Application of Artificial Intelligence Technology in College Physical Education

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Abstract. With the rise of a new round of scientific and technological revolution, the vigorous development of artificial intelligence technology has gradually entered human daily life. Physical education, as one of the daily teaching activities of human beings, is an indispensable part of the current teaching evaluation and students' quality assessment in Colleges and universities. With the development of the times, there are many shortcomings in the traditional teaching practice, and the unique advantages of artificial intelligence technology will largely make up for the shortcomings of traditional teaching. At present, the integration of physical education and artificial intelligence technology is still in the preliminary exploration stage. Therefore, this paper will first introduce the development history and main content of artificial intelligence technology. Then, starting from the reality of physical education in Colleges and universities, this paper analyzes the problems existing in traditional physical education teaching methods. Secondly, the paper puts forward the teaching methods of artificial intelligence technology such as virtual reality technology, big data analysis technology and intelligent recognition technology as the innovation points, in order to solve the shortcomings of traditional sports teaching method. The last part is the conclusion, analyzes the application prospect of artificial intelligence technology in college physical education.

1. Introduction

The development of artificial intelligence has a history of several decades [1]. In 1950, Alan Turing's paper "computer and intelligence" was put forward for the first time. The proposal of this pioneering idea provides a research direction for the development of artificial intelligence in the next few decades. Since then, at the Dartmouth conference in 1956, artificial intelligence was put forward for the first time, marking that human beings have entered the era of artificial intelligence. As shown in Figure 1, computation, perception and cognition are generally regarded as the three elements of artificial intelligence. The corresponding computational intelligence, perceptual intelligence and cognitive intelligence [2] also run through the whole development process of artificial intelligence technology.

![Figure 1. Development of artificial intelligence technology.](image)

The development of computational intelligence began in the 1950s, mainly to solve the problem of large amount of calculation or complex problems encountered in scientific research and engineering
practice. Its essence is the algorithm that engineers endow computer by imitating human computing process, but it can not achieve the function of human-computer interaction. With the development of large-scale integrated circuits, computational intelligence has developed quite mature. The development of perceptual intelligence began in the 1980s. Its characteristic is that it can collect and analyze the objective information from the outside world. One of the representative technologies is intelligent recognition technology, such as Baidu's speech recognition technology, iFLYTEK's face recognition technology has developed to a relatively mature stage. At the beginning of the 21st century, the concept of cognitive intelligence has been put forward gradually. Cognitive intelligence is a further step on the basis of perceptual intelligence, which requires computers not only to distinguish the collected information, but also to judge human emotions and intentions on the basis of comprehensive analysis. The related technologies are still in the preliminary exploration stage.

As shown in Figure 2, artificial intelligence has developed into sub fields such as virtual reality technology [3], intelligent recognition technology [4], big data analysis technology [5], machine learning [6] and artificial neural network [7]. Nowadays, people's life is inseparable from artificial intelligence, such as face brush payment, driverless car and intelligent voice assistant, which have entered into people's daily life [8]. However, the application of artificial intelligence in the field of education, especially in higher education, which is the key to talent cultivation, needs more efforts. To this end, under the guidance of the idea of strengthening the country through education and science and technology, the State Council and the Ministry of education successively issued the implementation plan for accelerating the modernization of education and the action plan for the innovation of artificial intelligence in Colleges and universities, which clearly pointed out the development direction of higher education in the future. It can be predicted that in the near future, the deep integration of artificial intelligence and higher education is an inevitable trend.

![Figure 2. Main contents of artificial intelligence technology.](image)

2. Shortcomings of traditional physical education in Colleges and Universities

Introduction

In the context of the comprehensive promotion and implementation of quality education, college physical education has made further development, whether in teaching philosophy or teaching methods have great changes and breakthroughs. Of course, although the traditional college physical education has developed for a long time, a relatively complete teaching system has been formed. However, with the continuous development of the society for talents, people gradually realize some shortcomings in traditional college physical education. Therefore, the following will be the shortcomings of traditional college physical education in the discussion [10].

2.1. Lack of theoretical knowledge learning

On the one hand, in the traditional teaching arrangement of colleges and universities, due to the heavy task of other courses, the position of physical education in the whole teaching system is not high. This also leads to less time for physical education teaching [11]. For example, many colleges and universities only offer one physical education class a week. Due to the problems of students' attendance, class
attitude and teachers' teaching ability, the knowledge and skills that students can learn in physical education are very limited, resulting in the lack of theoretical knowledge of students. On the other hand, sports is an indispensable part of campus life. Students often spend a lot of time and energy on physical exercise, but if they do not carry out sports activities under the guidance of professional theory, the final exercise effect may not be satisfactory, and even may cause harm to their own body.

2.2. The mode of unilateral Teaching
In the current physical education teaching in Colleges and universities, there is still a common problem of unilateral teaching mode [12]. In practice teaching, teachers usually use the same teaching template, the same teaching method, and teach the same content to different students. In this way, students' subjectivity, autonomy and independence are not highlighted, and the teaching process is too rigid. It is not conducive to scientific and reasonable analysis according to students' quality, sports hobbies, sports skills and other aspects, and to take targeted teaching means and methods to achieve the purpose of strengthening the physical education teaching of students. This will further lead to serious polarization in the process of physical education teaching. For the students who like sports, they are very active in the physical education class and can exercise consciously. But for the students with poor physical quality and resistance to sports, they are lack of interest, poor initiative, and often perfunctory in physical exercise, which leads to poor quality of physical education teaching, and the effect is not obvious. This is obviously out of date in the modern education system which advocates liberalization and diversified teaching.

2.3. Defects in teaching management
At present, the curriculum arrangement of physical education in Colleges and universities is roughly divided into two parts, namely, the usual class and the final course assessment. However, there is a lack of effective teaching management between class and final assessment to guide students to have a clear understanding of their own learning progress, so as to better grasp the content of physical education curriculum. The reason is that there is a big difference between physical education and other courses. It is difficult to evaluate the students' mastery of each class in a quantitative way. At the same time, because the teacher teaches more students, it directly leads to that before the final course assessment, the teacher can hardly get any feedback on the students' learning situation, and therefore is not very clear about the learning progress of each student. This will cause the teachers to the curriculum management and arrangement is not in place, resulting in the curriculum teaching can not achieve the desired effect.

3. Analysis on the application advantages of artificial intelligence technology in College Physical Education
In view of the problems existing in the traditional college physical education teaching, and considering the great advantages of artificial intelligence in integrating physical environment and virtual environment, constructing intelligent ecological education system, breaking through the space-time limitation of learning activities and sharing high-quality education resources, etc. Further discussion on the specific application of artificial intelligence in college physical education will make the traditional college physical education radiate new vitality.

3.1. Deep integration of Internet plus technology with VR Technology
Internet plus [13] refers to the effective combination of the simple and diversified advantages of the Internet with traditional industries, thereby changing the industrial structure of traditional industries and improving production efficiency. The essence of VR technology is a simulation system that can simulate the real world. It can shorten the distance between teachers and students in online teaching. Physical education is short of class hours and weak teachers, and can not give students more professional guidance. This problem can be solved by applying more extensive and more sophisticated Internet plus technology and VR technology. In this way, the physical education teaching environment in Colleges and universities can be more vivid and three-dimensional, which can be implemented according to the
following methods. First of all, build an online sports learning platform, and promote this platform as a part of the course teaching content for students to use. Second, encourage the professional level of physical education teachers to publish sports teaching related content on the platform, such as teaching video, theoretical knowledge, etc., and sort out these teaching resources on the platform, so that students can find and learn. Thirdly, considering the strict requirements for the standard of sports movements in physical education teaching, VR technology can be introduced into video teaching. Let students learn more solid theoretical knowledge and professional sports skills, at the same time, get better immersion experience.

3.2. Intelligent recognition technology
Intelligent recognition technology is a kind of technical means that collects information through identification equipment, processes information by computer, and finally automatically identifies relevant information and makes feedback. The problem of unilateral teaching in traditional physical education can be improved by intelligent recognition technology. First of all, students come to class is the premise of interactive teaching. Therefore, the intelligent recognition technology can be applied in class attendance. Compared with the traditional check-in methods such as question answering and code scanning, face recognition technology can not only fundamentally eliminate the possibility of signing in on behalf of others, but also ensure that the check-in can be completed in a very short time, thus taking into account the discipline and efficiency of class. Secondly, intelligent recognition technology can also be applied in the specific process of physical education teaching. For example, when students encounter difficulties in the learning process, they often have puzzled expressions and mumble or repeatedly make irregular sports actions. The intelligent recognition system will analyze and process the collected information through speech recognition and face recognition, so as to grasp the students' psychology and learning state more accurately, and further feed back the information to the class teacher. Let the teacher know more clearly the difficulties encountered by students in physical education, so as to make more interaction between students and teachers, improve the teaching effect of the classroom, and make sports teaching full of more fun.

3.3. Big data analysis technology
Big data analysis technology mainly includes data visualization, data mining and prediction analysis. Among them, data visualization technology [14], as a basic requirement of data analysis tools, can show data intuitively to users. On the basis of visual analysis results, the future trend of things can be judged by prediction analysis. The implementation steps of data visualization analysis technology are shown in Figure 3, including data acquisition, data access, data processing, statistical analysis and correlation analysis. In college physical education, the introduction of big data analysis technology will make the course teaching and management more scientific, standardized and efficient. For example, teachers can post homework on the learning platform and ask students to submit them in the form of photos or videos. In the learning platform terminal, VR, machine vision and other technologies can be used to extract and process the information provided by students. Then through the data visualization technology, the students' learning results are fed back to the teachers in the form of data. Therefore, teachers can adjust the teaching direction and progress in time through the data information obtained. At the same time, big data analysis technology can also help students learn more actively. Through the analysis of students' activity track, attendance and homework Submission on the learning platform, we can understand their preferences and learning habits, so as to portray a specific image of learners. Through further prediction and analysis, it provides learners with more suitable learning content and learning methods, so as to achieve the goal of personalized autonomous learning.
4. Conclusion
To sum up, as a new thing, artificial intelligence technology will be a great challenge to the traditional physical education teaching. It will make teachers face a new working environment, and the teaching mode also needs to keep pace with the times. This requires teachers to learn constantly to improve their core competitiveness. But it's also a good opportunity [15]. On the one hand, it can provide more high-quality learning resources for students, help students find their own interests, so as to enhance students' participation in physical education teaching, and achieve the teaching objectives of "healthy sports" and "Happy Sports". On the other hand, it can greatly change the existing management mode of physical education, make teachers separate from the mechanical teaching tasks, and make them devote themselves to the personalized development of students with the help of artificial intelligence technology. Therefore, in the near future, we will be able to see more and more innovative application of artificial intelligence technology in college physical education.

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