The Integration of Information Technology and Physical Education Professional Course Teaching in Colleges and Universities: Technology Empowers Modern Sports

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Abstract: This paper adopts the literature data method, content analysis method and logical induction method. This paper analyzes the application of information technology in universities. To summarize the problems existing in the application of information technology in physical education teachers, it is concluded that modern information technology is an effective auxiliary means of physical education professional course teaching in colleges and universities. The application of modern information technology has changed the learning style of college PE students and enhanced their interest in learning. The teaching of physical education in universities is the embodiment of teachers' information technology literacy, physical education knowledge and teaching organization and management ability. Modern information technology has increased the inclusiveness of professional physical education course teaching in colleges and universities. The application of modern information technology in the teaching of college physical education specialized courses should adhere to the principle of moderation.

Keywords: Information technology; University; Physical education professional course teaching; Integration; Technology empowerment

1. Introduction

In July 2016, the General Office of the Communist Party of China and the General Office of the State Council issued the "Outline of the National Informatization Development Strategy," which pointed out that enhancing the development capacity, improving the application level and optimizing the development environment are the three strategic tasks of the national informatization development [1]. In the 2018 Education Informatization 2.0 Action Plan, it is pointed out that the rapid development of artificial intelligence, big data, blockchain and other technologies will profoundly change the demand for talent and the form of education. The proposal of this action

plan shows that China's education informatization has entered a new stage of development, aiming to promote the deep integration of information technology and education and teaching, and finally realize the modernization transformation of education [2]. Colleges should actively promote the "Internet + education," adhere to the new concept of the deep integration of information technology and education, proposing the progress and innovation of education and teaching under the support of high and new technology.

With the advent of the era of information technology, the rapid development of the Internet, and the popularity of computers, information has become the goal of various industries. School information construction and application has also become an important indicator of whether a school has sustainable development sustainability. As part of higher education sports professional teaching also supports modern information technology, realizes the multimedia, networking, sports equipment, and venues, intelligence, better solves the problems encountered in the sports professional education teaching, enhances the level of professional teaching, forms conducive to the comprehensive development of information technology application environment.

This paper analyzes the application of modern information technology in college PE course teaching and discusses the problems existing in this area. Its purpose is to better serve modern information technology teaching, promote the digital transformation of college education teaching, and provide theoretical references.

2. Application analysis of modern information technology in college physical education professional course teaching

2.1. Multimedia teaching

2.1.1. Application of physical education theory course

The detailed and vivid PPT is the most basic application in the physical education theory course. In the fully equipped multimedia classroom, video teaching is a great advantage. Putting the video in the introduction part of the class will lead the class. For example, in the topic "Impact Factors of Social Sports," the wonderful video clip from the film "Wrestling, Dad" will make students feel the influence of family on a person's sports behavior. Information technology has changed the form of physical education theory course teaching, physical education teachers can present difficult knowledge vividly and intuitively through pictures, simulation, real scene display, technical skills video, interactive teaching video, etc., so that the teaching focus and difficult points to solve become easy.

Under the context of ideological and political education in the country, the multimedia video will encourage the students by playing the national anthem and raising the five-star red flag, and cultivating good sports emotion, play video clips of sports stars to stimulate students' appreciation and love for sports. In short, a variety of sports activities let students feel the spirit of sports, the beauty and happiness of sports, cultivate students not afraid of difficulties, and the spirit of struggle [3]. In addition, the perfect sound effect of the multimedia classroom speakers enhances the students 'interest in learning and also protects the teacher's voice. Mobile speakers and ears can be convenient for teachers to walk off the platform to interact with students more, but also the savior of physical skills course teachers, such as aerobics, and sports dance class teachers.

2.1.2. Application of physical education skills courses

The theoretical class hours of physical skills courses are very limited, and multimedia teaching can effectively help teachers achieve their teaching goals. Because video has vivid, coherent and interactive elements, it is especially suitable for explaining sports techniques and tactics. If the teacher summarizes the key and difficult

points of the skill learning of a certain sports project in a semester and the easy error points existing in the normal teaching. Then, through the theoretical class hours, and combined with modern information technology, the sports major students for a comprehensive and systematic knowledge explanation. For example, in the skill course, teachers will play some technical action demonstration and explanation videos of professional coaches, competition training of professional athletes, and technical action analysis videos of professional athletes, so that students can have a more intuitive and in-depth understanding of sports skills and tactics. These video data resources more clearly and intuitively display sports standard movements, so that teachers can better teach students [4]. In addition, the use of 3D animation software to show the details and essentials of movement technology movements, can deepen students' understanding of movement technology movements, and a more comprehensive and detailed understanding of the subtle process needed to complete the actual technical action. In this way, students' sports skills courses will be greatly improved.

2.2. Online teaching platform and resource sharing

2.2.1. Sports online teaching platform

The sports online teaching platform and sports network courses built with modern information technology provide supplementary learning opportunities for sports majors who miss classes due to competitions or training [5]. With the help of information technology, remote teaching and cross-regional interaction can be achieved, and well-known coaches from home and abroad can be invited to teach and guide remotely. Artificial intelligence technology provides support for computers to understand and generate natural language. Classroom teaching in a multicultural context can effectively promote human-computer interaction through means such as speech recognition and machine translation. Using video conferencing platforms, teachers can remotely guide and train athletes, thereby further breaking through geographical restrictions.

Wu Yan, Vice Minister of the Ministry of Education, once predicted that blended teaching would become the new normal for higher education in the future. Flipped classroom, as a form of blended teaching, allows students to use online resources (such as massive open online courses, MOOCs) for self-study before class, thus achieving an effective connection between online and offline. Students can watch teaching videos for self-study after class, and discuss and practice the content they do not understand in class, thereby deepening their grasp of knowledge and gaining more opportunities for interactive communication with teachers. It can be seen that blended teaching helps to optimize the learning methods of sports theory knowledge and sports skills and meet the in-depth learning needs of sports majors [6].

As a virtual learning environment that simulates traditional classrooms, online teaching platforms are designed for educational activities. The platform places teachers and students in the same virtual space, enabling participation in virtual lectures, training or teaching activities under different time and space conditions through the Internet, thereby promoting cooperation and learning on a global scale. In special periods (such as epidemics or students staying at home due to illness), online teaching can ensure the continuity of learning and ensure uninterrupted physical education.

2.2.2. Sports learning resources sharing

The sports learning resources on the network are huge, which creates a good learning environment for the professional learning of the sports major students and can improve the students' innovation ability [7]. Physical education teachers share teaching videos, courseware, articles, practice plans, training guidance and research reports on the teaching platform to facilitate students to download learning and promote the efficient use and

communication of resources. Through the independent learning of the online learning platform, college students participate in simulation exercises and discussions and obtain certificates or credits, which improve their active inquiry ability in learning. Some learning platforms can also gather information as each student completes their assignment and advise teachers for improvement. Through information technology, teaching resource sharing can be realized and communication and cooperation between different universities can be promoted. Organize joint training projects, and use information technology to carry out cross-campus or cross-department sports training and teaching activities. For example, students majoring in social sports are jointly trained by the physical education teaching department of colleges and universities and social fitness and leisure enterprises.

2.3. Real-time interactive cooperation and online teaching management system
2.3.1. Real-time interactive cooperation
Use tools such as interactive whiteboards to enhance classroom interaction and promote the interaction and cooperation between students and teachers and students. Teachers can use the video conference platform to conduct online interactive teaching, answer questions in time, and enhance the real-time interaction between teachers and students. At the same time, an online discussion area is set up for students to communicate and discuss the course content and training issues to enhance the interactivity of learning. Teachers can also use information technology to conduct virtual team cooperation training to cultivate students' teamwork ability and coordination abilities.

2.3.2. Online teaching management system
Physical education teachers in colleges and universities can use the online system to manage course arrangement, class attendance, class video, score record, examination paper and homework archiving, student performance evaluation, etc., to improve the efficiency of teaching management. At the same time, teachers can establish specific personal e-learning files for professional students to record their learning performance, advantages and disadvantages, and professional development. In physical skills courses, teachers can also establish health records of professional students, record and analyze long-term health data, and facilitate teachers to conduct personalized training and follow-up guidance. In addition, artificial intelligence technology in information technology can also automatically and accurately carry out many repetitive physical education teaching tasks.

2.4. Data analysis and evaluation and feedback
Artificial intelligence technology collects and analyzes the teaching data of physical education theory courses, evaluates the teaching effect, helps teachers to find the problems in teaching, timely adjusts the teaching strategies and methods, and improves the teaching quality. Artificial intelligence technology can also process and analyze a large amount of student sports data, helping physical skills course teachers to extract valuable information and discovery from the data. For example, smart devices and wearable technology play an important role in physical education teaching. Sports professional skills teaching in colleges and universities can use health and exercise, trackers, heart rate monitors, smartwatches and other wearable devices real-time monitor students' movement data, such as heart rate, steps, pace, speed, distance, calorie consumption, etc., to help students to monitor exercise, heart rate, physiological indicators such as heart rate [8]. Through the special data analysis software, the collected teaching data of skills courses is sorted out and analyzed, to help teachers find out the potential problems in teaching and understand the students' physical condition and training effect. The artificial intelligence system can also make a comprehensive assessment of students' physical education performance

and physical performance according to the objective evaluation system, to help teachers make better decisions in a complex teaching environment and put forward scientific and personalized teaching content and training suggestions.

Teachers of college physical education courses use intelligent software to design personalized training plans and track the progress of students, help them better achieve sports goals, and constantly improve training plans and methods. Smart devices and applications can also monitor athletes' sleep quality, physical conditions and other health conditions, help to cultivate students' health awareness, and assist physical education teachers to optimize training programs. PE teachers in universities can use big data technology to analyze sports data and find new rules and trends. In addition, through computer simulation and simulation technology, compare the effects of different training methods and competition strategies, and optimize the teaching and training strategies of sports professional skills courses.

2.5. Sports intelligent equipment, software and technical assistance
2.5.1. Sports intelligent equipment and software
The continuous development of information technology has promoted the research and development of various new sports equipment and software. The applications of smart devices and software can provide individualized teaching and training programs and feedback, for example, using intelligent equipment in the teaching of physical education majors, the monitoring of the students' physiological indicators in real-time, such as heart rate, blood oxygen level, body temperature, etc. Prevention of sports injuries and overtraining introduces an intelligent teaching system, based on the study data of professional students, and provides personalized learning advice and feedback. A smart basketball with built-in sensors can record the number of shots, the percentage and other data, helping students and teachers to analyze shooting skills. Smart running shoes equipped with sensors can record running data such as stride frequency and stride length and can provide a detailed running analysis report. The real-time score system for professional basketball courts can understand the progress and results of the teaching competition, and improve the transparency and enjoyment of the competition. Advanced recovery technology and equipment promote physical recovery in athletes, improve the training results, such as cryotherapy and ultrasound technology, and develop targeted personal training plans for students based on physical fitness data to improve training results. The application of these intelligent training equipment and software in the teaching of physical education in colleges and universities improves the scientificity and effect of physical education in colleges and universities.

2.5.2. Image and video analysis and other technical assistance
In the teaching of physical education skills courses, safety is always emphasized first. Computer vision technology enables artificial intelligence to analyze and understand image and video content, which can be used for sports safety monitoring, sports image analysis, etc. In the physical skills course, the technical movements with strong continuity and many movement essentials are the difficult points in teaching, such as in the teaching of three-step layup, teachers have a limited number of movements and cannot always stay at a certain action point, but the video can do it. In addition, with video combined with motion analysis software, teachers can accurately and carefully analyze the technical action in the completion of each link.

In addition, physical education teachers can record and analyze the sports performance of professional students through cameras, image recognition technology and video analysis software, and provide detailed motion analysis reports and suggestions for improvement. At the same time, the teachers use video playback

and analysis software, to help students understand the skills and tactics and find their problems. Using the voice assistant, students can get guidance and suggestions at any time during the training process to improve the training effect.

2.6. Virtual reality and augmented reality technology

Information technology provides virtual reality and augmented reality tools. Using VR headsets in physical education teaching, students can use virtual reality simulation to simulate the actual game scene, so that students can carry out practical skills training in an immersive environment, such as a virtual football field, basketball court, etc., which is helpful to improve students' ability of decision-making and dealing with complex problems in the game [8]. Using motion simulation software for technical training and tactical drills, students can practice repeatedly in a simulated training environment to reduce the risk of injury. Use AR or VR to create virtual sports venues and conduct tactical drills to help students better understand and execute tactics and improve synergies.

In a simulation environment, students experience game pressure and repeatedly practice sports skills, such as basketball shooting, to finely adjust their movements. Students can also use simulation techniques to simulate injury scenarios, helping medical teams train first aid skills for unexpected accidents that may occur during exercise. VR can provide an immersive learning experience, allowing students to learn the movement essentials and skills more intuitively. Using AR technology, digital information is superimposed in a real environment, such as displaying the real-time speed and pace data of runners on the track and field. Using AR technology, virtual guidance information can be superimposed in a real environment to help students better understand and master the essentials of movements, and realize interactive teaching between teachers and students. For example, it can guide students' movements in real-time through AR glasses.

2.7. Electronic sports teaching games

Electronic teaching games are one of the ways that teachers use to interact with students. It is also an important part of information technology and an important tool of physical education teaching [9]. They combine entertaining, educational, and online assessment and feedback functions to motivate students to enjoy and engage in learning. We know that sports originated from games, so the gamification elements are very suitable for teaching sports concepts, techniques and tactics, competition rules, simulating the competition field, etc. For example, it can help students to practice and improve sports skills, such as football and basketball, show and discuss and analyze, and teach the rules of sports through entertainment, which is easier for students to understand and master. Therefore, physical education teaching games not only effectively increase students' professional knowledge in a relaxed environment, but also increase their interest in classroom teaching [10].

3. Problems and difficulties in the application of information technology in physical education professional course teaching in universities

3.1. Lack of advanced sports professional information technology equipment and software

Some colleges and universities do not pay enough attention to the construction of hybrid courses [11]. At the same time, the lack of funds leads to the lack of sports information technology hardware facilities in some universities, and the poor management and maintenance of information technology equipment and systems, which makes some modern information technology cannot be applied in the teaching of physical education in colleges and universities. In the face of such a reality, the school cannot well meet the actual teaching needs of teachers. Only

when physical education teachers can apply the advanced physical education information technology equipment with high practical value, can they apply the new teaching media, teaching mode and teaching methods to the teaching of physical education professional courses.

The application of information technology is also inseparable from computer software, and the lack of auxiliary software related to physical education is also one of the important reasons for the teaching optimization of teachers in front-line physical education courses. Compared with the theoretical courses, physical education skills courses lack the support of physical education information technology software. Therefore, colleges and universities should pay attention to strengthening the cooperation and exchange between experts of physical education and computer software companies through multiple channels to promote the improvement and development of auxiliary software related to physical education.

3.2. Poor compatibility of IT equipment and software and inadequate data protection measures

Equipment and software of different manufacturers may have compatibility problems, which may affect the integration and use of data. Information systems and equipment may fail or be unstable, which will affect the smooth progress of teaching and training. When applying information technology equipment, the personal data of students and teachers may be at risk of being leaked, and enhanced data protection measures are needed. In the process of physical education teaching sports data collection, attention should be paid to balancing the teaching needs with the protection of personal privacy.

3.3. Less application of video technology such as teaching movies and television

At present, the application of information technology in the teaching of college physical education specialized courses is not balanced enough. Since the 21st century, the application of information technology in the teaching of physical education in universities has mushroomed. Due to the lack of teaching resources, low information technology literacy and teachers' resistance to innovative teaching methods, compared with the application of multimedia computers, teachers of physical education courses in colleges and universities pay less attention to and application of video technologies such as film and television. Video technologies such as film and TV can fully record the whole process of sports and competition and show the slow motion of sports technology, or even suspend a certain sports moment, which is a valuable teaching resource for the teaching of sports professional courses. It can be said that it is the perfect technical assistant of physical education professional teachers, which can well assist teachers in completing the goal of physical education teaching.

3.4. Online examinations are not common in semester examinations

The final examination time in colleges and universities is often more concentrated, and the final examination of four grades of physical education major is generally completed efficiently within two weeks. Due to the shortage of classrooms, conflicts occur from time to time in the examination arrangement of college students of all grades. The time of the two exams is very close, especially some students who make up multiple courses at the same time cannot complete the make-up exam. The combination of online examination forms and traditional examination forms can be a good solution to this problem. However, if online exams for a course are used simultaneously, teachers will face almost twice as much work when archiving their teaching files, so they are generally reluctant to adopt them. Therefore, the teaching department should further improve the accounting of the specific workload of different teaching.

3.5. Low skills in managing teaching information online

With the emphasis on the comprehensive development and comprehensive evaluation of students in the field of education, modern physical education teaching more and more embodies the student-centered concept [12]. In the course assessment, the proportion of the process assessment and the final assessment account for half respectively, and the process evaluation in some schools even exceeds half. The archiving of raw materials by traditional methods is cumbersome and cumbersome, and sometimes at risk of not being found or lost. At this point, the online management of teaching-related files is a better method.

3.6. Little information technology training about physical education professional

The pre-service training of teachers in colleges and universities includes information technology training, but there is less information technology training for sports majors. Some physical education teachers think that the traditional physical education teaching mode is the best, unwilling to try or difficult to accept the application of information technology in teaching, the awareness of the application of information technology is weak [13]. Sports professional skills courses are mostly in the form of outdoor practice training. In addition, universities' investment in teaching information technology is mainly in multimedia classrooms, while the investment in relatively professional sports intelligent equipment and software is insufficient, which also affects the enthusiasm of sports professional skills course teachers to apply information technology. In addition, some students are not skilled in the operation of new sports information technology and equipment, which affects the effect of learning. Due to the different family economic conditions and living environment of students, it may lead to the gap in the use of information equipment and network, and affect the fairness of students' learning.

3.7. The investment and maintenance costs of sports information technology equipment are high, and the management system of information technology application is imperfect

Technology is updated rapidly and requires constant investment to maintain equipment and systems. The purchase, maintenance and upgrading of sports professional information technology equipment and systems require a large amount of capital investment, which increases the financial burden of universities. The information technology training for relevant teachers requires manpower and financial resources, which increases the operation cost of universities. Student training and tutoring for new technologies also need certain resources and time. At the same time, universities need more perfect systems and standards in the management of information technology applications.

4. Conclusion
4.1. Modern information technology is an effective auxiliary means for the teaching of physical education professional courses in colleges and universities

Because multimedia technology can provide rich teaching resources and interactivity, multimedia classrooms have been more popular in the physical education system of colleges and universities, such as computer, projector, and multimedia audio equipment are more comprehensive [14]. The integration of modern information technology and physical education professional courses in colleges and universities also reflects the new idea of the new curriculum standard, which is the inevitable trend of teaching reform. In actual physical education teaching, make full use of information technology to optimize the physical education teaching, so that the teaching is comprehensive, intelligent and informative, is conducive to professional students to better understand

the theoretical knowledge and sports technology action, is also a beneficial way to improve the quality of physical education teaching.

4.2. The application of modern information technology has changed the learning style of college sports students and enhanced their learning interest

The application of modern information technology in physical education courses in colleges and universities has greatly improved the initiative of physical education students in learning and training, enriched their imagination and creativity, and further enhanced their interest in learning physical education courses, thus achieving the fundamental goal of improving the quality of professional talent training in physical education teaching in colleges and universities.

4.3. Teaching of physical education professional courses in colleges and universities in the embodiment of teachers' information technology literacy, physical education knowledge and teaching organization and management ability

In the information age, teachers of physical education in colleges and universities should not only master physical education knowledge, but also rationally use educational information technology, and have a strong ability to screen the network resources of physical education teaching and engage in online teaching. Through teaching design, teachers use different modern information technology to properly organize and arrange the teaching content, create a novel, vivid, scientific reasonable, good interactive teaching situation, and achieve the goal of teaching.

4.4. Modern information technology increases the inclusiveness of physical education teaching in colleges and universities

The development of educational information technology enables fixed physical education materials to adapt to students from different regions, different schools, different teachers, and different talents. Students have a more detailed and comprehensive platform or opportunity to receive sports guidance, which is conducive to personalized learning and real-time feedback. Students enjoy the great benefits of acquiring sports knowledge so that the underachievers in sports majors have the opportunity to reverse attack. In addition, the application of information technology in the teaching of physical education professional courses also provides more time choices for the learning and training of physical education majors.

4.5. The application of modern information technology in the teaching of physical education professional courses in universities should adhere to the principle of moderation

Information technology has brought great benefits to the transfer of professional knowledge to students. It has replaced some teaching work of teachers in many aspects, but teachers should adhere to the principle of moderation and cannot replace the traditional physical education teaching means. The teachers of specialized courses are not only scholars who impart sports knowledge but also selfless helpers who guide students to learn interest, acquire and master sports knowledge and skills. To better guide and help students, we can not deify the role of information technology in the teaching of modern physical education professional courses, but should better play the leading role of teachers according to the actual situation of professional students. In the teaching of physical education, teachers should deal with the relationship between technology and humanities, dare to shoulder the sacred mission of leading students to form a lifelong interest in learning, patiently help students

build their professional cognitive knowledge structure, and promote the promotion of sports professional quality. In short, the relationship between modern information technology and the teaching of physical education courses in colleges and universities is close and mutually reinforcing, and the application of physical education teaching in colleges and universities has become an important part of modern education. Modern information technology has promoted the enrichment and diversification of teaching content of physical education courses in colleges and universities, the modernization and innovation of teaching methods, the scientific nature of classroom teaching and training competition, the optimization of teaching management, improved interaction, cooperation and learning experience of students, and replaced part of the teaching labor of physical education courses teachers in colleges and universities. Therefore, the joint efforts of the government, schools, teachers and students need to promote the informatization and modernization of physical education teaching in colleges and universities in China [15].

Disclosure statement

The authors declare no conflict of interest.

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