

Research on the Reform Path of College Physical Education in the Digital Age

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ABSTRACT

In the digital era, the development of information technology has promoted the in-depth development of physical education in terms of contemporaneity and personalization, and greatly improved the efficiency of resource integration, which has injected powerful motivations into the innovation of teaching modes. From the perspective of digital transformation, this study deeply discusses the application value of digital technology in college physical education reform, and analyzes how to promote the realization of personalized teaching and efficient integration of resources. In the face of the practical problems in current physical education, this paper puts forward specific improvement strategies to promote the deep integration of teaching and technology. According to the research, the application of data analysis technology can accurately identify the diverse needs of students, the construction of smart sports platforms brings a new experience for classroom interactions, and the introduction of virtual reality technology also provides a broad space for the enrichment and innovation of teaching methods.

KEYWORDS

digital transformation; physical education reform; colleges and universities; empowerment

The wave of digital transformation has swept across various fields, and profoundly changed the way of production and life. As a key platform for talent cultivation, higher education is facing new challenges and opportunities brought by digitization. As an important part of cultivating students' physical fitness and healthy life concept, the teaching mode of college physical education urgently needs to adapt to the development of the digital age. Therefore, how to use digital technology to promote the personalization and efficiency of physical education is a problem that universities need to explore deeply. From the digital perspective, this study will analyze the practical application value and specific paths of digital technology in college physical education, so as to help colleges and universities meet the diversified sports needs of contemporary students.

1 The Value of Digitization Empowering the Reform of Physical Education in Colleges and Universities

1.1 Promote the Contemporaneity and Personalization of College Physical Education

With the intervention of digitization, physical education in colleges and universities presents an innovative trend of combining diversity and intelligence, which accurately fits the diversified

learning needs of contemporary students. The changes brought by digital technology makes physical education jump out of the traditional mode and stride towards the direction of personalization and adaptability. Through big data analysis, artificial intelligence and other technical tools, teachers can analyze individual characteristics and preferences of students in detail to build more targeted teaching programs. Moreover, course content, teaching forms and training intensity can also be dynamically adjusted according to different students' needs, thus forming a self-adapting teaching mode, and promoting the individualized development of teaching.

In addition, digitization also breaks the time and space limitations of college physical education and extends the boundary of the classroom. The application of online platforms and intelligent devices enables students to have access to rich teaching resources and practice content at any time^[1]. At the same time, colleges and universities release physical education course videos, technical guidance and other resources through digital platforms, so that students can consult them at any time according to their personal circumstances, and expand the space for independent learning. At the same time, students can use digital feedback to understand their own sports performance and get instant feedback, so as to achieve more precise self-regulation and personalized learning.

1.2 Promote the Efficient Integration of Physical Education Resources in Colleges and Universities

With digital empowerment, the integration of physical education resources in colleges and universities is accelerated, which effectively alleviates the dilemma of resource dispersion and reuse. In the traditional mode, teaching resources are often limited by time and space, and they are difficult to be flexibly allocated among multiple courses and various activities. With the support of digital technology, colleges and universities can build resource sharing platforms, centrally manage course videos, teaching materials, equipment, etc., and create systematic digital resource libraries. It improves the flexibility of resource use, avoids unnecessary waste and repeated investment, and greatly enhances the collaborative efficiency of resources.

The digital integration of resources also breaks through the internal boundaries of colleges and universities and promotes the openness and circulation of cross-university resources. With the help of digital platforms, different colleges and universities can realize the sharing of characteristic resources, so that students can have access to more diversified physical education courses and watch various teaching videos, thus breaking through the previous resource barriers among colleges and universities^[2]. This mode of resource sharing enriches the learning content for students and optimizes the management of teaching resources. The construction of digital platforms makes the allocation and scheduling of resources such as venues and equipment more efficient, and the resources can be reasonably allocated according to the needs of different courses and activities. Through the digital and efficient integration, the utilization rate of physical education resources in colleges and universities has been significantly improved, which gives more practical support to teaching reform.

2 Reform Strategies of Physical Education in Colleges and Universities under the Background of Digital Transformation

2.1 Use Data Analysis Technology to Accurately Locate Students' Sports Needs

In the reform strategies of physical education in colleges and universities empowered by digitization, the key path to realize personalized teaching is to accurately locate students' sports

needs through data analysis technology. Colleges and universities should build a big data system for students' sports to comprehensively collect and store multi-level data such as the physical fitness, sports interests and sports skills of students. The application of smart wearables and health monitoring tools enables real-time collections of students' physiological data during exercise, such as heart rate, body temperature, exercise intensity, etc., so as to gradually establish health records of students. If these data are compared with semester physical tests, daily sports records, and historical scores, a complete data link can be formed to provide solid data support for subsequent data analysis.

On the basis of data collection, data mining and analysis techniques can further reveal the individual and group needs of students. By means of cluster analysis and regression analysis, the changing trend of students' physical fitness and the preference distribution of their sports interests can be interpreted, so that college physical education teachers can gain insight into the differences and dynamic changes of students' preference in the selection of various sports events. In the analysis process, teachers can also generate targeted demand reports according to different group attributes such as grade, gender, and professional background to provide data support for the formulation of teaching plans and course design^[3].

In order to ensure the dynamic update and efficient use of data, universities also need to build a data feedback and optimization mechanism. The intelligent system feeds back the students' sports performance data in real time, so that teachers can grasp the students' learning situation at any time, and then adjust the teaching strategy quickly. In addition, colleges and universities can set up a "weekly data report" mechanism, regularly generate student movement data reports and feedback to teachers, which becomes an important basis for teachers to develop personalized teaching programs.

2.2 Build a Smart Sports Platform to Enhance the Interactive Experience of Teaching

The construction of smart sports platforms is an important strategy for the reform of college physical education empowered by digitization. Relying on technologies such as artificial intelligence, big data and cloud computing, colleges and universities can create a comprehensive platform integrating information release, course management, data analysis and teaching interaction to provide all-round support for different users. In the specific construction, the intelligent platform is divided into the teacher side, the student side and the management side to meet the different needs of all parties. The teacher side is used for course publishing, data analysis and online guidance. The student side supports the functions of learning tasks, sports punching and online interaction. The management side focuses on data management, resource allocation and monitoring and evaluation. This platform provides a systematic interactive tool, which greatly optimizes the management and service process of physical education.

The construction of the platform needs to integrate the existing sports resources of colleges and universities, upload teaching videos, professional courses, training plans and other content uniformly, and form an open course library for students to learn by themselves^[4]. In addition, the integration of intelligent interactive functions is also crucial. Online question-answering, real-time feedback and other mechanisms enhance the sense of participation in class, and greatly improve the learning experience of students. In order to further enhance the personalized experience, colleges and universities can set up the accurate push module to recommend suitable courses and training projects according to students' sports interests and course needs, so that students can choose more freely. The social module of the platform provides a space for students to communicate, so that students can share their sports experience, discuss training experience, and create a positive atmosphere for mutual help and progress. The real-time monitoring and visual

display functions of the smart sports platform can provide immediate feedback to students. After completing a course or training, the system will automatically generate the real-time sports performance analysis and visually present it in the form of charts, which helps the teaching to be more flexible and energetic, and meets the multi-dimensional needs of modern college physical education.

2.3 Introduce Virtual Reality Technology to Enrich the Forms of Physical Education

In the process of digitization empowering physical education in colleges and universities, the introduction of virtual reality technology has greatly expanded the teaching content and form, and added a rich dimension to physical education curriculum. Colleges and universities can integrate VR technology into various physical education courses by purchasing virtual reality equipment and developing exclusive teaching software. Colleges and universities should design virtual scenarios such as rock climbing, swimming and skiing according to the characteristics of different sports courses, which are often subject to site or safety restrictions. Through the VR simulation, students can truly experience the core skills and operational points of these sports in a virtual environment, which breaks the limitations of space and equipment. In addition, basic physical training can also be designed in a variety of forms with VR, so that students can explore different training methods in a virtual environment full of fun and enhance their learning experience.

In order to ensure the effective application of VR technology in teaching, colleges and universities can set up “virtual practice courses” and systematically incorporate VR equipment into the curriculum. In virtual practice courses, students can enrich their learning experience by taking turns to use VR devices for project learning. In this process, teachers should use the real-time monitoring and interactive functions of VR to guide online and correct the misunderstandings of students in operation. In addition, VR experience courses can also be used as an auxiliary way of regular physical education. For example, after students have mastered some basic skills, they use VR scenes to practice and consolidate, and teachers understand students’ performance in the virtual environment through the data in the system to provide targeted guidance to students.

In order to give full play to the value of VR technology, colleges and universities can also plan virtual competitive activities, such as virtual competitions, team confrontation, etc., which can bring students simulation competitive experiences and greatly stimulate students’ interest in learning. Such virtual competitive activities can also be integrated into the health education module, such as simulated first-aid operation or sports injury treatment in virtual scenes, so as to form a learning model that combines education with entertainment. In the late application stage of VR teaching, colleges and universities can constantly update the content of virtual courses and optimize the teaching effect of virtual reality based on student feedback, to make it meet the learning needs and technological progress of students.

3 Conclusion

Digitization has opened up a new development path for the reform of college physical education. The introduction of digital tools such as data analysis, intelligent platform construction and virtual reality technology has met the diversified learning needs of students, enhanced the interactive quality and interest of teaching process, and significantly improved the teaching effect. Driven by digitization, physical education in colleges and universities is moving steadily towards the direction of intelligence, openness and high efficiency. This transformation process has accumulated valuable practical experience for the innovation of education mode in the digital age. Looking forward to the future, physical education in colleges and universities should further strengthen the

application of digital means to promote the deeper transformation and development of physical education.

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