Research and Analysis of Piano Teaching Based on Intelligent Interactive Background

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Abstract. Nowadays, many new creative products are gradually emerging. In the piano art instruction class, intelligent interaction has also played its role. In the context of the widespread use of Internet technology, intelligent interaction has become a key factor affecting the development of art systems, and its application to piano teaching has very important practical significance for the innovation and development of piano teaching concepts. The article analyses the role of intelligent interaction in piano class teaching.

Keywords: Intelligent Interaction, Piano Teaching, Music Education

1. Introduction
Multimedia technology is a technology that comprehensively processes and manages a variety of media information such as text, data, graphics, images, animations, and sounds through a computer. By this, users can interact with computers in real-time through a variety of senses.

Nowadays, intelligent interaction has applied to the field of music teaching, which realizes an effective combination of video technology, audio technology, information technology, and other technologies[1-2]. It is a perfect technical method to achieve a good sound state, stimulate students' vocal singing enthusiasm, adjust their singing thinking, coordinate the vocal elements and tap the potential of their artistic expression[3-4]. In this way we can combine the vocal singing with the piano art direction more organically. The application of intelligent interactive technology can make up for the shortcomings of traditional piano teaching[5-6]. Piano performances and human singing are effectively brought together under digital recording demonstrations, to better promote piano art guidance for vocal singing. As shown in Figure 1, compared to reading and the control group, piano learning can effectively improve children's text discrimination. Especially, when learning consonants, children who have learned the piano possess a more significant advantage.
Intelligent interaction has three main parts, including the collection of front-end data by sensors, transmission to the back-end and information processing, and selective feedback by the back-end multimedia center or person. Intelligent interaction technology is developed based on intelligent technology. Intelligent technology uses computer technology, sensing technology and analysis technology to carry out information processing. With the continuous development of computing technology, intelligent technology has been applied to all areas of society with its unique advantages and simple operations. Its main performance is to create a good working environment, reduce the work intensity of the operator, and improve the quality and efficiency of the work.

2. Piano teaching under the background of artificial intelligence

Piano teaching is a complex and systematic project that involves many aspects of physiology, psychology, and music understanding. The purpose is to stimulate students 'feelings about music through active training, actively mobilize students' thinking, coordinate their limbs, and finally achieve the goal of performing music. The application of intelligent interaction in piano teaching can optimize the teaching process, make up for the deficiencies in traditional teaching work, and assist piano teachers to complete the teaching work better.

With the rapid development of interactive teaching, the construction of intelligent interactive digital media art systems has become a major development trend in the field of new media at China and abroad. At present, it is in a critical period of the transition from traditional media to digital media. Major progress has been made in the areas of multi-mode, multi-channel, and human-computer interaction centered on intelligent interaction, and it has become the main development area of future technology. The intelligent interaction discussed in this article is only in the field of music education, which can reduce the teaching burden of teachers, enable students to learn autonomously more efficiently, and provide feedback to improve the intelligent interaction technology. It may be possible to use this technology in the future to be more efficient to help the education industry. At the same
time, this technology platform makes it possible for students to learn and compare with each other, and then they can find their strengths to improve this platform.

2.1. Piano basic teaching stage
A good start is half the battle. A solid foundation is a cornerstone of learning piano. Training from basic hand shape, sitting posture, key touch mode, exertion mode, rhythm, music notation, etc, which is the most basic. At each point, the teacher and the family should coordinate to teach children for a long time. Many piano teachers tried their best to attract children's interest and tried to achieve happy teaching mode, but they had little effect. The piano with artificial intelligence is very good at this point and can bring us unexpected results and fun. For example, in the primary stage, after completing the teaching tasks, it is impossible for teachers to accompany the students to practice the piano, beat the rhythm, and learn at any time. For the music and practice of basic skills, the effective measures taken by traditional piano shops or tutors are to hire a companion to complete this process, but there will be several problems with the companion, whether the competitor's ability can meet the requirements of the instructor, the companion, and the student Whether coordination time can be coordinated, or whether the effect that the teacher wants can be reached are very complicated issues.

At this stage, the intelligent piano can complete these basic tasks independently without a teacher. Just like the course that Finds Smart Piano has launched today, 14 pianists from 9 professional colleges uploaded specially recorded basic courses in the Smart Piano program. The Smart Piano communicates with people through a 4K display. You can perform music scores and performance demonstrations, and also use animated images to learn, to achieve a variety of teaching exercises, games and sharing operations, turning learning piano into playing the piano. For the simple learning at the beginning, the smart piano is fully capable of this job. Even the teaching effect brought by the piano with artificial intelligence is far more effective than the methods that teachers rack their brains to attract children's interest. For example, the learning of rhythm, the smart piano's experience for the learner is like a very hot mobile game "Master of Rhythm". The learner uses the mode of customs clearance to learn the rhythm and rhythm with the difficulty of the music from simple to complex. The wrong place is that the artificial intelligence teacher will correct the teaching on the 4K screen so that the learners can learn while playing.

2.2. Application of the piano with artificial intelligence
The AI smart piano is helpful for teachers to do some work like data collection, analysis, calculations, and other infinitely repeated work.

On the one hand, the AI piano has multimedia functions. During the teaching process, according to the teaching objectives and characteristics of the teaching object, the piano teacher can design more pianist performance videos, audio, and picture information into the piano course to form a reasonable teaching process. And it can achieve an optimal teaching effect. For example, while studying the Liszt piano etude "Paganini Etudes", we can play the violin concerto part of the movie "The Violin Demon King Paganini" to the students. To make learners better understand Liszt's creative background comes from Paganini’s violin concerto. In order to achieve the effect of the violin devil on the piano, Liszt adapted the violin works to piano works. And famous composers Brahms did the same thing. These contents related to the teaching purpose can be displayed to students through multimedia.

On the other hand, the AI piano will not be tired, complain or strike, and artificial intelligence has infinite scale potential. This function surpasses humans and can replace the work of sparring in the process of heart training. We don't have to worry about finding people to be sparring and don't have to worry about conflicting with the time of the sparring teacher. The player's data is organized by AI piano, the wrong places will be corrected and practiced until the player finished practice. Besides, the
intelligent piano can record the course of the lesson. If you don't remember the knowledge point or skill, you can review it at any time to add the forgotten content.

3. Realistic significance of intelligent interactive assisted piano teaching

3.1. Innovative teaching concepts
It fully reflects the teaching concept of taking the learner as the center, and in the practice of piano practice, through intelligent interactive technology, students can understand the important skills and methods more intuitively. Intelligent interaction can allow learner to better understand their piano performance, method and overall state by detecting data transmitted in the help of sensors during piano training and learning process. Intelligent interaction can compare relevant data, actively master the student's learning process, and realize the perfect fusion of teaching philosophy and teaching practice.

As shown in Figure 2, the main application fields of artificial intelligence are medical health, corporate services, financial, automobile industry, industry solution, and education in the year of 2016 and 2017. And compared with 2016, the application of artificial intelligence in the field of education in 2017 is more in-depth and extensive.

![Figure 2. Popular AI investment areas in 2016 and 2017](image)

3.2. Improve teaching efficiency
Intelligent interaction makes live playing activities more efficient and effective through multimedia and network technologies. The theoretical knowledge of piano and other instruments is described in very abstract language, which makes people feel boring and tedious. Intelligent interaction uses multimedia and interactive technologies to vividly display this boring theoretical knowledge to students, thereby simplifying the teaching process of piano learning and increasing the speed of music knowledge transmission. Intelligent interactive technology with animation, sound, video and other multimedia information can achieve more effective communication between teachers and students, greatly improving the efficiency of vocal singing teaching.

3.3. Personalized teaching
Intelligent interaction technology can free teachers from tedious and repetitive preaching. At the same time, intelligent interactive technology allows teachers to eliminate unnecessary knowledge and explanations, allowing teachers have more time to personalize their singing skills guidance.

4. Conclusion
Intelligent interaction technology is a recently developed multimedia technology, which is widely used in various fields of society. Major progress has been made in the areas of multi-mode, multi-channel,
and human-computer interaction centered on intelligent interaction, and it has become a major development area for future technology. Using intelligent interactive technology, information turn into animations, sounds, videos forms, which can be used to visually and vividly display difficult content to students, simplify classroom teaching procedures, shorten knowledge transfer time, realize the efficient development of piano teaching work, and promote the organic interaction between teachers and students, which has greatly improve teaching efficiency. With the advancement of modern science and technology, music education and its research will increasingly tend to use scientific concepts, methods and necessary instruments and equipment to solve problems encountered. The research on intelligent interactive technology will help piano teachers to carry out interactive teaching and interactive performance efficiently, improve the traditional piano art instruction teaching mode, improve the artist's artistic expression ability, thereby improving the quality of music teaching. It also creates a new way of modern music.

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