

Harmonic Resonance under the Digital Wave: Digital Transformation and Empowerment of Music Teaching in Secondary Schools

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Abstract:

Digital resources, with their rich forms of expression, high interactivity and convenient access, have injected brand-new vitality and possibilities into education and teaching, and have become an important driving force for the innovative development of education. As an indispensable part of quality education, music education plays an irreplaceable role in cultivating students' aesthetic ability, emotional expression ability and innovative thinking. The purpose of this study is to analyze the application of digital resources in secondary school music teaching, to explore its advantages and potentials, and to explore practical application strategies, so as to comprehensively improve the quality of secondary school music teaching and promote the development of students' music literacy.

Keywords:

Secondary School, Music Teaching, Digital Resources

1. Introduction

In the digital era, the richness and diversity of digital resources have brought unprecedented opportunities for secondary school music teaching. Digital resources cover a variety of types, each of which has unique characteristics and values that can meet the different needs of secondary school music teaching. These text resources provide students with a systematic music knowledge system and help them understand music theory, history and culture in depth. Audio resources allow students to listen to the sound of music directly, feel the rhythm, melody, harmony and other elements of music, and cultivate students' music perception ability. As Xiaomeng Wang and Yamei Wang [1] point out, "It is not only acknowledged that music can have an impact on people's spirit and emotion, but also acknowledged that music can also have an impact on people's physiological state." Video resources use a combination of images and sounds to present students with more intuitive and vivid music learning content.

Digital resources have significant features in secondary school music teaching, and these features make them a powerful tool for improving the quality of music teaching. The content of digital resources is extremely rich, covering a variety of styles and types of musical works and musical knowledge from ancient and modern times and from China. Through the Internet and digital platforms, teachers and students can access almost unlimited music resources, greatly expanding the content boundaries of music teaching.

2. Survey Design and Implementation

In order to gain a comprehensive and in-depth understanding of the current status of the application of digital resources in secondary school music teaching, this study comprehensively utilizes the questionnaire survey method and the interview method to collect data from multiple dimensions, and strives to present the most realistic and comprehensive application situation. The purpose of this survey is to accurately grasp the current scope of application, frequency of use, and mode of application of digital resources in secondary school music teaching, as well as teachers' and students' perceptions, attitudes, and problems encountered in the application of digital resources. By analyzing this information, it provides a solid data foundation and practical basis for the subsequent exploration of effective application strategies of digital resources in secondary school music teaching. The survey covered music teachers and students from different regions and types of secondary schools. [2] The teacher sample included groups with differences in teaching age, job title, and academic qualifications to ensure a comprehensive reflection of teachers with different experiences and backgrounds; the student sample covered all grades in junior high school and senior high school, aiming to cover students of different ages and with different music fundamentals, so as to make the survey results broadly representative. Targeted questionnaires were designed for teachers and students respectively. The teachers' questionnaire mainly contains the following parts: first, teachers' basic personal information, such as teaching experience, title, education, etc., which is used to analyze the differences in the application of digital resources by teachers with different backgrounds; second, the knowledge of digital resources, including the degree of understanding of digital resources, access channels, etc.; third, the application of digital resources, such as the frequency of application, the teaching sessions to which they are applied, and the types of digital resources used; The fourth is the evaluation of the effect of the application of digital resources, including the evaluation of the teaching effect, students' learning interest and learning ability enhancement. The student questionnaire, on the other hand, focuses on students' experiences and feelings about digital resources assisting music learning, including the frequency of using digital resources for music learning, their favorite types of digital resources, their gains after using digital resources to learn music, such as their understanding of music knowledge, enhancement of music skills, and changes in their learning interests, as well as the problems encountered by students in the process of using digital resources, and their suggestions for teachers to utilize digital resources for Suggestions for teachers to utilize digital resources in teaching, etc.

The design of the interview outline centered on the application of digital resources in secondary school music teaching, and the interviews with teachers mainly explored their specific cases and experiences of using digital resources in teaching, such as how to use digital resources to stimulate students' interest and break through the teaching difficulties in a specific music course; their views on the integration of digital

resources and traditional teaching methods, and the technical difficulties they encountered in the application of digital resources, and difficulties in changing teaching concepts; their evaluation of and expectations for the construction and support of digital resources in schools. The interviews focused on the students' views on the integration of digital resources with traditional teaching methods and the technical difficulties encountered in the application of digital resources, the difficulties in changing teaching concepts, etc.; and the evaluation and expectation of the school in the construction and support of digital resources. The interviews with students focused on their real feelings about using digital resources to learn music inside and outside the classroom, such as whether they find digital resources more interesting for music learning, [3] whether they are able to utilize digital resources for learning independently, and their expectations for the future application of digital resources in music teaching.

The data collection process strictly followed scientific methods and procedures. The questionnaires were distributed through a combination of online and offline methods, online using a professional questionnaire platform to ensure the efficiency and accuracy of data collection; offline, they were distributed directly to participating schools, filled out and recovered on-site by teachers and students to ensure the recovery rate and efficiency of the questionnaires. Interviews were conducted in a combination of face-to-face and telephone interviews by trained researchers. During the interviews, a relaxed and open atmosphere was created to guide the respondents to fully express their views and opinions, and the interviews were recorded and audio-recorded in detail for subsequent analysis. Through rigorous survey design and implementation, a solid foundation was laid for in-depth analysis of the current status of the application of digital resources in secondary school music teaching.

3. Analysis of Findings

3.1. Frequency and type of use of digital resources

Through data analysis of the returned questionnaires, the results showed that the frequency of using digital resources in secondary school music teaching showed some differences. About 35% of the teachers indicated that they frequently used digital resources for teaching, 45% used them occasionally, while another 20% rarely or never used them. Further analysis revealed that teachers with shorter years of teaching experience (less than 5 years) used digital resources more frequently, with 45% of them using them frequently, which might be related to the fact that young teachers were more receptive to new technologies and were more willing to try out innovative teaching methods. This may be related to the fact that young teachers are more receptive to new technologies and are more willing to try innovative teaching methods. On the other hand, the proportion of teachers with a longer teaching experience (more than 15 years) who frequently use digital resources is only 20%, which means that some of the veteran teachers are more reliant on the traditional teaching methods, and have some difficulties in the application of digital resources.

In terms of preferences for the types of digital resources, music audio and video resources are the most widely used by teachers. More than 80% of teachers indicated that they would often use music audio resources, such as playing the audio of classical music works in music appreciation classes, so that students can feel the beauty of melody, rhythm and harmony of music; the frequency of using video resources is also high, about 70% of teachers would utilize music teaching videos, music performance

videos, etc. to assist teaching, and through the visual display of videos, help students better understand the background, performance skills and artistic expression of music works. Through the visual display of videos, they help students better understand the background, performance skills and artistic expression of musical works. The use of text and animation resources was relatively low. Only about 40% of teachers regularly use text resources, such as electronic versions of music textbooks and music theory documents, mainly to supplement teaching content and guide students in independent learning. The usage rate of animation resources is even lower, at only 25%, probably due to the relative lack of high-quality animation resources suitable for music teaching in secondary schools, and the difficulties teachers have in finding and integrating animation resources. However, in the few schools that actively explored innovative teaching, teachers achieved good results by transforming abstract music knowledge into lively and interesting animations through homemade animations or utilizing online animation tools. For example, animating the basic knowledge of music such as the time value of notes and the change of beats allows students to learn in a relaxed and pleasant atmosphere, which effectively improves students' interest in learning and learning effect. [4]

Students' use of digital resources shows similar trends. Over 70% use music apps or online platforms after school to enjoy music and meet learning needs. Around 50% watch music teaching videos, especially when learning instruments or preparing for exams. However, fewer than 30% actively use text or animation resources, likely due to their habits and interests. This suggests a need for teachers to better guide students in using a wider range of digital resources.

3.2. Teachers' and students' attitudes and feedback on digital resources

Teachers and students are generally positive about the application of digital resources in secondary school music teaching, but there are some problems and challenges. On the teachers' side, about 85% of them believed that digital resources had enriched the teaching content, made teaching more vivid and interesting, and could effectively enhance students' interest and motivation in learning. For example, one teacher mentioned in the interview, "After using digital resources, students are obviously more interested in music lessons, and the classroom atmosphere is more active. Previously, some boring music knowledge explanations are presented in the form of videos and animations, which are easier for students to understand and accept." At the same time, 70% of teachers believe that digital resources help to improve teaching effectiveness and can help students better master music knowledge and skills. When teaching musical instrument playing skills, by playing professional playing videos and slow-motion demonstrations, students can more clearly observe the fingering and movements of the players, and thus more accurately master the playing skills. However, teachers also face some difficulties and problems in using digital resources. About 60% of teachers reported that they spent a lot of time and effort in screening and integrating quality digital resources. Although digital resources on the Internet are abundant, their quality varies, and teachers need to carefully screen and select them to ensure that the resources meet the teaching objectives and students' learning needs. 40% of teachers reflected that there were difficulties in technical operation, such as the use of multimedia equipment and the operation of music software, which affected the effective application of digital resources. Some teachers also mentioned that the digital resources in their schools were not suitable for their students' learning needs. Some teachers also mentioned that the inadequate digital

teaching facilities and unstable network in their schools also constrained the application of digital resources to a certain extent.

Students' feedback on digital resources was also positive. About 90% of the students said that digital resources made music learning more interesting and convenient, and could meet their diversified learning needs. 80% of students believe that digital resources help them better understand musical works and improve their musical literacy. About 35% of the students said that they were easily disturbed by the Internet when using digital resources, which affected their learning experience. 25% of the students thought that the content of some digital resources was too difficult or out of line with the classroom teaching content, which was not suitable for their learning level. Some students hoped that teachers could provide more personalized digital learning resources and guidance to meet the learning progress and interests of different students.

4. Summary of the Current Status of Applications and Analysis of Problems

The comprehensive survey results show that the application of digital resources in secondary school music teaching has made some progress, but there are also some urgent problems to be solved. In terms of frequency of use, although there are still some teachers who use digital resources less frequently, the overall percentage of teachers who use them frequently and occasionally is relatively large, indicating that digital resources have been gradually recognized and applied in secondary school music teaching. In terms of the types of resources, the wide application of music audio and video resources provides rich materials for music teaching, effectively enhances the intuition and interest of teaching, and strengthens students' learning experience. In the process of digital resource application, some problems have been exposed, among which the uneven utilization of resources is one of the more prominent problems. On the one hand, there are obvious differences in the application of different types of digital resources, music audio and video resources are favored, while the application of text resources and animation resources is relatively insufficient. On the other hand, there is also a large gap in the application of digital resources among schools and districts. Some schools in economically developed regions and key schools have well-equipped digital teaching facilities and teachers' digital teaching ability, and the application of digital resources is more extensive and in-depth. On the other hand, some schools in economically underdeveloped regions and ordinary schools, due to insufficient capital investment, backward teaching facilities and equipment, poor network conditions, and lack of training for teachers, the application of digital resources is subject to greater limitations, and it is difficult to give full play to the advantages of digital resources. It is difficult to give full play to the advantages of digital resources.

Teachers' digital literacy and application skills still need improvement. Some struggle to select high-quality digital resources aligned with teaching goals and student needs. Inadequate skills in using multimedia tools and music software can lead to technical issues during lessons. Many teachers fail to integrate digital resources effectively into instruction, using them only as supplements to traditional methods. Additionally, schools face challenges such as outdated multimedia equipment, poor internet connectivity, and lack of updated digital music resource libraries. Teacher training programs are insufficient, and traditional teaching evaluation systems do not align well with digital teaching practices.

5. Conclusions

This study thoroughly explores the application of digital resources in secondary school music teaching, and comprehensively analyzes the current status of its application, advantages, challenges and development trends. The application of digital resources in secondary school music teaching has made some progress, but there is an uneven phenomenon. Some teachers use digital resources more frequently, and music audio and video resources are widely used in teaching, while text resources and animation resources are relatively under-utilized. There is a big gap in the application of digital resources between different regions and schools, with economically developed regions and key schools having better application, while economically less developed regions and ordinary schools have obvious deficiencies in hardware facilities, resource utilization and other aspects. Teachers and students generally have a positive attitude towards the application of digital resources, but still face many difficulties in resource screening and technical operation. However, the application of digital resources in secondary school music teaching also faces many challenges. Insufficient hardware facilities and technical support, some schools have outdated multimedia equipment, unstable network, and lack of professional and technical support, which affects the normal use of digital resources. Teachers' digital literacy and application skills are lacking, their knowledge of digital resources is insufficient, their ability to access, screen and integrate resources is weak, and their ability to apply digital technology and integrate resources with teaching needs to be improved. The quality and applicability of digital resources are outstanding, the quality of resources varies, lack of unified standards and audit mechanisms, and do not match with the teaching content and students' needs. Difficulties in the integration of teaching mode and digital resources, the traditional teaching mode of stereotypes and the limitations of the teaching evaluation system, hindering the full realization of the advantages of digital resources.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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