Research on the Application of Artificial Intelligence in Music Listening Learning -- Taking Intelligent Hearing Training as an Example

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Abstract. The integration of AI and intelligent big data can simulate the process of human thinking and reasoning, and realize efficient neural network evolution and algorithm iteration. Its utilization in the field of music education can extend and expand the process of music teaching, and gradually become a powerful teaching assistant and tool. Based on this, this paper first analyses the integration and utilization status of AI and music listening teaching, then studies the utilization of AI in music listening learning, and finally gives the utilization strategy and optimization strategy of AI in music listening learning.

Keywords: Artificial Intelligence, Music Listening Learning, Intelligent Hearing Training

1. Introduction

With the iterative progress and growth of computer tech, it has been widely and deeply studied and popularized in many fields, especially in the field of music listening education, which greatly promotes the progress and development of music teaching. On the other hand, with the continuous growth of social economy, more and more people take part in the activities in the art field represented by music, which makes music art get more significant attention and research. As an important part of music listening learning, auditory rehearsal plays an important role in the effect and quality of music learning. As an important branch of computer science, AI has broad utilization and space in music listening learning, especially AI tech can assist music visual and auditory training, so as to help learners better grasp the complex learning process [1].

In addition, as an interdisciplinary frontier discipline with several characteristics as shown in Figure 1 below, the utilization of AI in music listening learning can further optimize the concept of music teaching, especially in the level of teaching methods and teaching methods, AI can simulate,
extend and expand the process of music teaching, so as to become an effective teaching assistant and tool. The integration of AI and intelligent big data can simulate the process of human thinking and reasoning, and achieve efficient neural network evolution and algorithm iteration. Therefore, the utilization of intelligent perception in music listening learning can help learners better perceive, research and create music.

At present, the deep integration of AI, Internet and big data not only makes its utilization and development direction clear, but also further promotes its utilization and popularization in the field of education [2]. In order to establish an intelligent, interactive and experiential new music education system, we should further promote the process optimization of music teaching, management and resource construction at the school level, so that it can better match the information environment represented by Internet, AI and big data. For example, the utilization of AI represented by intelligent hearing training in music listening learning can effectively point out the shortcomings in practice, so as to promote music teaching reform and education practice, and realize teaching optimization.

In a word, AI can construct intelligent behavior and content by analyzing and simulating the law of human intelligent activities, which greatly promotes the innovation of music teaching and the utilization of new tech [3]. This shows that we should attach importance to the utilization of AI tech in music classroom teaching, and promote the organic combination of AI and music classroom teaching, so as to improve the quality and efficiency of music listening teaching, as well as the intelligence of hearing training. Therefore, it is of great practical value to study the utilization of AI in music listening learning.

![Figure 1](image-url)  
**Figure 1.** The frontier tech subject of AI tech integration

2. The integration and utilization of AI and music listening teaching

2.1. The role of AI in music listening teaching

AI education has the typical characteristics of the teaching process of intelligent dominance, personalized personnel training and so on [4]. Among them, at the level of intelligent dominance of teaching process, with the help of AI tech, it could realize the intelligent and three-dimensional music listening learning as shown in Figure 2 below. Secondly, at the personalized level of music listening learning, the establishment of a full process and intelligent music teaching environment with the help
of AI tech will help to achieve diversified and accurate intelligent guidance and evaluation, and promote the personalized and sustainable development of music listening learning.

![Diagram](image)

**Figure 2.** The utilization area of AI in music listening teaching

In addition, in terms of music listening teaching efficiency, AI can guide the explanation and correction of music, so that teachers and students can better carry out teaching interaction and emotional communication. Through the intelligent evaluation of students' learning knowledge, this paper analyzes students' learning ability, makes students' learning process more flexible, improves the quality of teaching, and realizes the circulation of music listening resources.

2.2. **Utilization scenarios of AI in music listening learning**

The utilization scenarios of AI in music listening learning are mainly reflected in teaching assistance and intelligent adaptation platform. In the teaching assistance level, AI tech can achieve objective and efficient music listening learning guidance, so as to save teaching time and improve teaching efficiency, and at the same time, provide more effective accurate guidance for students. Secondly, in the utilization level of intelligent adaptation platform, using AI tech to analyze students' learning behavior data can better understand students' learning progress, so as to develop more personalized and targeted learning strategies for students and help students find the optimal learning path. In addition, the use of AI tech can help students better carry out closed-loop learning, accelerate and catalyze the effect and efficiency of music listening learning.

2.3. **The integration of AI and music listening teaching**

With the continuous improvement of policy guidance and social demand for quality education, it provides a convenient development environment and premise for the integration of AI and music listening education [5]. At present, the integration of AI and music listening education is still mainly concentrated in the relatively vertical field, but its connection with music learning in a higher dimension has gradually become a development trend. Figure 3 shows the investment of AI industry giants in the field of AI and education. It can be seen that the utilization of AI in the field of music education is in the transition period from the teaching assistance stage to the value creation stage. With the progress of knowledge mapping, natural language processing and other technologies, AI will be involved in more teaching core links to better improve the quality of teaching.
3. Utilization of AI in music listening learning

3.1. Utilization of AI in intelligent hearing training

AI tech has the function of big data analysis, which makes it more convenient and intuitive for teachers to understand students' learning state in the process of hearing training in music listening learning. Especially for students with learning disabilities, with the help of AI tech, students' music skills can be more scientific and effective analysis, so as to help teachers teach students in accordance with their aptitude [6]. In addition, in the process of AI assistance, not only the enthusiasm and initiative of students' learning can be significantly improved, but also the dominant position of students' learning can be further demonstrated.

3.2. The function of AI in music hearing training

The utilization of AI in music listening learning includes the utilization of music software and the utilization of music intelligent assistant tools represented by intelligent electronic instruments. At the level of music software, with the help of AI software, we can achieve better communication and interaction between teachers and students in the teaching process, so as to help students establish a better music perception [7]. Secondly, in the utilization level of AI intelligent electronic instruments, on the one hand, these instruments can store music timbre; on the other hand, they can greatly reduce the difficulty of music performance. It can be seen that the comprehensive utilization of AI Music software and tools can significantly improve the quality of music teaching, mobilize students' subjective initiative in music learning, and promote the efficiency of music education.

3.3. The organic integration of AI and music education

First of all, AI makes music listening and discrimination learning more interesting and creative. With the help of AI, students are more interested in music listening and discrimination learning, and the learning process avoids the limitation of time and space, which makes music listening and discrimination contact more flexible, and the demand for accompaniment is also greatly reduced [8]. Secondly, AI tech reduces the difficulty and threshold of music listening learning and listening training, so that students can master the basic theoretical knowledge of music theory, at the same time,
it can further promote the expression of students' personal feelings, so that students can better establish their own style in music learning, and establish a better learning music. In addition, with the help of AI tech to achieve students' autonomous learning and creation, it can help students reduce the cost of music listening learning, and further promote the public music literacy and the popularity of music creation.

4. Utilization strategy and optimization of AI in music listening learning

4.1. The utilization strategy of AI in music listening learning

The utilization of AI in music listening learning can first replace the low skilled labor force at the macro level, standardize the education market, and integrate and optimize the level of teachers. Secondly, AI tech can improve students' music level and provide better music resources and fair learning opportunities for music learners [9]. In addition, at the micro level, AI tech can improve teachers' teaching quality and efficiency; integrate learning resources, especially the AI audio-visual virtual full immersion music teaching, with its super-high resolution, persuasive.

In addition, with the help of AI tech in music listening learning, music perception and cognition can be carried out. For example, create AI music scene space to make students feel music stories better. Secondly, the use of AI music scene space to better achieve music listening learning deduction, adaptation, music creation, so as to help students better understand and master the music listening learning in many related elements.

4.2. Utilization trend of AI tech in music listening learning

In addition to the utilization of AI music listening learning assistant software and AI electronic instrumental music assistant tools in music listening learning, the future AI robot will further provide fundamental auxiliary force for music listening learning [10]. Secondly, AI machine learning tech is mature, which can not only bring convenience to music teachers, but also enable music learners to experience the charm and help of science and tech in the process of music learning. In addition, with the gradual maturity of AI tech represented by natural language and knowledge reasoning, the analysis and discrimination ability of AI tech in music listening learning will be further strengthened in the future. The emotion, emotion and even thinking ability of AI in music will be further strengthened, so as to further promote the depth and breadth of the utilization of AI tech in music listening learning.

5. Conclusion

In summary, the utilization of AI tech in music listening learning and the organic combination with music classroom teaching represented by hearing training will help to promote the quality and efficiency of music listening teaching and the intellectualization of hearing training. Through the research on the integration and utilization of AI and music listening teaching, this paper analyzes the utilization scenarios of AI in music listening learning. By analyzing the utilization of AI in music listening learning, this paper studies the function of AI Music software in listening training. Through the research on the utilization strategy and optimization of AI tech in music listening learning, this paper analyzes the utilization strategy and trend of AI tech in music listening learning.

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