

Research on the Current Situation, Opportunities, and Innovative Strategies of Music Education Development Empowered by Digital Technology

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Abstract: With the sweeping tide of digitalization, the impact of digital technology is becoming increasingly extensive and profound. While music education is presented with rare development opportunities, there are also some issues that urgently need to be addressed. Taking the development of music education as the starting point, this paper first summarizes the current situation of music education development empowered by digital and intelligent technology, and identifies problems such as the uneven quality of digital educational resources, insufficient digital literacy of teachers, and the backwardness of evaluation systems. Subsequently, the paper analyzes the development opportunities in the digital era, and finally puts forward specific development and innovation strategies to promote the integration of digital technology and music education, thereby fostering students' artistic literacy.

Keywords: Digital technology; Music education; Current situation; Strategies

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1. Introduction

Music education falls under aesthetic education, one of the “Five Types of Education” (including moral, intellectual, physical, aesthetic, and labor education). Its core focus is to cultivate students' aesthetic ability and enhance their humanistic literacy. Under the traditional music education model, factors such as geography, teaching staff, and resources have hindered the balanced distribution of educational resources, making it difficult to meet students' personalized needs—all of which impede the development of music education. The advancement of digital technology has opened up boundless possibilities for educators; its characteristics of efficiency, diversity, and convenience have made it highly favored, leading to an increasingly deep integration with education. From the widespread application of intelligent music scores to the rise of online music teaching platforms, from immersive music learning scenarios created by virtual reality technology to the customization of personalized learning plans supported by big data, digital technology is constantly breaking the boundaries of traditional music education and reshaping the music education ecosystem.

2. Current Situation of Music Education Development Empowered by Digital Technology

The rapid development of digital technology has brought unprecedented opportunities for the development of music

education. However, while empowering music education, it has also gradually given rise to a series of in-depth problems, which have exerted certain negative impacts on the digital development of music education. This paper will elaborate on the situation from three aspects, focusing on resources, teaching, and evaluation, so as to conduct in-depth examination and reflection^[1].

2.1. Uneven Quality of Digital Educational Resources and Imbalance Between Supply and Demand

Although the application of digital technology has brought a massive amount of music educational resources, the uneven quality of these resources has become a key factor restricting the effectiveness of education. A large number of digital resources feature high content similarity; some online educational platforms merely apply basic music theories, music general knowledge, and musical instrument playing methods, without conducting in-depth interpretation from perspectives such as musical aesthetics and music culture. As a result, these resources fail to meet students' needs for diversified and advanced learning^[2]. On the other hand, in the process of resource development, there exists a phenomenon where excessive emphasis is placed on the application of technological means while the connotation and value of the content itself are neglected. Developers only focus on the exquisiteness of interfaces and the attractiveness of interactions, ignoring the intent and purpose of teaching. This leads to a disconnect between technological means and teaching content, failing to achieve the expected goal of promoting the development of students' musical abilities. The imbalance between the supply and demand of digital resources is prominent. High-quality digital music educational resources are concentrated in developed regions or first-tier cities. In contrast, remote areas and rural schools face difficulties in accessing high-quality resources due to constraints such as funds and equipment^[3].

2.2. Insufficient Digital Literacy of Teachers and Disconnection in Teaching Integration

As the main implementers of music education, teachers' digital literacy directly determines the effectiveness of digital technology application. Some music teachers lack professional skills in using digital technology and cannot properly apply intelligent music scores, music production software, online collaboration platforms, and other tools in music classrooms^[4-5]. Additionally, some teachers are deficient in information-based teaching design literacy. They fail to design educational activities that integrate both technological elements and educational value based on the characteristics of music as a subject and students' learning styles. This leads to the underutilization of digital technology—its potential to enhance teaching effectiveness is not fully unleashed, and it becomes difficult to improve the teaching process. Furthermore, some teachers still adhere to the traditional “teacher-led, student-passive” teaching model. They fail to recognize that new technologies have brought about a new teaching paradigm and lack the ability to deeply explore the value of digital technology. Consequently, it is hard for them to create appropriate teaching scenarios for students, resulting in only superficial integration between digital technology and music education. This makes it difficult to achieve the goal of improving classroom teaching quality.

2.3. Singular Evaluation System and Misalignment with Educational Objectives

Music education empowered by digital technology requires a diversified evaluation system that matches its educational model. However, the problem of a singular evaluation mechanism remains prominent^[6-7]. First, the evaluation content overemphasizes the quantitative assessment of knowledge and skills. For example, online exams are used to test students' mastery of music knowledge, and technical software is employed for mechanical scoring of musical instrument performance accuracy and rhythm. In contrast, it neglects the assessment of students' intangible yet crucial competencies, such as music appreciation ability, innovative spirit, and cultural awareness. As a result, the evaluation results cannot fully reflect students' comprehensive music ability. Second, the current evaluation method is still dominated by teacher assessment, lacking student self-evaluation, peer evaluation, and process-oriented evaluation enabled by digital means. This is unfavorable for assessing students' learning enthusiasm and self-reflection ability from multiple dimensions and perspectives. Such a singular evaluation system easily leads to the misalignment of music education's educational

objectives. It traps students in the misunderstandings of “valuing skills over aesthetics” and “valuing results over process,” deviating from the original purpose of music teaching—which is to cultivate students’ artistic appreciation ability and humanistic literacy^[8].

3. Opportunities for Music Education Development Empowered by Digital Technology

Currently, with the global prevalence of the digital wave, unprecedented development opportunities have emerged for music education. Endowed with the characteristics of efficiency, convenience, and diversity, digital technology continuously breaks the boundaries of traditional music education and injects new impetus into its development. Whether in terms of teaching resource allocation, teaching reform, or the improvement of students’ learning experience, digital technology has demonstrated its role in reshaping the ecosystem of music education and propelled the development of the music education field to a new level.

3.1. Breaking Temporal and Spatial Limitations to Realize Inclusive Sharing of Educational Resources

Traditional music teaching faces the problem of unbalanced allocation of educational resources due to geographical constraints and shortages of qualified teachers. However, with the application and development of digital technology, this issue has been alleviated to a certain extent—high-quality educational resources have broken through spatial barriers, achieving popularization and sharing^[9]. Through channels such as online teaching, live-streamed classes, and pre-recorded videos, students in different regions can easily and quickly access teaching content from outstanding music teachers, high-quality music theory courses, and skill instruction on various artistic performances. This resource-sharing model maximizes the provision of equitable educational opportunities for students in remote or educationally underdeveloped areas, lowers the threshold for music education, and allows more music enthusiasts to engage in music learning.

3.2. Innovating Teaching Modes and Enriching the Presentation Forms of Music Teaching

The traditional music teaching mode is relatively simplistic, mostly adopting the “explanation + demonstration” approach. In this mode, students are in a passive position of receiving knowledge, making it difficult to exert their enthusiasm and initiative; meanwhile, the level of interaction and sense of experience are relatively weak. The application of digital technology, however, has given rise to new teaching modes such as immersive teaching and interactive teaching. Additionally, digital technology has transformed the presentation form of textbook content: obscure music concepts are visualized through images, animations, and other forms, making complex music theory knowledge clear at a glance. This not only effectively reduces the difficulty for students to understand but also enhances their curiosity for knowledge. Such innovative teaching modes improve the fun and interactivity of music classes, and contribute to cultivating students’ autonomous learning ability and creativity.

3.3. Promoting Personalized Learning to Meet Learners’ Diverse Needs

Due to differences in students’ existing knowledge bases, learning receptivity, and personal interests, the traditional “one-size-fits-all” teaching model struggles to meet their personalized needs. The application of digital technology, with its powerful information processing and analytical capabilities, creates opportunities for personalized music teaching. By accurately analyzing students’ learning-related data (such as learning progress, performance in assignments, and practice duration), educators can identify areas requiring reinforcement and pinpoint students’ learning characteristics. Based on these characteristics, customized learning plans and teaching programs can be developed. Students, in turn, can flexibly adjust their learning pace, select learning content, and choose learning methods according to their own schedules and learning rhythms^[10].

4. Innovative Strategies for Music Education Development Empowered by Digital Technology

4.1. Improving the Digital Music Education Resource System to Consolidate the Foundation for Educational Development

First, attach importance to top-level design and build a national digital music learning resource database. This database should integrate high-quality music education materials nationwide, including resources on music theory, musical instrument instruction, vocal training, and music appreciation, and form a well-organized and searchable structure. During the construction process, priority should be given to standardization: unified standards for content production, review, and updating should be formulated to ensure content standardization and high quality. Additionally, local regions and schools should be encouraged to supplement characteristic resources based on their own strengths, forming a three-level co-construction and sharing mechanism of “national-regional-school”. Second, promote the digital transformation and innovation of resources^[11-12]. Digitize essential resources for traditional music education (such as textbooks, music scores, audio recordings, and videos) to enhance their accessibility. Leverage digital technology to develop new learning resources, such as interactive music scores, simulated musical instruments, and 3D music scenarios, thereby improving the fun and interactivity of learning. Third, emphasize the digital development and inheritance of characteristic resources such as ethnic minority music resources and ancient music resources. Use digital technology to preserve and widely disseminate music cultures that are at risk of being lost or are rare, thereby diversifying and enriching the content of music education.

4.2. Innovating Digital Music Teaching Modes to Enhance Educational Effectiveness

First, promote interactive learning. Leverage new technologies such as virtual reality (VR) and augmented reality (AR) to build simulated learning environments, allowing students to experience the charm of music^[13]. For instance, VR technology can be used to let students experience the atmosphere of a live performance by a large orchestra; alternatively, AR technology can overlay virtual musical instruments into the real world for simulated performances, thereby enhancing students’ sense of experience and practical engagement. Teachers can also use internet-based collaborative tools to organize activities such as small-group music creation and ensemble practice, which facilitate communication and knowledge sharing among students while fostering their teamwork spirit and creativity. Second, apply the online-offline blended teaching mode. We should leverage the timeliness of online education and the practicality of in-class teaching to implement blended online-offline instruction. The “online” component can be used for mastering basic knowledge, accessing reference materials, and resolving doubts; the “offline” component, by contrast, should focus on training students’ practical performance skills, accumulating stage performance experience, and providing on-site guidance from teachers. This approach ensures that online and offline elements complement each other to maximize teaching effectiveness^[14].

4.3. Strengthening Guarantee Mechanisms for Digital Music Education to Support Sustainable Educational Development

First, enhance the development of the teaching workforce. Provide information technology training for music teachers to improve their digital literacy and skills, enabling them to utilize digital teaching equipment, resources, and platforms to fulfill teaching tasks. The training should cover basic theoretical knowledge of digital technology, methods for creating and applying digital teaching resources, and the design and implementation of new teaching modes. Additionally, teachers should be encouraged to actively participate in digital teaching research projects, facilitating the transformation of their teaching concepts from traditional models to modern, innovative educational philosophies.

Second, improve hardware infrastructure. Increase investment in school-based digital music teaching infrastructure, making full use of multimedia teaching equipment, digital music production software, electronic musical instruments, and VR/AR teaching facilities to ensure the hardware conditions required for delivering digital music courses. Beyond this, efforts should be made to strengthen school network construction, improving internet speed and stability to guarantee smooth online teaching and access to learning materials. For remote or rural areas, educational support measures and

preferential resource allocation should be adopted to optimize their digital music education infrastructure, narrow the gap in digital music education between urban and rural areas, and achieve educational equity^[15].

5. Conclusion

To sum up, the integration of digital technology and music education has become an inevitable trend. This not only provides broader space for music education to break through traditional limitations and achieve leapfrog development but also enables it to address challenges in areas such as educational resources and teaching content. The strategies proposed in this paper—including improving the digital music education resource system, innovating teaching modes, and strengthening guarantee mechanisms—offer ideas for solving the current problems faced by music education empowered by digital technology. For the future development of music education, educational institutions, schools, and researchers must work together to deeply explore the potential of integrating digital technology with music education. Only in this way can we truly leverage the advantages of digital technology, resolve the problems encountered in development, realize the goal of “making music education accessible to all,” cultivate talents with high artistic appreciation ability and humanistic literacy for the new era, and propel China’s music education cause to a higher level.

Disclosure statement

The author declares no conflict of interest.

References

- [1] Liu X, 2024, Practical Paths of Music Art Education in Colleges and Universities under the Background of Quality-Oriented Education: A Review of Research on the Diversified Practice and Development of Music Education in Colleges and Universities. *Contemporary Cinema*, (01): 181.
- [2] Cheng Z Q, 2023, Development and Influence of China’s “New Music” Educational Thought in the Early 20th Century. *Journal of Hulunbuir University*, 31(06): 17-21.
- [3] Liu X Y, 2024, Development of Music Education Under Differences in Physical Geography. *Reference for Middle School Geography Teaching*, (01): 83.
- [4] Wang Y, Yang L R, 2023, Research on the Development Status and Countermeasures of Music Education in Rural Middle Schools: A Case Study of Rural Areas in Sanmenxia City, Henan Province. *Chinese Musical*, (06): 94-98.
- [5] Jiao X N, 2024, On the Development of Contemporary Music Education from the Perspective of Pioneers. *China National Expo*, (02): 112-114.
- [6] Qin W T, Wu X L, 2024, Localized Development of Orff Music Teaching Method in China. *Popular Literature and Art*, (04): 177-179.
- [7] Zuo W L, Ni H M, 2023, Comparison of the Development Trends of Modern Music in China and Japan. *Popular Literature and Art*, (23): 71-73.
- [8] Qi W G, 2023, Development Ideas of Vocal Music Teaching in Colleges and Universities Based on Chinese Classical Poetry Songs. *Journal of Jiangxi Vocational and Technical College of Electricity*, 36(11): 31-33.
- [9] Liu Z Z, 2023, The Development Path of Music Education with Construction and Reflection: Exploring the Significance of Anthropological Theories and Methods. *China Music Education*, (10): 44-49.
- [10] Pei X Q, 2023, In-depth Study and Implementation of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era: Promoting High-Quality Development of Higher Music Education Through High-Quality Party Building. *Art Education*, (09): 12-15.

- [11] Li X C, 2023, Promoting the Contemporary Value of Yan'an Literary and Art Spirit to Advance the New Development of Music Education in the New Era. Beijing Education (Higher Education Edition), (07): 42-44.
- [12] Yang L, 2023, Value Exploration and Resource Allocation of Preschool Music Education Under the Background of Rural Revitalization: An Investigation Based on Literature. Modern Communication, (05): 115-120+124.
- [13] Song M, 2023, Collaborative Development Path of Music Education and Ideological and Political Education. Journal of Shanxi University of Finance and Economics, 45(S1): 148-150.
- [14] Tang W T, Luo Y F, 2023, A Perspective on the Development Trend of Holistic Music Education from the View of Intermediality. Northern Music, (02): 109-116.
- [15] Li J, Meng Z, 2023, Evolution and Advancement: A Reflection on the Development of Research Methods in Chinese Music Education. China Music Education, (04): 39-44.

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