

Application Scenarios and Forms of Artificial Intelligence in Physical Education

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Abstract. The application of artificial intelligence in physical education is analyzed. The manifestations of artificial intelligence in physical education are as follows: accurate diagnosis, process monitoring, personalized service and intelligent decision-making; The application forms are as follows: intelligent tutor system, automatic evaluation system and physical education robot. The prospect of artificial intelligence in physical education is put forward: facing modernization and building a learning society; Facing the world, changing the teaching concept; Facing the future, innovating physical education teaching methods.

Keywords: Artificial intelligence; Physical education; School sports.

1. Introduction

Education is a dynamic system, in the process of accumulating experience and knowledge, the intelligence of the educated is improved [1], and education is a dynamic process that lasts a person's life. Learning is a manifestation of human talent and socialization. There are two ways of learning: autonomous learning and guided learning, and the manifestation of guided learning is education. Guided learning is the noumenon of education, that is, the unchanging essence of education, which cultivates and shapes people [2]. In different times and societies, the essence of education is something we need to adhere to for a long time. Physical education is a "whole person" process that helps the educated to form a harmonious and all-round development [3]. As an important part of education, physical education has its own scientific characteristics and teaching paradigm, but its fundamental goal is highly consistent with essence and education. Artificial intelligence is the intelligence realized on machines by artificial and deep learning methods, that is, people use machines to simulate human intelligence. Simply put, it is to realize human education on the machine [4]. Applying artificial intelligence technology to sports is an educational model in the new era. This educational model is an upgrade and evolution on the basis of "internet plus Sports", and its educational goal is to cultivate and shape people with certain knowledge and skills, international vision and all-round development. Therefore, the essence of the application of artificial intelligence in physical education is to use artificial intelligence to improve teaching efficiency from the aspects of classroom environment, teaching resources and interactive forms of teaching, and to cultivate more new generation talents with free and all-round development, international competitiveness, profound humanistic background, scientific spirit, strong physique, practical innovation and responsibility.

2. Application Scenarios of Artificial Intelligence in Physical Education

2.1 Accurate diagnosis

Artificial intelligence is a deep machine learning algorithm based on big data. Therefore, the more data it has, the more it can accurately analyze the weak points of students' knowledge, thus having the opportunity to obtain more targeted personalized counseling and improve the efficiency of teachers' teaching and students' knowledge learning. In the application of sports, artificial intelligence can analyze and calculate the learning psychology and external behavior characteristics

of each practitioner in time by tracking different types of dynamic motion trajectories, and portray a three-dimensional and visual portrait of the practitioner [5], thus providing accurate diagnosis and service for individualized learning of different educatees and improving teaching of physical education teachers, reducing inefficient repetitive work, and enabling students to accurately master sports techniques and cultivate their interests and abilities.

2.2 Process monitoring

In the process of acquiring knowledge, artificial intelligence can monitor and evaluate the emotions, reflections and explorations of the educated. In addition, artificial intelligence technology assists teachers in daily teaching monitoring, and reminds teachers to dynamically adjust the course content based on students' ability and skill level in time, so as to further adapt and improve learners' performance and realize self-help intervention in teaching. Thirdly, artificial intelligence technology helps the educated to achieve their learning goals by monitoring a series of learning process behaviors and data. For example, the intelligent classroom behavior management system can analyze the degree of students' learning concentration and skill mastery according to their facial expressions, improve the pertinence of education, and promote the benign interaction between students' learning and teachers' teaching. In physical education teaching, after teaching motor skills, through the process monitoring of artificial intelligence, teachers can get the feedback of students' mastery of motor skills and the fatigue degree of learning motor skills, and correct the teaching objectives of physical education classroom in time to achieve the expected learning effect.

2.3 Personalized service

The development of human society has entered the information age. Xi Jinping pointed out that information has brought a golden opportunity to the China nation. We must firmly grasp the opportunity of this era, closely combine students' personality with intelligent education, and promote students' personality to be fully affirmed and developed in the process of learning. The intelligent sports cloud service platform based on artificial intelligence technology supports the analysis of students' mind, sports skills and sports knowledge, grasps the learning personality bias, needs and existing experience of sports, provides differentiated personalized services, and works out the physical education class course training scheme of teaching students in accordance with their aptitude according to the characteristics of students in different growth environments. Finally, driven by the goal, the physical education learning activities carried out by the educated at all stages of their lives are completed, which promotes the educated to develop the lifestyle and behavior habits of lifelong sports and learning. Artificial intelligence can effectively record and generate the learning path of the educated in different stages of physical education [6], and help physical education teachers to better realize teaching according to their studies and accurate teaching.

2.4 Intelligent decision-making

In the era of big data, educational data mining and development has become a new format and specific application in the field of education [7]. The combination of artificial intelligence and sports has caused a lot of sparks. Artificial Intelligence-Classroom Quality Assessment System (AI-CQE) is a teaching evaluation system based on artificial intelligence and big data analysis. According to the massive video data of classroom teaching, using the artificial intelligence training method of deep learning, using AI technology to intelligently identify the classroom behaviors of PE teachers and students, including face recognition and expression analysis, etc. After analyzing the behaviors of teachers and students with big data, including the data of students' action trajectory, classroom performance and concentration, the results are presented to students, teachers, parents and other educators in a more intuitive chart form, which provides scientific decision-making basis for educational decision makers.

Table 1. Application and service content of artificial intelligence in physical education

Service theme	Application scenario	Service content
Educattee	Accurate diagnosis	Educational data mining and analysis; Analysis of classroom behavior of teachers and students; Diagnosis of students' learning activities;
Educator	Process monitoring	Real-time tracking and feedback; Curriculum association; Classroom attendance; Data classification, export and push
	Personalized service	Relevant data of learners' habits and interests; Portfolio of independent learners; Personal learning path; Flexible learning environment;
Manager	Intelligent decision-making	Pre-study shows; Pre-warning against learning risks[8]; Learning support and evaluation; Resource recommendation; Conduct continuous evaluation during the learning process.

The intelligent decision-making of artificial intelligence has greatly facilitated physical education teachers. In a country that attaches great importance to education, it is necessary to cultivate students' all-round development in morality, intelligence, physique, beauty and labor. At present, physical education teachers are still scarce, and the distribution of talents is uneven in various places. In the face of teaching classrooms with a large number of students, it is necessary to use artificial intelligence to record the learning situation of each student's motor skills, so as to save teachers more time and carefully arrange the teaching content.

3. Application form of artificial intelligence in physical education

3.1 Intelligent Tutor System

With the support of big data, the intelligent online learning and education platform built by the intelligent tutor system is the main application form of "artificial intelligence+education". Intelligent tutor first appeared in 1982. It simulates teachers' teaching experience and methods by computer, adopts one-on-one teaching mode for students, and teaches students with different needs and characteristics to solve problems [9]. Through language processing, speech recognition and other technologies, intelligent tutors can deeply analyze scenes and data in real time, give full play to the role of tutors, provide all-round diet, training plans, quantitative training results and analysis, reduce unnecessary repetitive work of physical trainers, improve the effect of sports training, and conduct follow-up evaluation and feedback according to the performance of practitioners and problem solving, and put forward corresponding suggestions [10]. It can provide scientific learning methods for practitioners, and provide solutions to students' problems in physical education teaching through effective analysis of data by intelligent tutor system after leaving the guidance of teachers themselves.

3.2 Automated evaluation system

The initial embryonic form of "artificial intelligence+physical education" automatic evaluation system was designed by Huang Dahai [11] in his graduation thesis in 2001. He pointed out that physical education teaching evaluation is a complex and repetitive system engineering, which consumes a lot of human, financial and material resources. The traditional manual processing method can no longer meet the increasingly strict requirements of physical education teaching evaluation, so it is necessary to accelerate the intelligentization of physical education teaching evaluation. At present, this automatic evaluation system is widely used in online evaluation of various disciplines. Based on natural language processing technology and a large number of corpus

storage, the distance between students' homework and standard corpus is automatically analyzed and evaluated, and then the score is made immediately and suggestions and content analysis results are provided, such as the correction network [12]. In the future, there is still much room for improvement in real-time tracking management and evaluation of automated evaluation system. After the teachers in physical education class teach the teaching content of this class, students practice their motor skills independently after class. The automatic evaluation system can evaluate the learning content of students in physical education class at anytime and anywhere. Therefore, it can also be applied to the physical health test, changing the way of testing by teachers and sports workers in the past, which not only improves the accuracy of test data, but also saves manpower and financial resources, and can improve students' physical fitness by combining the daily evaluation content of physical education class learning effect.

3.3 Physical Education Robot

The overlapping of artificial intelligence and other disciplines has promoted the new breakthrough of educational artificial intelligence in the field of education [13]. Educational robot has been upgraded from the initial educational equipment to an artificial intelligence assistant with more extensive applications and more comprehensive functions. In addition to helping students manage daily learning tasks, share learning resources and guide students to actively participate in learning [14], educational robots can also establish friendly companionship with students, entertain and educate, and promote their learning and growth. The main forms of educational robots used in sports are as follows: (1) Assisting personalized exercises to make sports training no longer boring. (2) Knowledge assistants in sports lecture halls, popularizing sports common sense and explaining sports history. (3) A sports assistant with real-time feedback can accurately record your exercise time, intensity, heartbeat and other physiological indicators, generate exercise reports, and provide exercise suggestions according to the actual situation of your body. (4) Digital portraits of athletes can help teachers understand the learning situation of each student and constantly improve teaching methods. In the future, the popularity of physical education robots will enable more and more students to participate in physical education classroom teaching. Parents can rest assured that students love physical exercise more, thus forming the learning concept of lifelong physical education.

4. Conclusion

China is at the historical intersection of the information age and the new era in Socialism with Chinese characteristics, and the educational informatization must resonate with the times at the same frequency. In the new era, physical education has also been endowed with more important educational significance. The combination of artificial intelligence and physical education has brought more possibilities for physical education. China's artificial intelligence technology is still in the process of further research and development and improvement. Objectively speaking, China's educational artificial intelligence technology still lacks a lot of practice, and it needs to widely adopt the suggestions and opinions of grassroots teachers. Therefore, we must look at the development of information education in China from a long-term perspective, look at the strengths and weaknesses of information education in China with the educated as the center, build future talents in China from an international perspective, and vigorously develop the application of artificial intelligence in the field of education to better help the development of sports in the future.

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