WHIOCE PUBLISHING PTE. LTD.
PROVIDING
FIRST-CLASS SCIENTIFIC INFORMATION
FOR TOP SCHOLARS

2025 Volume 3, Issue 8
Contemporary Education Frontiers
ISSN (Online): 3029-1860 ISSN (Print): 3029-1879

# The Practice of Empowering Physical Education and Training in Colleges and Universities with Digital and Intelligent Technologies

**Yangbo Liu**
Zunyi Normal University, Zunyi 563006, Guizhou, China



**Abstract:** The deepening of strategic concepts such as a sports power and lifelong sports has put forward higher requirements for the optimization of physical education and teaching in colleges and universities. It is not only necessary to attach importance to the cultivation of students' physical health levels, but also to break through the limitations of traditional professional teaching models, and cultivate students' awareness of lifelong sports, innovative thinking, and comprehensive quality. digital and intelligent technologies provide a facilitating function for the optimization of physical education and training in colleges and universities. Relying on the data support, high interactivity, and personalized recommendation functions of digital and intelligent technologies, physical education resources can be expanded, and real-time monitoring and personalized recommendation of physical training can be promoted to enhance teaching effectiveness. This study will analyze the value of digital and intelligent technologies in empowering physical education and training in colleges and universities, explore its optimized practical paths, and contribute to the implementation of strategies such as building a sports power.

**Keywords:** Digital and intelligent technologies; Empowerment; "University"; Physical education and training; Practice

***Online publication:*** September 26, 2025

## 1. Introduction

Documents such as the "Outline of the Plan for Building an Education Powerhouse (2024–2035)" clearly state that it is necessary to "promote the construction of smart campuses, explore effective ways to empower large-scale individualized teaching and innovative teaching with digital and intelligent technologies, and proactively adapt to the transformation of learning methods". In particular, it is necessary to "explore an educational mechanism that integrates in-class and after-class collaboration, on-campus and off-campus integration, and online and offline fusion". Emphasize the enabling function of digital and intelligent technologies to promote educational and teaching innovation in disciplines or specialties. As a fundamental base for cultivating high-quality sports talents, college sports, under the in-depth implementation of strategies such as building a strong educational nation, emphasize relying on digital and intelligent technologies for data storage, transmission and sharing, as well as precise analysis and scalability of data, to innovate the model of college sports education and training, in order to enhance teaching efficiency and meet students' personalized and diversified sports training needs. However, in the current physical education teaching in colleges and universities under digital and intelligent

technologies, teachers still pay more attention to the perspective of digital and intelligent technologies empowering the innovation of educational methods, and pay insufficient attention to the optimization of physical training under digital and intelligent technologies, which affects the exertion of the functions of digital and intelligent technologies. How to expand the enabling functions of digital and intelligent technologies and optimize the optimization and innovation of physical education training practices in colleges and universities has received widespread attention.

## 2. The value of digital and intelligent technologies empowering physical education and training in colleges and universities

### 2.1. Supported by data, facilitate the personalized development of students' sports skills

Under the application of digital and intelligent technologies, the limitation of the "one-size-fits-all" approach in traditional college physical education and training has been effectively broken. Relying on the collection and analysis of multi-dimensional data, it helps to implement precise and personalized teaching. Due to differences in physical fitness, sports interests and habits among college students, their demands for physical education learning and training also vary. Teachers can use smart bracelets, motion sensors, questionnaires and other means to collect relevant data such as students' physical skill indicators, sports preferences, physical fitness foundation and training progress, and form a personalized sports profile for each student. With the support of these data, Teachers can formulate and recommend personalized and hierarchical physical education learning and training plans for students. For instance, they can recommend sports materials such as yoga and martial arts for students with poor physical fitness to enhance their physical fitness, and provide specialized skills materials for students of different sports majors, so as to facilitate the personalized development of students' sports skills [1].

Digital and intelligent technologies also provide students with a simulated training environment. Students can rely on AR, VR and other technologies to experience virtual scenes that are identical to real sports training environments in an immersive way. With the real-time recording, evaluation and feedback functions of digital and intelligent technologies, it helps students understand problems such as non-standard movements in their sports learning and training, and promptly correct and guide their sports skills. Facilitate the individualized development of students' sports skills. Moreover, digital and intelligent technologies also have the functions of online interaction and feedback. Students can use the platform to interact with classmates and teachers, promptly correct their learning problems, and promote their development.

### 2.2. Improve the teaching form and expand the time and space for physical education and training in colleges and universities

Under the application of digital and intelligent technologies, the venues for physical education and training in colleges and universities can be effectively expanded. This enables students to create an integrated online and offline teaching model in addition to traditional physical education classes, broadening their learning time and space. Students can access physical education learning and training resources anytime and anywhere, and rely on the online interaction and experience functions of digital and intelligent technologies Expand students' sports learning resources, broaden their horizons in sports training, and enhance their learning outcomes. Under the application of digital and intelligent technologies, the traditional model of relying solely on physical education teachers to conduct one-way skills guidance and physical education knowledge teaching has been changed. It has formed diversified interactive scenarios such as between teachers and students, among students, and between humans and machines. Teachers can use online discussions, live classroom broadcasts, and virtual situation creation to expand the interaction between teachers and students as well as among students in the process of physical education and training. Help students obtain timely answers regarding sports skills or competition tactics; Teachers can also organize students to be equipped with digital wearable tools, precisely analyze students' movement trajectories, force application states and other indicators, and rely on the feedback function of technology to correct students' training problems, thereby enhancing students' learning outcomes through efficient

interaction.

### 2.3. Promote resource sharing and advance the fairness of physical education and training in colleges and universities

The uneven distribution of educational resources has long been a major issue in China's education development. With the application of digital and intelligent technologies, a smart education platform can be relied on to promote the sharing of high-quality sports education resources, especially by integrating professional coaches' training guidance resources, high-quality sports courses, regional sports resources and other resources through the platform, so as to narrow the regional differences in resources. When teaching physical education in colleges and universities, live streaming platforms or smart online platforms can be relied upon. Coaches and experts from different sports fields can be invited to share professional sports skills training guidance with students through live lectures, special lectures and other means, allowing students to be exposed to higher-level sports knowledge. Physical education teachers from different universities can also record and share the process of teaching research and guidance. Through the sharing of diverse physical education teaching resources and the innovation of teaching plans, they can expand students' physical education learning and training resources. With the development of technology, virtual resource libraries can be created to help students obtain sports knowledge and training guidance in real time, enabling more students to access high-quality and diversified sports education and training materials, and promoting the implementation of the educational equity strategy [2].

## 3. The current situation of digital and intelligent technologies application in physical education and training in colleges and universities

### 3.1. Achievements made

Under the development of digitalization in education, colleges and universities have been actively carrying out digital reforms in physical education and training, especially by strengthening the allocation of digital educational tools and innovating teaching scenarios, and have achieved a series of referential digital education and training practice plans. Firstly, universities are actively strengthening the construction of digital teaching infrastructure. Especially under the construction of smart sports venues, universities are actively equipping AR, VR and related smart wearable devices, smart education platforms, sports vision analysis systems and other teaching tools, as well as related monitoring equipment and tools, providing important technical support for the digital transformation of sports education and training. Secondly, under the deepening of educational reform, various regions have actively organized diverse teaching and research activities, as well as subject research, to explore the digital teaching reform paths and plans for different majors. Guided by the strategy of building a sports power and others, college physical education teachers have also been actively exploring digital physical education teaching plans and have achieved a series of teaching results. And the research results were shared on the smart education platform, providing support for the digital transformation of physical education and training in colleges and universities. Finally, under the in-depth implementation of strategies such as building a sports power and lifelong sports, colleges and universities also attach great importance to the cultivation of students' sports skills and awareness of physical exercise. Especially by relying on sports tools and educational platforms, they promote resource integration and educational expansion, effectively building intelligent sports management scenarios and promoting the development of physical education teaching.

### 3.2. Existing teaching problems

Although certain research achievements and progress have been made in the digital reform of education, there are still many problems. Especially, there are differences in digital and intelligent technologies among regions and institutions of higher learning. Some economically developed regions and "Double First-Class" universities have achieved good results in the digital transformation of sports by leveraging their advantages in funds, human resources, and technology. They

have not only introduced more professional digital technologies and equipment but also actively carried out independent research and development of technologies and systems. It provides an important fundamental support for digital education and training in sports. Moreover, these universities have excellent teaching staff and abundant educational resources, which have also promoted the development of digital sports education and training in colleges and universities. However, some universities in economically backward areas have problems with incomplete technical tool provision and insufficient teaching staff. They mainly focus on digital education and training in basic sports such as ball games and track and field, which is difficult to meet students' interest and needs in sports.

# 4. The practical path of empowering college physical education and training with digital and intelligent technologies

## 4.1. Strengthen infrastructure construction

The complete configuration of digital and intelligent technologies equipment is the foundation for giving full play to its enabling function in the physical education and training of colleges and universities. Local government departments should play a leading role and provide support for the digital transformation of college sports venues. This can be achieved through policy guidance, investment in special funds, and encouraging colleges and universities to renovate sports venues through cooperation with public sports venues in society and investment in funds. At present, most colleges and universities are equipped with smart education platforms and some basic physical education teaching equipment. Colleges and universities can use special funds to equip intelligent monitoring devices, physical fitness testing devices, AR and VR, smart bracelets and other devices, providing support for physical education and training in colleges and universities, accurately collecting students' exercise data, and also providing support for teaching innovation. It should be noted that in order to achieve the sharing of teaching resources and equipment among universities, during the process of equipping digital devices, attention should be paid to the compatibility of the devices and the application efficiency of the devices should be improved.

The prevention of data security issues under digital and intelligent technologies is also of vital importance. Colleges and universities should optimize the construction of digital platforms, relying on firewalls, security protection tools, etc., to ensure the data security of sports digital platforms [3].

## 4.2. Pay attention to the transformation of digital resources

Sports education and training resources are also the foundation of teaching practice. Colleges and universities should actively strengthen the optimization and construction of sports digital resource libraries. They should not only attach importance to the collection of diverse sports education and training resources, but also rely on smart platforms to fully integrate teaching videos and simulation animations about sports knowledge, sports safety protection ideas, and sports skills related to different sports activities. It is also necessary to attach importance to the digital transformation of physical education and training materials within colleges and universities, integrating skills teaching videos, strategic discussion ideas, and rehabilitation activities for sports injuries in physical education teaching into the resource library to provide resources for students' autonomous learning and physical training. Moreover, with the deepening of cultural confidence and the strategy of building a sports power, emphasizing the development of regional sports education resources and promoting the transformation of characteristic sports resources, university teachers should actively develop traditional sports, ethnic sports, and emerging sports programs and courses, especially traditional sports such as martial arts and health qigong, or some universities in ethnic minority areas It is possible to actively introduce distinctive sports education and training resources, such as Mongolian wrestling, horseback riding, archery, etc., which can effectively expand sports education and training resources and meet students' diverse learning needs [4].

## 4.3. Innovate educational and training methods

With the support of digital and intelligent technologies, it helps to innovate the training methods of physical education in colleges and universities to enhance educational effectiveness.

(1) College physical education teaching can innovate classroom teaching models and rely on digital platforms to build an online and offline blended teaching system. First of all, online platforms can be used to share previewing resources of physical education courses with students before class, including basic movement methods, training techniques and related sports health knowledge of sports events, laying the foundation for classroom teaching. Secondly, in the classroom, teachers can, under the guidance of students' non-standard movements, organize students to practice their motor skills by referring to standardized movements and techniques through online platforms. They can also use technologies such as AR and VR to organize students to rely on the movement recognition and feedback of smart platforms to promptly correct their movement patterns and training techniques. Finally, after class, teachers can share with students the key and difficult points of sports events in class, as well as some wonderful videos of sports activities, to cultivate students' sports skills and lifelong sports awareness.

(2) College physical education teachers can utilize motion-sensing technology, virtual reality technology, etc., to provide students with diverse self-exercise activities. Students can make appointments for sports activities in smart sports venues through mobile phone apps, participate in the sports they are interested in through smart wearable devices, and rely on human-computer interaction Timely grasp of one's own data such as non-standard movements and physical indicators during sports can ensure students' sports safety and standardization while promoting their individualized development. Intelligent devices can also collect multi-dimensional data. By gathering students' physiological indicators such as heart rate and blood oxygen during exercise, as well as data on exercise norms and movement standards, they can build personalized exercise profiles for students, promote personalized training plans for them, and enhance the effectiveness of their sports learning and training.

(3) Colleges and universities should also play a supporting role in strategies such as school-enterprise cooperation and job, course, competition and certificate management. They should rely on digital and intelligent technologies to expand students' physical education learning and training activities. For instance, colleges and universities can enhance cooperation and exchanges with other institutions and communities, and organize cross-school sports competitions. Especially under the development of "village super schools", Football competitions can be organized between college students and village super league teams. While enhancing students' sports skills, these competitions can also cultivate students' lifelong sports awareness. Moreover, sports injuries are highly likely to occur during sports activities. Digital platforms can be utilized to establish partnerships with medical institutions and rehabilitation centers, inviting professional medical staff from these institutions to share knowledge and skills related to sports injuries with students. This will expand sports teaching resources and students' knowledge system for sports learning, thereby enhancing the effectiveness of students' sports learning and training [5].

## 4.4. Optimize the evaluation of physical education

Digital and intelligent technologies also provide significant support for the evaluation of physical education training. College physical education teachers should rely on the data processing and analysis functions of digital platforms to comprehensively summarize relevant data information such as students' physical indicators, sports activity data, and physical education learning achievements, and evaluate students' physical education learning achievements through comprehensive data collection. In response to the problems students encounter in terms of the standardization of movements, learning participation, and sports knowledge reserves, targeted improvement suggestions are provided to promote students' growth and development.

## 5. Conclusion

In conclusion, digital and intelligent technologies provide significant technical support for the optimization of physical education and training in colleges and universities. It can effectively expand physical education resources, innovate teaching models, and promote the personalized development of students' sports skills with diverse data resources. It can also stimulate students' motivation for physical exercise and promote the implementation of China's educational equity and sports power strategy. However, in the digital transformation practice of physical education and training in colleges and universities, there are still teaching problems caused by limitations such as technical tools and resources. Colleges and universities should actively develop the enabling functions of digital technologies, optimize the practical paths of physical education and training, and especially attach importance to the provision of digital physical education teaching equipment and tools, as well as the digital transformation of physical education resources, to provide support for teaching. And leverage the supporting power of diverse sports tools, expand the design of teaching activities, and then rely on the evaluation function to continuously improve the practical path of physical education and training in colleges and universities, promoting the cultivation of high-quality sports talents.

## Disclosure statement

The author declares no conflict of interest.

## References

[1] Zhang B, 2023, Sound, Rhyme and Emotion: Progressive Singing Teaching Practice. Qin Tong, 2023(4): 50–52.

[2] Zhao L, 2025, Research on the Construction of Progressive Curriculum System of "Hemei Folk Music"—Innovative Practice of School Art Education from the Perspective of Lide Shuren. Huaxia Teachers, 2025(7): 22–24.

[3] Ma Q, Li Y, 2025, The Application Strategy of Information Technology in Vocal Music Teaching—Taking Vocal Music Teaching Practice in Higher Vocational Colleges as an Example. Drama Monthly, 2025(2): 128–130.

[4] Chen Y, 2025, Digital Media Empowers the Construction of Characteristic Teaching Mode of Vocal Music Major in Colleges and Universities. Charming Hunan, 2025(2): 97–100.

[5] Ding X, 2024, Empowering the Practice and Evaluation of Music Education in Colleges and Universities to Build a "Music Brain". Art Grand View, 2024(21): 124–126.

[6] Cha J, 2020, Analysis of the Application of Digital Teaching Mode in Music Major Courses in Colleges and Universities. Daguan (Forum), 2020(5): 118–119.

[7] Li J, 2025, Research on the Innovative Application of Basic Vocal Music Courses from the Perspective of Artificial Intelligence. National Music, 2025(1): 95–97.

[8] Fan X, 2024, The Transformation Path of Digital Empowerment of Vocal Music Teaching in Colleges and Universities. Journal of Yuzhang Teachers College, 39(6): 90–94 + 116.

[9] Lee J, 2024, Technology Empowerment: A New Paradigm of Blended Teaching of Vocal Music in Colleges and Universities. Drama House, 2024(36): 125–127.

[10] Liu F, 2023, Analysis of Online and Offline Mixed Teaching Mode of College Vocal Music Class. Art Grand View, 2023(36): 112–114.