The demand mechanism, reality survey and approach analysis of artificial intelligence into physical education

Yuhua Qiu[1,a,*], Yubin Hua[2], Qin Xu[1]

[1]Physical Education Institute, China University of Geosciences, Lumo Street, Wuhan, China

[2]Department of Accounting, Hubei University of Education, Gaoxin Street , Wuhan, China

[a] Qiuyuhua@cug.edu.cn

*Corresponding author

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Abstract: With the promulgation of the development plan for a new generation of artificial intelligence and the wide application of chat GPT and other artificial intelligence technologies in various fields, how to integrate artificial intelligence into physical education has become a new topic of education reform. This paper analyses the demand mechanism, reality examination and approach analysis of artificial intelligence to promote the development of physical education. The research shows that the demand mechanism of artificial intelligence to promote the development of physical education includes: the implementation object of physical education is deeply affected by artificial intelligence, the overall promotion of the wide application of artificial intelligence in the field of education, and the urgent need for artificial intelligence in the development of physical education in the new era. The approach of integrating artificial intelligence into physical education teaching includes: optimizing the technology research and development process and enhancing the adaptability of artificial intelligence physical education teaching products; reinforcing the construction of artificial intelligence infrastructure in the sports field; transforming the role positioning of teachers and students and highlighting the tool attributes of artificial intelligence; developing typical application cases of artificial intelligence in physical education teaching and promoting the wide application of artificial intelligence in physical education teachers.

1. Introduction

In recent years, artificial intelligence technology aiming at simulating human activities and thinking, extending and expanding human intelligence has flourished worldwide and is deeply integrated with various industries.

As an important part of education, physical education is of great significance to improve students' comprehensive quality and cultivate their will to fight. Artificial intelligence can help students quickly master basic sports knowledge and sports skills, and will also make sports training more scientific and efficient, and help to realize the visualization and personalization of Physical Education [1-3]. In terms of the existing research, scholars have made a lot of explorations in the fields of student learning, education evaluation, education management and so on around the "Ai+education", but there are few systematic discussions on the practical dilemma and breakthrough path of the integration of AI into physical education. Therefore, taking physical education as the foothold, this study analyses the value, practical difficulties and approaches of the integration of AI technology into physical education, in order to provide theoretical reference for promoting the high-quality development of physical education.

2. The demand mechanism of integrating artificial intelligence into the development of Physical Education

2.1. The implementation object of the new generation of physical education is deeply affected by artificial intelligence

Current students were born after the millennium, and they have been deeply influenced by AI since birth [4]. Artificial intelligence has a profound and comprehensive impact on the younger generation, and as time goes on, the new objects of physical education will be more and more deeply affected by artificial intelligence. Therefore, physical education has a strong demand for the application of artificial intelligence when facing the educated objects who grow up in the era of artificial intelligence and face the influence of artificial intelligence for life.

2.2. Overall promotion of the wide application of artificial intelligence in the field of Education

In May 2019, the International Conference on artificial intelligence and education formed the Beijing consensus - artificial intelligence and education, which clearly proposed to explore the effective strategy and practice mode of using artificial intelligence to promote educational innovation [5].

Driven by the wide application of artificial intelligence in the field of education, physical education is bound to be affected by the overall environment. Taking the construction of smart campus in intelligent education as an example, sports teaching venues, equipment and facilities, teaching content and so on must be integrated into the core elements of smart campus construction, such as the Internet of things and big data, so as to realize the intelligent link of all terminals on campus, which will have a profound impact on sports learning environment, learning methods, academic evaluation and so on. And this impact can help physical education save resources, improve efficiency, and improve autonomy and fairness while ensuring students' safety, which lays the foundation for physical education to actively embrace artificial intelligence.

2.3. The urgent need for AI in the development of physical education in the new era

The development of physical education in the new era has an urgent need for AI. On the one hand, it stems from the gradual application of AI in other fields of sports, on the other hand, it stems from the new direction of physical education reform. However, at present, there are few practical applications of artificial intelligence in physical education, which is not commensurate with the important position of physical education. Therefore, in order to promote the high-quality development of physical education in the future, it is urgent to strengthen the in-depth application of artificial intelligence in the field of Physical Education: first, the integration of five education and interdisciplinary education are the development direction of future education; Second, give full play to the advantages of the application of artificial intelligence in physical education, and promote the transformation and upgrading of physical education as a whole.

2.4. Driving force of cultivating students' high-level sports thinking ability

With the emergence of chat GPT and other AI products, most repetitive and even some creative work can be completed by AI. How to cultivate students' high-order thinking ability has become the core issue in the current education field. In this context, physical education needs to guide students from shallow learning to deep learning, so as to meet the goal of cultivating students' high-level thinking ability. All kinds of artificial intelligence applications in the new era can transform students' Sports shallow learning into deep learning, and cultivate students' high-level thinking abilities such as complex thinking and problem solving.

3. The four-dimensional dilemma of integrating artificial intelligence into physical education

3.1. Dilemma of education orientation

The interaction between AI and physical education is still in its infancy. What role should AI

technology play in future physical education? The effective response to this problem is directly related to the development of artificial intelligence technology in the field of Physical Education [6]. Specifically, the integration of AI into physical education needs to focus on two positioning issues. First, the problem of teacher orientation change. The simple and repetitive work in traditional physical education has also been largely replaced, but students' sports skills and character building still need the teaching and guidance of physical education teachers. Activities such as error action correction and psychological counseling cannot be replaced by artificial intelligence. In this situation, we should complete the transformation of teacher orientation under the mode of "artificial intelligence+physical education" to give full play to the value of teacher education.

Second, the problem of student orientation change. Although the virtual practice supported by AI technology provides a certain degree of feedback mechanism, it can not completely replace the actual body feeling and feedback. In addition, one of the important objectives of physical education is to cultivate students' sense of competition. While artificial intelligence technology can meet the personalized needs of different students, it may weaken the competitiveness among students, and even affect the motivation of their continuous efforts. It can be seen that students can better adapt to the new mode of intelligent physical education only on the basis of understanding, understanding and using the function and value of artificial intelligence in physical education learning.

3.2. Difficulties in technical adaptation

First, artificial intelligence is not mature enough. Physical education itself is more cultural and emotional. In order to effectively integrate artificial intelligence, we must make greater breakthroughs in Humanities and emotion. However, it is a pity that at present, the research depth of artificial intelligence in emotional and cognitive dimensions is slightly insufficient, and it is difficult to quickly meet the requirements of physical education. The result is that in the short term, the effect of integrating artificial intelligence into physical education teaching is bound to be lacking, which needs to be followed up and supplemented from other dimensions.

Second, the integration of educational theory is insufficient. AI programs require both IT experts and industry experts. It experts understand machine learning toolkits, while industry domain experts will bring knowledge in specific fields. However, as for the research and development of AI products in the field of physical education, it is more limited to the AI industry itself, and the absorption of the education industry still needs to be further improved. In fact, studies have shown that intelligent teaching intervention will make students who perform poorly feel uncomfortable [7]. In the process of integrating artificial intelligence into physical education, if we can not fully consider the educational objectives and laws, the mission of "physical education" and "educating people" will be out of the question.

3.3. Dilemma of education data

Large scale and large amount of data are the basis for the development and application of AI technology [8]. After investigation, it is found that the data of physical education at this stage need to focus on two aspects.

First, the dilemma of data collection. The first is the lack of family and social physical education data. Compared with school physical education, it is difficult for family physical education and out of school physical education to produce systematic sports data. The second is the backward means of physical education data recording in some regions. It can not provide sufficient support for the application of artificial intelligence in the field of physical education. Finally, the lack of interoperability of physical education data, physical education data between different education systems and platforms failed to be open and shared.

Second, data security dilemma. Physical education data involves a large group of educatees and educators, including personal identity, health status, training results, competition results and other sensitive information. But at the same time, we should also pay attention to the existence of education data security risks. On the one hand, it is the risk of data collection infringement. The collection of personal physique related data such as height, weight, heart and lung rate is likely to evolve into a normal [9]. In this process, it is difficult to fully ensure that the data collection is within

the scope of data privacy and security. The other is the risk of data application infringement. In the process of integrating intelligent technology into physical education, a large number of students' personal information, sports performance, training progress and other data will be centrally stored in the database. If not effectively protected, these data will directly face the risk of theft, disclosure, tampering and so on.

3.4. Difficulties in mode popularization

First, the introduction of equipment. In the process of integrating artificial intelligence into physical education, the first problem is the introduction of equipment. The premise of the application of artificial intelligence technology is to equip relevant equipment support, which requires a lot of capital costs. After investigating the schools that have tried to apply AI to physical education, it is found that these schools are mostly concentrated in Beijing, Shenzhen, Shanghai and other cities or regions with better education conditions. The digital infrastructure construction level of some schools in economically backward areas is relatively backward, and they do not have the corresponding capital or technical strength. The equipment required for the introduction of artificial intelligence has hindered the overall effect of the integration of artificial intelligence into physical education.

Second, teachers' digital literacy training. As the core element of the relationship between "teaching and learning", teachers' professional quality directly determines the quality of teaching. Under the background of artificial intelligence education, the development of physical education shows three trends: intelligent teaching conditions, three-dimensional teaching management, and human-computer interaction of teaching behavior. This requires teachers to have sufficient digital literacy and be able to make good use of artificial intelligence, a modern tool [10]. However, as far as the actual situation is concerned, the professional training of physical education teachers focuses more on sports skills and teaching methods, and the training in digital technology is relatively less. In addition, one of the important characteristics of physical education is that it is dominated by practical exercises. The vast majority of physical education teachers lack digital teaching experience, and their overall digital literacy is relatively weak, which restricts the integration and penetration between artificial intelligence and physical education.

4. The approach of integrating artificial intelligence into physical education

4.1. Optimize the technology R&D process and enhance the adaptability of AI physical education products

First, strengthen the key technology. On the one hand, strengthen the guidance of key projects. The government should actively promote the collaborative application of AI technology and Informatics, psychology, sports and other disciplines, fully strengthen the "cultural" and "emotional" of AI technology, and make it more suitable for the characteristics of physical education. On the other hand, promote the construction of artificial intelligence sports education demonstration area, create artificial intelligence sports education demonstration area, and explore the application of artificial intelligence in the field of sports education.

Second, improve the participation of physical education experts. Form a R&D team of "industry experts+IT experts". Specifically, AI technology R&D companies should hire educational experts with profound experience in the field of physical education according to their product positioning, so that they can participate in the product design and planning process, and use their teaching experience to ensure the practicability of AI products. After the initial product development, we should actively carry out product experience feedback survey, collect the expectations and improvement opinions of education experts and front-line teachers on AI education tools, and timely optimize them. In addition, AI product R&D companies can also establish cooperation mechanisms and platforms with universities to build a platform for cooperation and exchange between IT engineers and education experts.

4.2. Strengthen the construction of AI infrastructure in the field of Physical Education

Physical education teaching is mainly carried out in indoor sports venues or open outdoor venues, so it is necessary to lay artificial intelligence hardware infrastructure in these environments. If conditions permit, students can also be equipped with intelligent wearable devices, teachers can be equipped with physical education terminals, etc., so as to realize the comprehensive perception and communication of students and teachers in the physical education teaching environment, intelligently monitor all kinds of data generated by students in sports, and store and transmit them in digital form.

4.3. Change the role orientation of teachers and students and highlight the tool attribute of artificial intelligence

First, speed up the role reconstruction of physical education teachers. On the one hand, physical education teachers need to play the role of the applicator of artificial intelligence technology. In the future, physical education teachers should focus on the instrumental value of artificial intelligence, and improve the teaching quality with the help of chatgpt and other artificial intelligence technologies. On the other hand, physical education teachers need to act as supervisors of AI technology. Teachers should be alert to the technical ethics, information security and other issues in the application of AI, and timely find and correct the educational problems caused by AI.

Second, cultivate students' adaptive learning ability. From the perspective of students, the first is to establish a knowledge framework and build thinking. Students need to learn and understand the characteristics of AI, self analyze and judge the matching degree between the personalized physical education scheme recommended by AI and themselves, and actively build an evolving knowledge framework. Second, establish Internet interactive thinking. This requires students to have a certain degree of Internet interaction literacy, learn to build online communities, efficient search and other basic skills. The third is to establish independent exploration thinking. Under the appropriate exercise load, we can explore and learn independently, and realize the upgrading of sports skills from "teaching oriented" to "learning oriented".

4.4. Developing typical examples of AI application in Physical Education

The development of typical examples of AI applications in physical education can be used for reference. First, there are few mature application cases at present, and they are basically in the stage of theoretical thinking. At present, experts' cognition of sports is mainly focused on sports itself, and it has not yet gone deep into how to realize the level of sports people based on AI, so it is necessary to provide reference in the form of examples; On the other hand, there is a wide gap in the ability of physical education teachers. Many of them have never been exposed to artificial intelligence, and it is difficult for them to carry out independent and innovative application. Therefore, it is feasible to prmote the extensive application of artificial intelligence by providing examples for physical education teachers.

5. Conclusion

With the rapid development of artificial intelligence, the reform of physical education has ushered in a new opportunity. Various practical activities to infiltrate artificial intelligence technology into the field of physical education are being carried out in an all-round way. In terms of practical effect, the application potential of artificial intelligence in physical education is huge, but in terms of effectiveness, rationality and legitimacy, it still needs to be further explored. In view of the large scale of people involved in physical education, its complexity and involvement are extraordinary. The embedding and integration of artificial intelligence and physical education need to follow a relatively prudent idea, ensure the value of artificial intelligence in terms of mode change, system reconstruction, concept remodeling, and then explore the realization of its functionality.

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