Research on the Transformation and Development of Physical Education in Universities through ChatGPT

Hongliang Qu[1,a], Wenjing Yao[1,b]

[1]Xi'an Peihua University, Xi'an, Shaanxi, 710125, China
[a]425648560@qq.com, [b]yaowenjing@peihua.edu.cn

Abstract: Taking ChatGPT as the research object, this paper analyses the challenges and opportunities faced by physical education in Chinese universities. Research has shown that in the future, artificial intelligence will directly participate in the application of education, mainly undertaking tasks such as content development and student evaluation; ChatGPT has made physical education more humane, and the teaching philosophy of physical education in universities needs to shift from technical teaching to moral education; In terms of teacher traits, there is a need to shift from knowledge-based to speculative; In teaching scenarios, it is necessary to shift from academic style to interactive style; In the relationship between teachers and students, it is necessary to transform from singularity to diversity, adapt to the development of the times, and undergo transformation and upgrading.

Keywords: ChatGPT; artificial intelligence; sports science; sporting body

1. The era of ChatGPT has arrived

ChatGPT, as an intelligent chat system, was launched by OpenAI in November 2022 New artificial intelligence products. ChatGPT has had significant impacts in fields such as education, entertainment, news, manufacturing, technology, scientific research, and the arts. With almost ordinary communication skills, ChatGPT is able to complete various tasks such as translation, problem-solving, exams, composition, copywriting, programming, organizing article viewpoints, conceptualizing novels, writing work weekly reports, and video scripts. Its professional level has surpassed the abilities of many on-the-job personnel in many basic tasks.

The "humanoid" world established by artificial intelligence represented by ChatGPT is an extension of human society. Currently, research on this "humanoid" world is mainly led by experts in the field of natural sciences. With the continuous deepening of artificial intelligence into daily life, the exploration and interpretation of the "humanoid" world is gradually expanding to various fields.

The core technology of ChatGPT is "generative artificial intelligence", and the latest version is a large deep learning model based on OpenAI's GPT-4 architecture. Compared with the traditional Discriminant model, the generative model has the characteristics of learning training data directly. Taking Machine translation as an example, when performing tasks such as Machine translation, there is no need to model the intermediate stages such as problem decomposition, part of speech tagging, syntax analysis, etc. Through pre training with a large amount of data, these intermediate tasks have been incorporated into the parameters of the Transformer as linguistic features, and the final task can be directly solved end-to-end. Systems based on "generative artificial intelligence" can improve human productivity and creativity. This kind of artificial intelligence system can help people break down Thought disorder, provide new ideas, check work and create a lot of content. Compared to traditional cognitive intelligence, which requires customized systems for various tasks in various fields, generative artificial intelligence systems can complete multiple scenarios and rounds of quite natural human-machine dialogue, and can achieve human-like communication, learning, and progress in multiple rounds of interaction through natural language interactive learning, and independently, quickly, and continuously learn professional knowledge in various fields to reach the level of human experts.

Sports is a practical activity centered on human physical and mental development, and it is crucial to find the appropriate balance point for the application of this technology. In the sports industry, it is related to computing, such as data analysis, program code, and basic text information processing, such as business planning, video scripts, basic literature collection and organization, combined with human creative thinking activities. ChatGPT technology Artificial intelligence technology provides beneficial

assistance for the long-term development of sports and the sports industry, leapfrog in speed and efficiency, and even fundamentally replace it.

2. ChatGPT Boosts Physical Education Management

One is to create and operate a physical education management system. Physical education is a highly complex management task that involves the coordination and coordination of human resources such as administrative personnel, teachers, students, parents, as well as recruitment, scheduling, teaching, training, attendance, extracurricular exercise, and home school cooperation. If only relying on traditional peer-to-peer management methods, it is difficult to fully meet the current development needs of physical education. Developing a physical education management system based on ChatGPT can greatly improve management efficiency, form a vertical management channel, reduce the complexity of hierarchical management, and improve management inefficiency. Taking the campus basketball teaching as an example, by developing an intelligent management system, we can realize intelligent connection of processes such as material selection, trial training, enrollment, enrollment, and training, and integrate data in different periods to track and analyze the growth process and future development potential of basketball student athletes. In addition, an intelligent management system can also be used to focus on basketball teaching, break time, after-school clubs, and students' independent exercise. By utilizing mobile mini programs, the Internet of Things, multimedia screens, and intelligent wearable devices, the campus basketball "learn practice match" can be integrated for management, and real-time data related to the entire school basketball movement can be obtained. This provides a basis for the superior to evaluate the effectiveness of campus basketball and the school to make decisions on the development of campus basketball.

The second is to develop various sports education expert systems. Expert systems are typical examples of artificial intelligence applications in recent years. They are computer programs that can mimic the behavior of human experts. They quickly and accurately respond to information (problems) raised by users (interrogators) (problem-solving methods), thus simulating experts in the field. Chat GPT can be seen as an integration of expert systems in multiple fields such as education, technology, history, culture, etc. The expert system in the sports field mainly focuses on the coach expert system, material selection expert system, Exercise prescription expert system, national physique monitoring and function evaluation expert system, event declaration and decision-making expert system, etc., aiming to form a "knowledge base" of the knowledge, experience and strategies of experts in these fields, and then to simulate and solve complex sports related problems in reality. With the high attention paid by the country to the integration of physical education and adolescent health, the development of a sports education expert system has great potential, which can be applied to sports teaching, exercise, extracurricular activities, reserve team selection, and other aspects. Taking the physical education teacher expert system based on Chat GPT as an example, the excellent experience of excellent physical education teachers in physical education teaching, after-school sports training, extracurricular sports competitions, extracurricular activities, physical health testing and other aspects can be digitized and structurally integrated to form a data management platform to provide knowledge input and data support for the expert system. Compared to traditional physical education teachers, an expert system that integrates a large amount of excellent teacher experience and provides teaching guidance based on intelligent algorithms has advantages.

Taking the design of basketball teaching plans as an example, traditional physical education teachers have rich experience in learning situation analysis, goal setting, content selection, and learning evaluation. However, in reality, a large number of physical education teachers are needed to focus on teaching effectiveness, teaching competitions, performance evaluation, and other aspects of new physical education teachers' training, teaching competitions, and teaching evaluation.

3. ChatGPT boosts Big data mining and intelligent analysis of physical education

ChatGPT provides decision-making consultation for sports education management. There is a massive amount of data in physical education, and in the past, due to the lack of mining and in-depth analysis, the availability of these data was ignored. With the continuous maturity of artificial intelligence technology, machine learning algorithms can be used to deeply mine data and gain insights into hidden information that is difficult for the human brain to retrieve and analyze. According to the sports data collection standards and data warehouse construction standards issued by the government, wearable intelligent sensing devices can be used to collect students' basic information, sports testing

data, sports learning data, and exercise duration. Then, various scattered structured and unstructured data can be combined for association analysis based on artificial intelligence, and various storage devices can be used to store the data in the form of data warehouses, Then, cleaning and conversion are carried out to improve the normalization and standardization of data, and these sports data are compared, classified, predicted, clustered, etc. through machine learning and data mining algorithms, so as to achieve the purpose of intelligent data analysis. Data and information visualization technology is used to more intuitively express the data processing results, so that managers, policy makers, teachers Students can quickly discover the patterns contained in these sports data and use them to guide decision-making services.

4. ChatGPT Boosts Students' Physical Education Learning

Provide feedback to students through intelligent assessment of physical education learning. The ChatGPT based intelligent evaluation system for physical education learning aims to assist physical education teachers in completing routine physical education learning assessments (such as physical health tests, skill assessments, etc.), while also achieving adaptive, value-added, and procedural evaluations for physical education learning, thereby making the evaluation of physical education learning more scientific and comprehensive. Taking adaptive evaluation of physical education learning as an example, in traditional physical education learning evaluation, due to the uneven physical fitness and skill levels of students, students have different feelings towards the same evaluation content and standards, which cannot highlight the guiding role of evaluation in students' learning. However, the intervention of ChatGPT can achieve adaptive evaluation of physical education learning, This type of assessment will design individual assessment content and standards for each student based on their previous performance in the physical education classroom, and can adjust the difficulty of subsequent assessment tasks according to their performance in the assessment, thereby stimulating students' challenge mentality and confidence in learning the corresponding content. For example, taking process evaluation as an example, currently in many places in China, the middle school entrance examination for physical education requires a combination of process evaluation and summative evaluation. However, the difficulty lies in the need to invest a lot of resources in process evaluation, and the evaluation made by frontline physical education teachers who undertake process evaluation tasks under pressure may be unfair. The intervention of ChatGPT technology can solve the problems in process evaluation. It can record students' sports behavior in their learning and life in a normalized and real-time manner, evaluate their sports performance, and use them as an important basis for process evaluation, thereby promoting the practical implementation of process evaluation.

For the analysis of sports learning, it is necessary to first collect various information of learners in sports activities, then conduct systematic analysis of data from different dimensions, and feed back the analysis results to sports learners, sports teachers and policy makers in a visual form. Finally, according to the data analysis results, sports learners, sports teachers and policy makers make changes to adapt to development. Therefore, in the analysis of sports learning, various sensors such as GPS, Heart rate monitor, accelerometer, intelligent bracelet, Motion capture system and other equipment can be used to record the data of Student activism 'step frequency, speed, heart rate, motion form, etc., and then through machine learning, deep learning, Natural language processing and other artificial intelligence technologies, the characteristics of students' sports learning can be extracted based on the algorithm model to form a digital portrait of sports learners, Thus providing scientific basis for diagnosing the state of physical education learning and coping with difficulties.

5. The transformation strategy of ChatGPT to promote the development of physical education

The full exploration and utilization of ChatGPT is conducive to the transformation and innovation of traditional university physical education models, and the construction of a diversified, distinctive, intelligent, and comprehensive university physical education classroom and practical teaching system. But this does not mean abandoning the traditional teaching mode of college physical education, but rather leveraging the advantages of ChatGPT to further enrich the teaching methods of college physical education.

In the traditional teaching environment, physical education teachers in universities pay more attention to the improvement and improvement of their own sports skills, as well as the learning of relevant theoretical knowledge. However, in the era of ChatGPT, the optimization of sports technology and the accumulation of professional theoretical knowledge can all be achieved through ChatGPT

technology, which is more efficient and has richer reserve content. In college physical education teaching, the decomposition teaching, demonstration of certain sports technical movements, and even the recording and analysis of students' movements during learning can be achieved through intelligent means. For physical education teachers, there is no longer a need for cramming, but for enlightening guidance, that is, how to cultivate students' interest in exploring sports, how to inspire students to find the value and meaning of life through sports, and so on. The ability that college physical education teachers need to improve is not only the ability to learn professional knowledge, but also the critical thinking ability for physical education teaching and student development.

The emergence of artificial intelligence technology is changing the academic teaching scene, showing unidirectionality and mechanization in teaching procedures. In future physical education in universities, tools such as intelligent wearable devices, intelligent terminal devices, robot "teaching assistants", and 3D display "blackboards" may appear in the classroom, becoming one of the constituent elements of teaching. In such a teaching scenario, students no longer passively listen to lectures and imitate teacher actions in one direction. Students can choose their own learning time, methods, progress, etc. based on their own conditions, including physical fitness, skill acquisition speed, time arrangement, etc., and hand over the initiative of learning to students. What physical education teachers need to do is to explain the content, time, and standards of assessment to students, publish regular interactive time, and discuss the learning situation of a certain sports skill in the form of one-on-one, one-to-many, or many to many. However, due to the particularity of the error correction process in physical education teaching and the indispensable nature of school education characterized by "offline" interaction in the process of human socialization, offline interaction still needs to be maintained.

6. Conclusion

ChatGPT related technologies can serve as auxiliary teaching tools for physical education in universities. Teachers can choose matching artificial intelligence technologies to serve the entire teaching process based on the technical characteristics of sports projects, the spatial structure of teaching venues, and the design and arrangement of teaching content. For a long time, the development of physical education discipline has been imbalanced with the development of individual humanistic value and social service value of college students. College physical education lacks humanistic care and exhibits strong purposefulness and instrumentality, making the educational value of physical education in an overshadowed state. ChatGPT not only changes the traditional teaching mode and imparts knowledge, but also has an impact on some inherent educational values or concepts. As mentioned earlier, the era of artificial intelligence not only brings technological innovation, but also promotes the transformation of educational tasks. The status of moral education is prominent, and the concept of holistic education is valued. Compared with other university curriculum education, physical education in universities has outstanding advantages in this regard.

Acknowledgements

References

[1] Zhou Weifang. Technical Innovation and Practice of Sports Methodology—The Oral History Text of Cheng Zhili's Dialogue with Su Bingtian and Xu Mengtao [J]. Sports and Science, 2021,42 (01): 34-39
[2] Wang Zhihui. Imagination in Physical Education: The Generation and Writing of Research Paradigm for Individual Sports Behavior [J]. Journal of Shenyang Institute of Physical Education, 2022, 41 (01): 122-130
[3] Zhang Wenyi. The Mystery of Life and Social Transcendence: The Unspeakable Pain, Imagination, and Tongue Ghost of Jingpo People in Southwest China. Society, 2022, 42 (02): 179-208
[4] Hu Haixu, Jin Chengping. Personalized Training in the Intelligent Era: Research Progress in Machine Learning Applications and the Digital Future [J]. Sports Research, 2021,35 (4): 9-19
[5] Lan Kaihui. Research on university sports intelligence system based on artificial intelligence

technology [J]. Journal of Liberal arts college (Natural Science Edition), 2021, 24 (2): 94-98

[6] Tthornton H R, Delaney J A, Duthie G M, et al. Importance of various training-load measures in injury inci-dence of professional rugby league athletes[J]. InternationalJournal of Sports Physiology and Performance, 2017, 12(6):819-824.

[7] Stein M, Janetzko H, Seebacher D, et al. How tomake sense of team sport data: From acquisition to data modeling and research aspects [J]. Data, 2017, 2(1): 2.

[8] Wang T, Li J, Deng Y, et al. Digital twin for human-ma-chine interaction with convolutional neural network [J]. International Journal of Computer Integrated Manufacturing, 2021, 34(7/8): 888-897.

[9] O'Driscoll R, Turicchi J, Beaulieu K, et al. Howwell do activity monitors estimate energy expenditure? A systematic review and meta-analysis of the validity of current technologies [J]. British Journal of Sports Medicine, 2020, 54 (6): 332-340.

[10] Feigin V L, Stark B A, Johnson C O, et al. Global, regional, and national burden of stroke and its risk factors, 1990—2019: A systematic analysis for the global burden of disease study 2019[J]. The Lancet Neurology, 2021, 20(10): 795-820.