International Journal of Web-Based Learning and Teaching Technologies
Volume 18 • Issue 2

College Piano Teaching Based on Multimedia Technology

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ABSTRACT

College piano teaching with multimedia technology has the characteristics of more intuitive teaching content and more convenient teaching methods. It has a significant auxiliary role in improving the teaching effect and cultivating personalized music talents. Therefore, educational circles and music festivals at home and abroad have also conducted corresponding research on the application of multimedia technology. On the basis of investigating the current situation of piano education at home and abroad, this article summarizes the background significance of the development and application of multimedia technology, and points out the shortcomings of existing multimedia applications. This article analyzes the possible problems in the application of piano education in colleges and universities. Finally, it discusses the innovative application and development prospects of multimedia technology in piano teaching in colleges and universities, and analyzes the key problems that need to be solved in the implementation of multimedia technology in piano teaching.

KEYWORDS

Colleges and universities, Multimedia, Piano teaching, Technology

INTRODUCTION

The invention of radio at the end of the 19th century represented an important advance in news dissemination. This medium has continued to develop alongside changes in mainstream media(Daniel, 2004; Huang, et al. 2011). The dissemination of texts has evolved into a relatively mature and stable stage of characterized by acousto-optical multimedia integration. (Pike, 2014; Li, 2018; Simones, et al., 2015; Chmurzynska, 2012). In today's social society, the development of multimedia technology has brought us a lot of convenience, simplicity, efficiency, and in the fields of industrial production management, school education, public information consultation, commercial advertising, military command and training, and even family life and entertainment. At the same time, multimedia technology is also widely used in different stages and different types of teaching modes (Garcia, 2002; Yang, 2020; Sturm, et al., 2000). With the continuous improvement of people's living standards, the importance of art education has become more and more important in the hearts of people of different

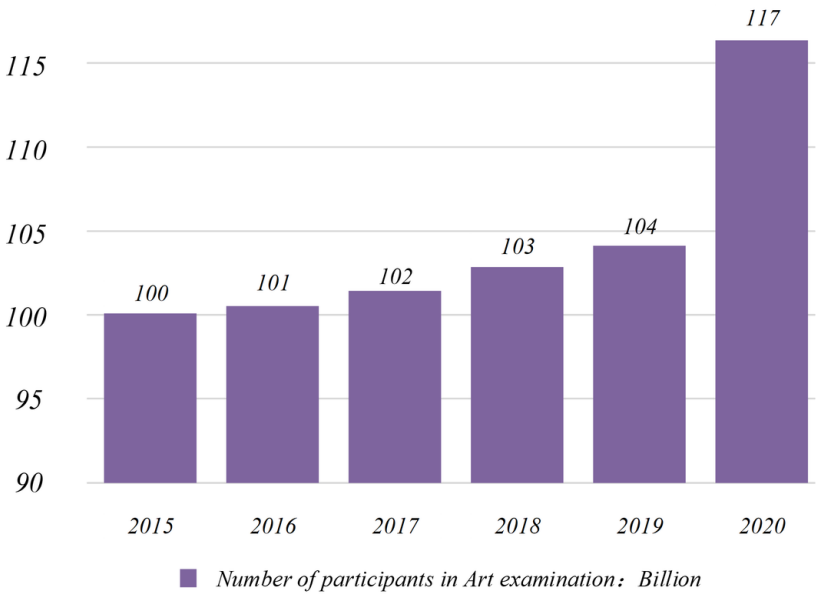
DOI: 10.4018/IJWLTT.330677 *Corresponding Author

classes. Art education can not only improve students' artistic accomplishment and comprehensive competitiveness, but also can be used as a tool for success. (Bobbe, et al., 2021; Burkett, 1982; Pike, 2014). Figure 1 shows the number of people participating in the national art examination in recent years.

It can be seen from Figure 1 that more and more people agree with the importance of art education in their work and life. The introduction of multimedia technology in art instruction enables students to understand the essence of art more vividly. The piano, as a popular and all-ages musical instrument, is particularly important in the future development of art teaching in colleges and universities. The introduction of multimedia technology into piano teaching in colleges and universities is an important means to meet the needs of art teaching in the current era (Fang, 2021; Gladstone, 1980; Liu, 2020; Xia, 2020; Dannenberg, et al., 1993). The current mode of piano teaching in colleges and universities is based on large-scale theoretical teaching, supplemented by batch practice. The lack of practical teaching has led to some students' inability to transform theoretical knowledge into applied skills. In addition, in the traditional college piano teaching classroom, it is most common for the teacher to demonstrate the performance while the students listen to it. This form decreases students' initiative and enthusiasm for learning. In the process of leading the course, teachers only focus on the method of lecture and teaching students' expressions, ignoring the students' own characteristics. Under the traditional teaching form, students passively learn a lot of patterned performance skills and theoretical knowledge and improve their test-taking skills very quickly; however, they will lack thinking ability and initiative and what they have learned is relatively simple. There is no deep understanding of the content expressed by a piece of music. Throughout the entire piano teaching environment, before students take the art test, many private teachers adopt the form of one person, one lesson. Compared with the large class teaching method, this kind of course can indeed increase the attention to the students, and it is convenient for teachers to point out the students. Skills in playing can effectively improve students' sense of music (Rao, 2020; Bobbe, 2021; Karahan, 2016).

However, under the influence of resources and costs in the environment faced by colleges and universities in China, this form of teaching cannot be widely used. On the one hand, it increases the workload of teachers and reduces the teaching efficiency; on the other hand, it hinders the communication and exchange between students (Zhang, 2015; He, 2021). With the arrival and

Figure 1. Participation in the National Arts Examination in recent years



development of the "internet plus" big data era, the continuous reform of teaching has been promoted. Diversified teaching content is widely applicable to the needs of talent training in colleges and universities. The application of multimedia technology in the teaching of skill application for piano will change the traditional teaching concept, enrich the teaching content, enrich the teaching imagination, improve the teaching experience, make students understand and transform the application of piano skills more stereoscopically, and improve the learning efficiency to a large extent. Multimedia combines science and technology with music knowledge, breaking the limitations of the traditional teaching mode, not only improving the learning efficiency of piano scholars, but also expanding the field of knowledge. For this reason, we began to think about how to construct a new form of piano art through multimedia technology, change the traditional teaching mode and students' way of thinking, and create a good classroom atmosphere to enrich the content of piano teaching.

THE VALUE AND PROBLEMS OF MULTIMEDIA TECHNOLOGY IN PIANO TEACHING IN COLLEGES AND UNIVERSITIES

Concepts and Characteristics of Multimedia Technology

There are two definitions of traditional media. The most primitive definition refers to the means of disseminating of information, such as language, text, images, video, audio, etc. In the process of development, the second definition has evolved, which refers to storage, including information carriers like ROM, RAM, magnetic tape, and optical discs. The media in the multimedia technology we study mainly refers to the former—that is, the comprehensive digital processing of language, text, image, video, audio, and other different media information through computer network technology and integrated into a certain interactive interface. It enables computers to interactively display different media forms. The characteristics of multimedia technology are shown in Table 1.

The Practical Significance of Multimedia Technology in Piano Teaching in Colleges and Universities

In order to achieve the purpose of multimedia technology changing piano teaching, we must first clarify the significance of multimedia technology in college piano teaching. This paper summarizes several points in the following sections by integrating and analyzing relevant research literature.

Enrich the Content of Piano Teaching. With the rapid development of computer network technology today, we can obtain the piano teaching information resources we need through various media channels. When college students collect and organize these resources by themselves and use them in their own learning practice, they can effectively deepen their understanding and mastery of piano learning, consolidate their piano art foundation, and achieve the purpose of improving their own artistic accomplishment. At the same time, students can also share their performance process and performance experience through the Internet, communicate with other piano lovers, and discuss various problems that arise during the performance.

Table 1. Multimedia technology characteristics

Characteristic	Describe
Content integration	Multimedia technology can acquire, store, organize and synthesize information in a unified manner through multiple channels.
Real-time processing and control	Multimedia technology can integrate real-time processing and control of multimedia information by computer.
Active interactivity	Multimedia technology can realize people's active selection and control of information.
Performance flexibility	Multimedia technology can present content to readers in a more flexible and varied way.

Improve Students' Interest in Learning. Interest is the best teacher for students. The use of multimedia technology in college piano teaching can fully stimulate students' interest in learning piano. Multimedia technology can bring students immersive audio-visual teaching, allowing them to actively integrate into the teaching process, which makes up for the shortcomings of traditional piano teaching form and boring content. It will really stimulate students' subjective initiative, improve their thinking ability of piano performance, and ultimately improve their performance skills.

Improve Students' Thinking Ability. Students' creativity and imagination are the source of power for the progress and development of colleges and universities. When they become interested in something, they will take the initiative to think and explore a series of questions related to the thing to strengthen their thinking ability.

Improve Students' Comprehensive Aesthetic Quality. In the current context of art education in our country, the motivation to study for exams occupies most art learners' thinking, which also leads to the emergence of many cramming piano teachings. Especially in piano teaching in colleges and universities, students should understand that piano is not a course but an art. The introduction of multimedia technology has broken the time and space limitations of traditional piano teaching in colleges and universities, enabling students to return to the art itself, focusing on music, showing the characteristics of music, and deepening the resonance between students and authors. While improving the quality of teaching, it also enhances students' pursuit of beauty so as to improve students' comprehensive aesthetic quality.

Problems Existing in the Application of Multimedia Technology in College Piano Education

The main problem in the application of multimedia technology in piano education in colleges and universities is the change in the subject-object relationship in the teaching curriculum. The purpose of introducing multimedia technology into the piano teaching classroom is to enrich the teaching content, strengthen the interaction and connection between students and teachers, and make students' subjective initiative become the driving force of learning while the teacher serves as more of a guide. However, in the process of actual operation, there are two levels of differentiation. One is that the teacher uses the multimedia courseware as a substitute for books and continues to follow the script. During the rapid demonstration of the courseware, many students just see a novelty and forget it in the blink of an eye. Without the key content, students' absorption of the teaching content is not even as good as the traditional teaching mode. Another is the excessive use of audio and video, not focusing on the interaction of teaching, and students lose interest and enthusiasm for learning after repeated viewing.

The problems to be solved are as follow. Firstly, the overall level of multimedia hardware facilities for piano teaching in universities is relatively low, and most schools lack multimedia assisted classrooms. Secondly, teachers still rely on traditional teaching ideas and lack the skills to effectively integrate multimedia technology, resulting in courseware being only used as auxiliary materials rather than central materials. Thirdly, the lack of innovative multimedia courseware resources has affected the quality of teaching, leading to a decrease in teachers' innovative awareness and score design ability. In addition, a lack of timely information can hinder students' learning and reduce the effectiveness of talent cultivation.

RESULTS

Innovative Application of Multimedia Technology in College Piano Teaching

The integration of multimedia technology and piano teaching in colleges and universities is an organic combination of modern information technology and the traditional education industry. The starting point of technology development is to improve productivity, thereby promoting the sustainable development of the existing industry. Piano teaching has higher requirements for improving students' skills and aims to give students the ability to successfully complete a performance.

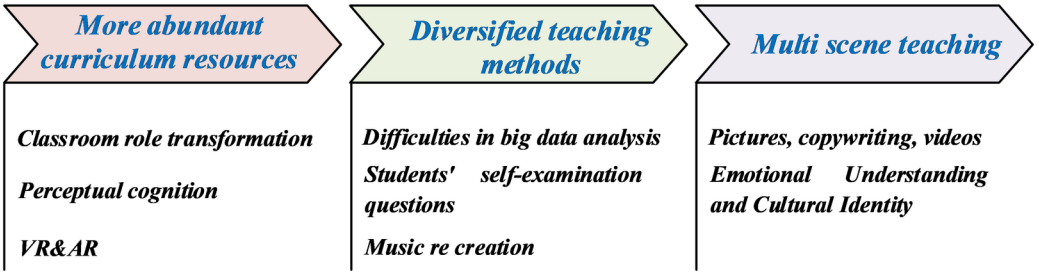
Current teaching is limited by the single teaching medium, and students can be exposed at the same time. There are relatively few teaching resources. The application of multimedia technology allows us to have more channels to obtain various teaching resources and more ways to display learning results. At the same time, the dominant relationship between students and teachers in the classroom is transformed, and students gradually become the main body in the classroom. This help to promote communication and exchanges between teachers and students, thereby improving the quality of instruction. When teaching related music skills and background culture, teachers can display the composer's life and inspiration through multimedia, so as to help students understand piano skills and culture more deeply and enhance students' recognition of music culture and perceptual cognition of piano. Furthermore, using virtual reality (VR) or augmented reality (AR) technology to create a real performance environment can exercise students' on-the-spot performance skills and psychological quality. Traditionally, pian teaching involves students practicing after the teacher demonstrates. However, when students have poor mastery of a certain skill, they can only be corrected by the teacher pointing it out. For large-scale piano teaching, teachers have limited energy and it is difficult to give full consideration to all students.Multimedia technology-assisted piano teaching in colleges and universities can be analyzed through big data to make clear the difficulties and points of error in piano course teaching, and set up special video courses and common causes for these points to analyze the problems, combined with corrective video exercises.In addition, students can re-create music works according to their own interests and learning progress. Through the new visual and auditory feelings brought by multimedia technology, they can deepen the perceptual understanding and emotional resonance of works and authors and improve their personalized expression.

Teaching context is the key to highlighting the atmosphere of music and art. The artistic atmosphere in which students understand the sentiment of piano music will directly affect their overall perception of piano culture. Multimedia technology renders scene teaching in all aspects in the form of pictures, copywriting, videos, and other media to maximize the deep communication between piano music and students' hearts and to improve students' ability to appreciate beauty. Playing the film and television works related to piano music in the form of multimedia will deepen students' emotional understanding and cultural identity of the works; they can then spontaneously bring this emotion into piano performance, rather than just their pure skill training. Figure 2 shows a schematic diagram of the innovative application of multimedia technology in college piano teaching.

Development Prospect and Application Approaches of Multimedia Technology in Piano Teaching in Colleges and Universities

The application of multimedia technology to piano teaching in colleges and universities is a typical example of the combination of modern information technology and traditional teaching. The traditional "give-receive" teaching mode is time-consuming and inefficient. Teaching materials are often limited to handouts and PowerPoint presentations, making it difficult to effectively improve course efficiency.

Figure 2. Innovative application of multimedia technology in piano teaching in colleges and universities

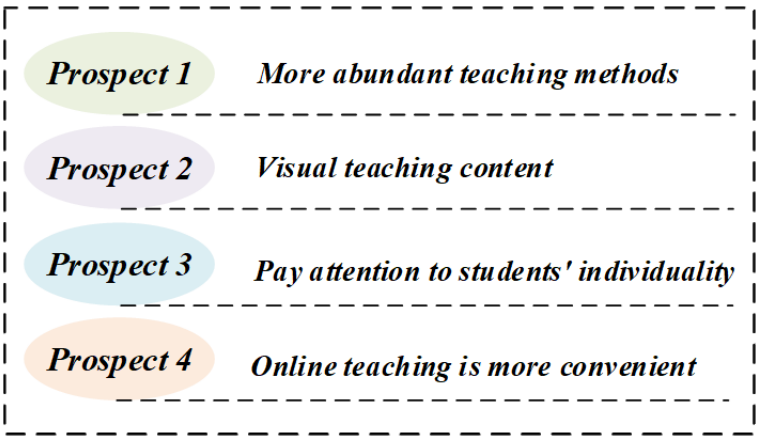


Piano instruction involves multiple theoretical and practical procedures that require varied teaching methods beyond a single approach. Conducive to improving the quality of the course, piano teaching integrating multimedia technology can display basic piano skills, piano theory, and so on in the form of audio and video, which is convenient for students to learn multiple times. In order to pay more attention to the cultivation of students' musical ability, teachers only need to focus on explaining key issues and guiding students' interests. College music teachers can use existing multimedia technology and software platforms to make students the main participants in the classroom. By selecting high-quality piano teaching resources, teachers can improve teaching effectiveness. Improving piano teaching hardware facilities is essential to ensure teaching quality and teacher initiative. Developing more innovative multimedia teaching resources will help communication between teachers and students and enhance piano music courses.

Existing piano music classes are limited by resources, and most of the teaching content is based on textbooks or teachers' collections. The teaching content is inevitably monotonous. Teachers can use the rich resources that are organically integrated to form multiple types of teaching documents such as audio and video. Through the dual experience of "vision + hearing," students can deepen their understanding of piano music works and, at the same time, it can be extended to the author's situational mentality and appreciation of related works when the works are created. Learning extends from the simple background learning of works to "knowing people and discussing the world" and "by analogy." After the teacher 's work in the basic teaching section is relieved, he can focus on the development of the students' personality and characteristics and return the piano teaching to the essence of artistic comprehension. Art is different from engineering design. It does not have standard answers and reference templates. It is derived from people 's perception and love of life and is the product of people's pursuit of beautiful things. Therefore, we, help them explore the way of expressing beauty in their research field and promote the development of students' personality. Sinc Covid-19 pandemic, online teaching has the advantage of not being limited by space. Using online resources to carry out piano education is also the core problem to be solved by multimedia technology. The development prospect of multimedia technology in piano teaching in colleges and universities is shown in Figure 3.

Multimedia technology has significantly transformed piano teaching and performance. Creating a three-dimensional audio-visual environment not only enhances students' music appreciation but also improves their overall artistic quality. The use of multimedia has changed traditional teaching methods by integrating the display of relevant pictures or audio, which effectively mobilizes the learning atmosphere of the whole class. Students are interested in colored patterns and videos, which stimulates their learning initiative, leading to improved efficiency and quality in the classroom.

Figure 3. The development prospect of multimedia technology in piano teaching in colleges and universities



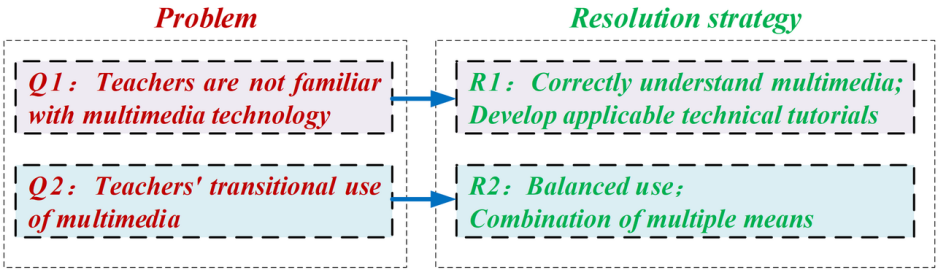
For example, when teaching "Colorful Clouds Chasing the Moon," teachers can find relevant video materials through multimedia to help students improve their enthusiasm for learning. "Colorful Clouds Chasing the Moon" is a piano piece adapted by Ren Guang and Nie Er from the national orchestra. This piano music shows a beautiful and vast night sky. In the process of adaptation, Nie Er and Ren Guang combined various piano techniques to achieve this classic piece of music. The whole piece adopts five sound stages and consists of eight bars. When teachers explain this piece of music, they can display the relevant playing video through multimedia. In the first section, the lightness of the national orchestral instruments brings people a sense of relaxation and tolerance. The second section is composed of arpeggios with long tones and vibrato with many skills, which brings people a strong national flavor. The third and fourth bars are the advanced modes of the first and second bars. In the fifth bar, the left hand is used to play alternately in a single way, describing the beautiful moonlight under the vast sky. The broadcast of the video can let students experience the scene of colorful clouds chasing the moon, to stimulate students' enthusiasm and initiative in learning. At the same time, playing videos can help students observe the performer's performance skills through real performance, greatly improve their enthusiasm for learning, and lay a solid foundation for the next step to improve their music appreciation ability.

The Urgent Task of Implementing Multimedia Technology in Piano Teaching

The important value of multimedia technology in piano education is more and more widely recognized by society, but there is still a long way to go before the real transformation of multimedia technology into teaching productivity. Figure 4 shows the urgent task of implementing multimedia technology in piano teaching. Multimedia technology does not mean simply using equipment to play PPT or audio and video materials, but carrying out the organic integration of teaching activities with multimedia technology around teaching goals, taking into account scientizing and personalization. On the one hand, piano teachers should realize the important role of multimedia technology in teaching and quickly understand the essential characteristics and convenience of multimedia technology by carrying out communication activities with multimedia technology researchers. Drilling into a certain field and knowing less about other aspects of information, it takes a lot of time and cost to quickly master a new skill. Therefore, schools can develop multimedia technology courses suitable for piano teaching in the form of joint development to help teachers quickly grasp and apply it to practical teaching.

Multimedia technology is an auxiliary means to improve teaching efficiency and serve teaching goals. Different from other disciplines, piano learning requires higher practical ability. Excessive use of multimedia will affect students' autonomous thinking and practice ability to a certain extent. Teacher demonstration, multimedia assistance and other means have their own advantages and disadvantages. Balanced use will help to increase the sense of teaching hierarchy, but blindly using a certain technology will lead to obvious shortcomings in the course, which is not conducive to the realization of teaching goals.

Figure 4. The urgent task of implementing multimedia technology



CONCLUSION

This paper takes piano teaching in colleges and universities as the research object and carries out corresponding research on the application of multimedia technology-assisted teaching. Based on the a review of the current situation of piano teaching at home and abroad, this paper summarizes the development and application background of multimedia technology and points out the shortcomings of existing applications. In particular, the innovative application and development prospects of multimedia technology in piano teaching are discussed and countermeasures are given for the problems faced by the implementation of multimedia foundation. Piano education is an important part of music teaching. As an auxiliary technology, multimedia technology is of great help to improve teaching efficiency. Research on the integration and application of the two has a positive effect on the cause of music teaching in colleges and universities. This paper starts from the current situation and application problems of multimedia technology and conducts research on its specific application and development prospects. The next step will be to combine multimedia to improve teaching resources. The future work of this study involves the evaluation of multimedia technology's balanced application in piano teaching by integrating data from multiple sources.

DATA AVAILABILITY

The figures and tables used to support the findings of this study are included in the article.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

FUNDING STATEMENT

This work was not supported by any funds.

ACKNOWLEDGEMENTS

The authors would like to show sincere thanks to those techniques who have contributed to this research.

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