the scientific and interesting content, so as to stimulate students' interest in learning and improve the teaching effect.

Promoting open sharing of educational resources is another vital strategy to promote intelligent transformation. The construction of smart music courses needs to break through the limitations of region and platform and use cloud technology and blockchain technology to achieve efficient circulation of resources. Colleges and universities can cooperate with industrial institutions and music education platforms to build an open music resource ecosystem, and share high-quality teaching content and cases with more teachers and students [8]. Through the open platform, students can obtain rich music scores, famous teacher courses, and virtual musical instrument playing guidance, and teachers can also share teaching experiences and research results using the platform. This open resource mode can alleviate the problem of lack of teaching resources in traditional teaching, and effectively improve the coverage and popularization of teaching. Intelligent transformation also needs a close combination of technology and teaching objectives to realize the precise application of educational resources. AI technology can analyze the data in the resource library, understand the differences between students in the learning process, and design personalized teaching content accordingly.

3.2. Emphasizing interesting teaching to create an active classroom atmosphere

In higher music courses, interesting teaching is an essential strategy to stimulate students' interest in learning. Combining the characteristics of music majors and AI technology can effectively improve classroom activity and teaching effect. Fun teaching should not only be entertainment-oriented but also be integrated into the professional content of music discipline, so that students can master solid theoretical knowledge and practical skills in a relaxed and pleasant atmosphere.

The technology of using AI to generate music is one of the important tools of interesting teaching. Such techniques can generate melodies, harmonies, and even complete music through algorithms, providing an experimental learning environment for students. For example, AI composition tools can generate music that meets their characteristics based on specific musical styles (such as Baroque or jazz). Students can intuitively understand the characteristics of different styles in melodies, rhythm, and harmony by analyzing the structure of the music generated by the AI [9]. This real-time generated music creation practice not only enhances the interest of the classroom, but also deepens students' understanding and application ability of composition techniques. The introduction of interactive gamification teaching design in classroom teaching can be more directly combined with the music professional content.

3.3. Focusing on the cultivation of practical ability to enhance students' musical expression

In higher music education, the cultivation of practical ability is directly related to students' musical expression and professional competitiveness. With the support of AI technology, digital intelligent music courses can provide more efficient and scientific solutions for music practical teaching. To emphasize the cultivation of practical ability, we need to take multi-level and multi-dimensional approaches for the in-depth integration of students and music professional theory through technical means and

enhance students' expression and creativity [10].

Practical courses integrated with AI technology can achieve personalized guidance and efficient feedback. The AI-assisted performance system can conduct real-time analysis of students' intonation, rhythm, and strength in real time, and visually present the problems in the performance. This system can provide specific suggestions for improvement by comparing the differences between students and the standard model, so that students can optimize their performance skills in continuous adjustment. AI-based timbre analysis technology can help students more accurately control the vocal characteristics of musical instruments and improve their ability to grasp the details of music. For example, in stringed instrument courses, AI can provide students with a precise direction of improvement by analyzing changes in arch speed, pressure, and vocal points. Virtual rehearsal technology can provide students with a more diverse practice environment. Through AI and virtual reality technology, students can simulate rehearsals in the virtual band, and the system can coordinate and adjust according to each members' performance [11]. This technology not only solves the problem of lack of skills caused by insufficient rehearsal time, but also helps students get familiar with the cooperation mode with different bands or conductors, thus enhancing their cooperation and adaptability abilities in musical performances. At the same time, the virtual rehearsal technology can also record and replay the rehearsal process, providing students with comprehensive self-assessment opportunities.

The digital platform can support a variety of music practices to further enhance students' performance. For example, online playing platforms can present students' works to a global audience and get feedback from the audience through real-time interaction. This platform not only provides students with opportunities to perform but also helps them accumulate practical performance experience and improve their stage performance. Online practice courses can also combine technical means, such as AI generation of accompaniment or imitating specific musical styles, to provide more possibilities for students' performance practice. In practical teaching, we also need to pay attention to the multi-dimensional cultivation of music expression ability.

3.4. Cultivating compound talents and promoting interdisciplinary integration

Under the promotion of AI technology, higher music education not only needs to pay attention to the cultivation of music professional ability, but also focuses on the cultivation of compound talents, so as to meet the demand for multi-disciplinary knowledge integration in the digital era. In the construction of intelligent music courses, interdisciplinary integration can expand students' knowledge breadth and innovation ability and lay a foundation for their development in the interdisciplinary field of music and technology [12].

The diversification of teacher teams is a critical guarantee to promote interdisciplinary teaching. The construction of music courses requires hiring educators with AI technology backgrounds and designing the teaching content together with traditional music teachers. Through cross-field collaboration, the course can combine the depth of the music major and the breadth of technology application.

4. Challenges and prospects of digital intelligent music course construction

4.1. Main challenges in the curriculum construction

The construction of the digital intelligent music curriculum has made remarkable progress in the advancement of technological progress and teaching demand, but it still faces many challenges in practical implementation. The deep integration of technology and music teaching presents a primary issue. The existing AI technology pays more attention to the realization of technology but lacks an understanding of the needs of music majors, thus it is difficult to fully support the complex artistic expression and personalized needs in music education.

The adaptability of the teaching staff also puts forward new requirements for curriculum construction. Many music teachers lack an AI technical background and are incompetent in teaching tasks involving digital content [13]. This technical gap not only affects the quality of teaching but also restricts the popularization scope of the curriculum.

4.2. Opportunities and directions for future development

With the continuous progress of technology, the construction of the digital intelligent music course has ushered in a new development opportunity. The optimization and upgrading of AI technology provide more powerful technical support for personalized teaching. For example, a deep learning-based music generation and analysis system can more accurately simulate music style and expression, providing students with a rich and creative practical environment [14]. In addition, the popularization of 5G and cloud computing technologies enables large-scale online teaching and real-time interaction, which provides a solid foundation for resource sharing and distance learning.

International cooperation and resource opening are an important path for future development. By building a global music education platform, music teaching resources can be shared in a larger scope, and students and teachers can expand their horizons through cross-cultural communication [15].

5. Conclusion

The construction of digital intelligent music courses under the background of AI is the key direction of the modernization of higher music education. By analyzing the far-reaching influence of AI and digital education, this article defined the core elements of intelligent curriculum objectives, digitalization of teaching content, and diversified teaching modes. The research points out that the application of technology needs to be combined with the essence of music art, and optimizing the teaching resources and cultivating interdisciplinary compound talents are the core strategies to realize the construction of an intelligent curriculum. At the same time, the practical challenges include technology integration and teacher adaptability. Looking forward to the future, digital intelligent music courses will continue to develop in the direction of openness and internationalization, providing more innovative paths for music education, and laying a solid foundation for cultivating music talents with both artistic and technical capabilities.

Disclosure statement

The author declares no conflict of interest.

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