

Research on the Reform of College Physical Education Teaching Based on the Digital Background

Jianxin Zhou

Physical Education College, Nanjing Xiaozhuang University, Nanjing, 211171, China

How to cite this paper: Zhou, J. X. (2025). Research on the Reform of College Physical Education Teaching Based on the Digital Background. *International Journal of Educational Development*, 2(1), 68–72. ISSN Print: 3104-4263; ISSN Online: 3104-4271.

<https://doi.org/10.63313/IJED.9037>

Published: 2025-12-31

Copyright © 2025 by author(s) and Erytis Publishing Limited.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Abstract

Based on the digital background, this study discusses the digital coordination mechanism in physical education teaching, the value embodiment of digital empowerment in college physical education teaching, and the response to ethical risks, and proposes measures to promote the sustainable development of college physical education teaching empowered by digital technology, so as to provide reference for the reform of college physical education teaching.

Keywords

Digitalization; Physical Education Teaching; Teaching Reform

1. Introduction

With the issuance of policies such as Education Modernization 2035 of China, the technological wave represented by artificial intelligence has been increasingly embedded in the field of education. The digital transformation triggered by it is not a simple tool replacement, but an ecological reconstruction that touches upon teaching concepts, teacher-student relationships and organizations. As an important part of higher education with both physical practice and educational value, college physical education teaching makes in-depth research on its digital transformation particularly urgent.

2. Raising of the Research Questions

The connotative characteristics of physical education teaching in the artificial intelligence era are reflected in the immersion, personalization, datatization and scientization of physical education teaching scenarios[1]. Meanwhile, in the wave of

digitalization, traditional physical education teaching is faced with enormous challenges and opportunities. First of all, in the context of “AI +”, how can physical education teachers complement AI tools? Secondly, how does digital technology reshape the traditional physical education classroom model? In addition, there is no doubt that digitalization plays a huge role in promoting the efficiency of physical education teaching. Then, how to safeguard the ontological value of physical education for moral and intellectual cultivation while pursuing efficiency and technological application ?

3. Synergy Mechanism of Digital Technology in Physical Education Teaching

In the digital transformation of college physical education teaching, digital technology should be synergized with teachers' pedagogical knowledge, students' learning and the school's management logic.

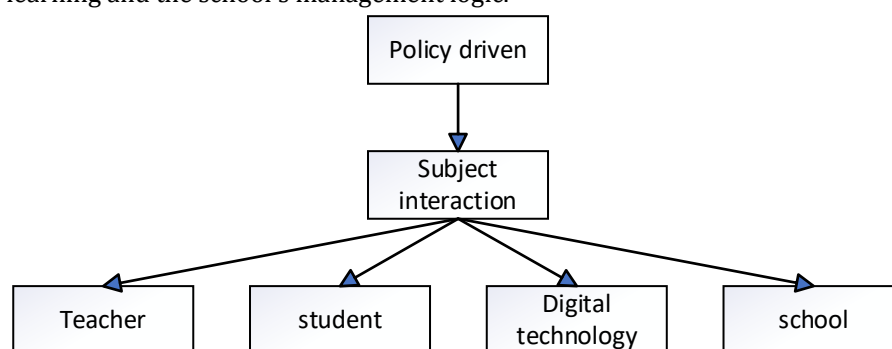


Figure 1. Framework of Digital Synergy Mechanism in Physical Education Teaching

Figure 1 clearly demonstrates the core logic that with policies as the core driving force, the linkage relationship among the four core subjects of teachers, students, digital technology and schools ultimately promotes the construction of a new digital ecology of college physical education teaching. Among them, relevant policies have clarified the synergy direction of subject interaction by formulating standards and norms for college physical education digital teaching, providing institutional basis and resource support for the linkage. Secondly, as implementers of digital teaching, teachers rely on digital technology to develop and design personalized teaching plans; as learning subjects, students complete independent learning and feedback evaluation through digital platforms; schools assume the functions of platform construction, teacher training and resource integration, so as to achieve accurate matching between digital technology and the teaching needs of teachers and students. In addition, the feedback data of college physical education teaching under the digital background can be fed back to policy makers to continuously promote the optimization of policies and the improvement of teachers' teaching ability. Finally, driven by policies, through the interaction of the subject linkage layer and the

optimization of data feedback, the digital technology synergy mechanism in college physical education teaching is jointly shaped.

4. Value Embodiment of Digital Empowerment in College Physical Education Teaching

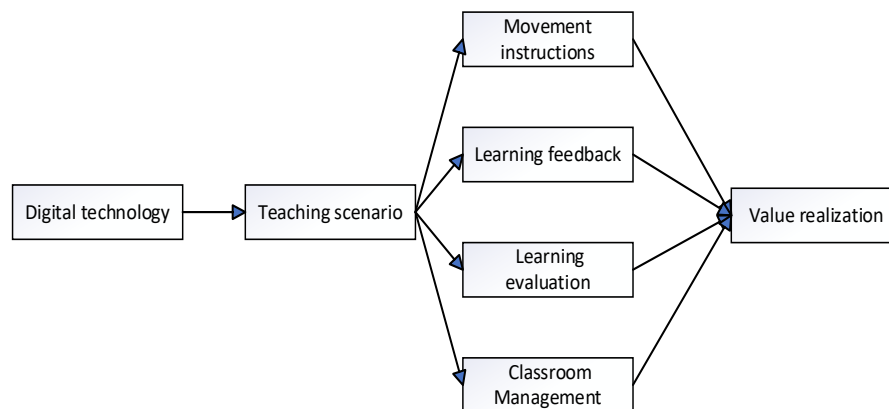


Figure 2. Value Embodiment of Digital Empowerment in College Physical Education Teaching

Artificial intelligence promotes the liberalization of physical education fields, modernization of evaluation, personalization of programs, intellectualization of management, and reduction of risks in processes, which points to the value of artificial intelligence integrated into physical education[2]. Specifically in college physical education teaching, digital technology has multi-dimensional application scenarios. In terms of movement guidance, it can capture students' movement trajectories in real time and compare them with standard movements to improve the efficiency of skill acquisition. In terms of training feedback, it collects students' relevant physiological indicators or sports data to strengthen health promotion and avoid sports injuries. In terms of learning evaluation, it integrates process-oriented and summative data to ensure the fairness of teaching evaluation. In terms of classroom management, it realizes intelligent attendance checking to optimize classroom order and promote student-student collaboration. Its ultimate value is to promote the all-round development of students' motor skills, physical health, willpower and social adaptability.

5. Response to Ethical Risks

Some scholars have conducted research on the potential risks of artificial intelligence-empowered physical education assessment, and expressed concerns about privacy security disclosure and ethical misconduct in intelligent physical education assessment[3]. Therefore, it is necessary to attach great importance to the possible ethical risks in college physical education teaching, adhere to the principle of "ethics first and humanism-oriented", and address the possible ethical risks from four dimensions: system, technology, subject and culture. First of all, based on

college physical education teaching itself, issue ethical norms for the application of digital technology in college physical education teaching, clarify the collection principles such as “informed consent” for sports data, and define the boundaries of technology application for multiple scenarios. Secondly, promote algorithm transparency to avoid implicit biases caused by data limitations. In skill scoring, not only pay attention to the standardization of students' movements, but also consider multiple dimensions such as the progress of students; at the same time, set functions such as data anonymization to protect students' data privacy. In addition, it is necessary to strengthen the digital ethics literacy of teachers and students, integrate ethics education into courses and daily life, guide students to rationally view the evaluation results of digital technology, and jointly build an ethical supervision mechanism. Furthermore, digital technology should be integrated into cultural concepts. As relevant scholars have pointed out that the intervention of digital technology may challenge some traditional educational concepts, which will lead to the weakening of the humanistic value education of school physical education[4]. Therefore, we should establish the “education-oriented” orientation, incorporate the effect of ethical practice into the evaluation of teaching quality, and prevent technological alienation.

6. Measures to Promote the Sustainable Development of College Physical Education Teaching Empowered by Digital Technology

Some scholars have proposed promotion strategies for interdisciplinary thematic teaching of physical education and health integrated with artificial intelligence, including attaching great importance to the overall intelligent transformation of physical education and health teaching[5]; transforming the role orientation of teachers and students and highlighting the tool attribute of artificial intelligence; and the micro development directions mainly include computer vision technology, intelligent wearable devices, big data technology, etc[6]. Based on the above analysis, this study puts forward measures to promote the sustainable development of college physical education teaching empowered by digital technology, which are mainly reflected in three aspects: institutional support, cultivation of cultural soil and professional development guarantee.

6.1. Institutional Support Measures

There are differences in the specific conditions of each college, and the application of digital technology should be carried out according to the actual situation of each college, such as combining the characteristics of different programs in college physical education teaching. In addition, in terms of data security systems, it should be clarified that the collection and storage of students' sports data must obtain the informed consent of teachers and students; at the same time, an emergency response mechanism for data leakage should be established and the responsible

subject should be specified. In addition, a collaborative governance system involving multiple subjects should be established to ensure the scientificity and democracy of relevant decisions.

6.2. Cultivation of Cultural Soil

By creating a teaching culture integrating “technology + humanity”, strengthen teachers' concept of technology application based on “human-oriented” principle, avoid over-reliance on data evaluation while ignoring students' emotional experience. Especially in physical education classes, traditional teaching links such as face-to-face movement demonstration between teachers and students should be retained to ensure that technology empowerment and humanistic care promote each other. At the same time, it is necessary to cultivate students' digital sports literacy and autonomous learning ability, teach students methods for interpreting sports data, and encourage students to improve their ability to apply digital technology through independent exploration, so as to form a learning atmosphere of “making good use of technology and viewing data rationally”.

6.3. Professional Development Guarantee

First of all, build a stepped technical training system for teachers, ranging from basic operation of digital basics to guidance on personalized teaching plans and related academic research, so as to promote the two-way transformation of teaching practice and theoretical innovation. Meanwhile, establish an incentive and evaluation mechanism for teaching with digital technology to further encourage teachers to actively engage in the teaching reform of digital technology.

References

- [1] Yang Y. Connotative Characteristics, Development Dilemmas and Promotion Strategies of Physical Education Teaching in the Artificial Intelligence Era[J]. Sports Culture Guide, 2022 (09): 104-110.
- [2] Liu W, et al. Value Analysis, Realistic Examination and Approach Exploration of Integrating Artificial Intelligence into Physical Education[J]. Journal of Shenyang Sport University, 2023, 42(06): 61-67.
- [3] Zhang X M, et al. Application Scenarios, Potential Risks and Mitigation Strategies of Artificial Intelligence-empowered Physical Education Assessment[J]. Sports Science Research, 2024, 38(03): 38-49.
- [4] Zhao G, Xi Y. Breakthrough, Prospect and Concern: Reflections on the Intervention of AI Technology in School Physical Education[J]. Journal of Tianjin University of Sport, 2023, 38(03): 283-288.
- [5] Yin Z H, et al. Framework Construction and Promotion Strategies of Integrating Artificial Intelligence into Interdisciplinary Thematic Teaching of Physical Education and Health[J]. Journal of Chengdu Sport University, 2024, 50(05): 16-26.
- [6] Huo B, et al. Research Status and Development Direction of Key Technologies in the Field of Sports Artificial Intelligence[J]. Journal of Capital University of Physical Education and Sports, 2023, 35(03): 233-256.