

Research on the digital transformation and development of Campus Sports in Sichuan Province

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DOI: <https://doi.org/10.5281/zenodo.11518874>

Published Date: 28-May-2024

Abstract: This paper analyzes the current situation of sports construction in some universities in Sichuan Province, and discusses the development mode of physical education in universities. The investigation found that at present, physical education depends on teacher management, the management platform is single, and each link has not formed effective interconnection. Based on the research, it is proposed that digital technology should be used to coordinate the physical education teaching resources, methods, management mode, evaluation system and service system, promote the digital transformation, and build a comprehensive, interconnected, safe and efficient teaching mode. At the same time, the guiding ideology, significance, ideas, conditions, measures and effects of the construction of the digital model have been deeply demonstrated. It is expected to provide reference for the digital construction of university sports and promote the development of undertakings.

Keywords: Sichuan Province; Campus Sports; Digital Transformation; Digital Model Construction.

1. INTRODUCTION

School physical education is very important in the education system. It can improve the physical fitness of teenagers, promote the development of physical function, and also bear the responsibility of moral education. It is the cornerstone of intellectual education learning, and also the link between students, families and society. In recent years, China has promoted the digital transformation of the education field, and issued a number of policy documents, aiming to realize the deep integration of digital technology and education and teaching of [1]. In 2022, the China Education Work Conference clarified the "implementation of education digital Strategy action", marking the irreversible trend of the digital transformation of education. Digital information technology is widely used in the field of educational innovation, which is of great significance to expand the application in the field of sports in universities [2]. At present, the physical education work in Chinese universities faces many challenges, such as "teaching and learning", teaching efficiency, sports management and safety. The university has initially introduced digital information technology, but the effect is limited, and it is difficult to meet the needs of digital construction. Therefore, it is necessary to deepen the application of digital information technology in university sports, promote the comprehensive digital transformation, improve the teaching quality and management level, and ensure the safety and efficiency of sports activities.

As a major province of education and higher education, Sichuan currently has a total of 134 universities, with 1.92 million students and 140,000 teachers. Under the clear guidance of the current national educational guidelines and policies, the innovation of physical education in universities should not be limited to the simple application of information means, but on this basis, deeply explore the aggregation and enabling function of digital information technology. Specifically, we should make full use of the existing physical education teaching environment and resources, through the integration of digital information technology, coordinate the physical education teaching resources, teaching methods, management means, evaluation system and service guarantee, to realize a comprehensive, interconnected, safe and efficient operation mode of college sports^[3]. This process requires us to take the digital transformation of sports as an opportunity to promote the comprehensive upgrading of the physical education teaching mode in colleges and universities, so as to meet the needs of the development of education in the new era.

This paper studies the construction of the digital platform of physical education in colleges and universities in Sichuan Province, uses digital information technology to promote the cooperation, interconnection and resource sharing of physical education work, improves the teaching level of teachers and students, establishes a scientific, safe and effective management mode, and promotes the healthy development of physical education in colleges and universities. Under the background of the digital construction of smart campus, actively promote the digital construction of university sports to help the process of modern education.

2. METHODS

Overview Of The Survey Subjects And Research Methods

This study aims to analyze the current situation and development trend of digital sports construction in universities, and adopt various research methods, such as literature analysis, interview, questionnaire survey and statistics. In terms of theoretical construction, this research takes "digital construction of physical education work in universities" as the core idea, and designs the Questionnaire on digital Construction of Physical education work in Sichuan University by systematically sorting out the literature and gathering the wisdom of experts. In subject selection, this study distinguishes between teacher questionnaire and student questionnaire. The teacher questionnaire is mainly for the teachers and principals of physical education majors in Sichuan Province and universities in Sichuan Province. Through extensive questionnaire survey, this study successfully covered 34 universities in Sichuan Province (including 28 undergraduate colleges and 6 higher vocational colleges), with 62 questionnaires of 91.2%, 32340 questionnaires, and the effective rate of questionnaires reached 95.0%, which provided solid data support for the further promotion of the research. In addition, through in-depth interviews with the leaders of some university physical education colleges and PE teachers in Sichuan, this study comprehensively understands the needs and expectations of physical education teachers in the digital construction of physical education teaching. At the same time, this study also conducts a detailed investigation on the digital and information training and use of physical education in some universities, so as to accurately grasp the current situation and trend of the digital construction of physical education in universities in Sichuan, and provide reference for future research and practice.

3. RESULTS

Analysis Of The Survey Results

Teacher-Centered Management Mode:

Due to the differences in the objects of university education management, individualized management and diversified talent training are always the ideal state of education pursuit. With the continuous promotion of China's education system reform and the wide application of information technology, the field of school physical education is also constantly exploring innovative development mode, among which the proposal and implementation of the "three independent" teaching mode is a remarkable example. "Three autonomous" teaching mode, which allows students to choose the course content, choose teachers and choose class time, aims to combine the students' individual sports interest, effectively stimulate the enthusiasm of the exercise, and improve the efficiency and effect of physical education curriculum implementation, finally guide students to set up the lifelong sports consciousness. Compared with the traditional physical education teaching mode, the "three autonomy" mode gives students more independent choices, which makes the classroom content and form present a certain degree of innovation^[4]. However, in the practical teaching application, some universities in Sichuan province still face a series of practical problems to be solved urgently in the sports construction. As shown in Figure 1, among many

problems, the problems of theoretical learning and practical activities, and the class teaching emphasis on theory but insufficient practice are the most prominent, accounting for 36.15%. In addition, 21.16% of students' personal sports ability and curriculum, the mismatch between teachers and students' needs, 17.32%, 15.21%, and subjective assumption and blind obedience in sports measurement and evaluation accounted for 10.16%. The existence of these problems reflects that some colleges and universities have not fundamentally changed the "teacher-centered" management mode, which leads to the great limitation of students' exercise time and interest. At the same time, students have doubts about the means and results of physical education evaluation, which also reflects that the current physical education teaching methods have not really realized the teaching principle of "student-oriented", and lack the support for open and inclusive teaching methods and the ability to adapt to the platform docking. Therefore, the core of the change of physical education teaching mode lies in the change of teaching concept. We should promote the innovation of teaching methods with the concept of development, focus on the actual needs of students, and help the in-depth development of physical education teaching.

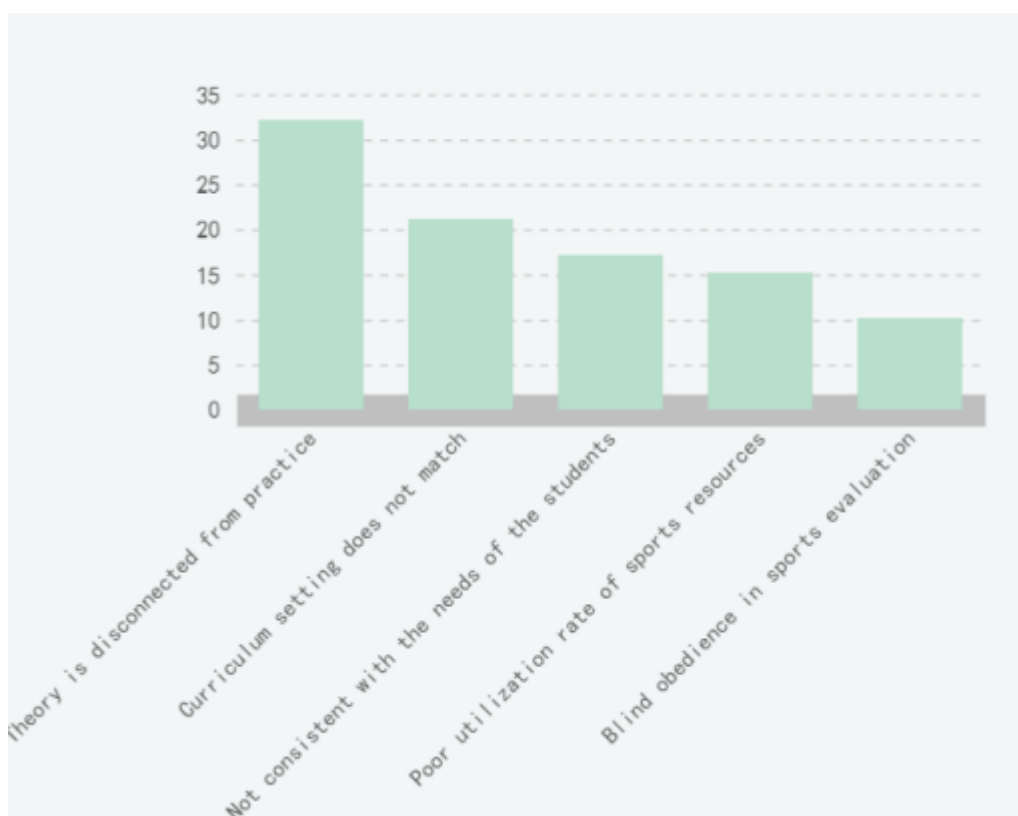


Figure 1: Evaluation Of The Implementation Effect Of Physical Education Curriculum

Construction Of a Relatively Single Digital Platform:

At present, many colleges and universities in Sichuan Province have successfully set up a physical education teaching management platform, which has significantly improved the efficiency of physical education teaching and the quality of talent training, and formed a relatively complete closed-loop management mechanism for internal teaching coordination. However, as shown in Figure 2, most of these platform models are based on the traditional computer single-network platform construction, the process of data collection, exchange and analysis is relatively closed, and the lack of scientific integration and management of students' whole or whole-process learning behavior data makes it difficult for us to accurately analyze students' learning behavior data. The existing platform mainly realizes the basic system connection functions such as physical education teachers and course selection of students, but the application effect in data analysis, intelligent planning and other aspects is not ideal. At the same time, the connection between the platform interface and the overall teaching platform of the school also faces many difficulties. These problems have been gradually highlighted in the process of promoting the digital construction of university campus. It is worth noting that the construction of physical education teaching management platform in colleges and universities is unique compared with the construction of intelligent environment in other basic disciplines ^[5]. The platform should not only meet the basic functional needs such as class

scheduling and course selection, but also undertake the important task of improving the core quality of teachers and students, ideological and political education, sports and medical integration, lifelong sports and other all-round system construction, so as to cultivate high-quality talents with all-round development. In addition, the core goal of campus digital construction is to provide a comprehensive intelligent perception environment and comprehensive information service platform for teachers and students, and widely expand the application and service fields, to realize the interconnection and collaboration between the school and the outside world. Therefore, only relying on a single management platform construction has been unable to meet the needs of the campus digital construction environment. In order to promote the in-depth development of the campus digital construction, we must actively promote the deep integration of the physical education teaching management platform and other campus digital systems, so as to improve the overall intelligent level of education and teaching.



Figure 2: Evaluation Of Physical Education Teaching Management Platform Construction

The Digital Construction Of Each Link Is Not Interconnected:

In the practice of physical education teaching in many universities in Sichuan Province, due to the uneven distribution of sports resources, the imbalance of teachers and the deviation of interactive learning subject between teachers and students, leading to the fracture between physical education teaching and management ^[6]. This performance for sports resources failed to get reasonable use, teachers are difficult to cope with the growing year by year, especially the school management involves each link scattered in different information management system, part of the system only support the PC operation, this obviously does not conform to the current students tend to use mobile phones for the trend of digital information interaction. For example, as shown in Figure 3, the superstar learning system, rain classroom system widely adopted by universities in Sichuan Province and the educational administration management system designed by universities in Sichuan Province cannot achieve effective interconnection and real-time link between each other. More importantly, these systems fail or have only a small number of functions to deeply integrate with mobile public platforms (especially widely used wechat platforms), resulting in serious information barriers and data sharing and communication, thus affecting the systematization and integrity of the digital teaching process. These problems have brought many efficiency bottlenecks and resource waste phenomena to colleges and universities. Therefore, it is urgent to make breakthroughs in the aspects of off-school online teaching of students and students, students' curriculum practice and online physical education evaluation under the unified platform. For example, in the standardized teaching of sports technology, imitation teaching has remarkable effect, but universities in Sichuan Province generally lack sports venues that can directly conduct digital display. Even after observing the digital classroom and then doing the sports venue for practical teaching, the effect will be limited to some extent. If the functional module can be built into a platform system, the management of physical education teaching can be more systematic, scientific and standardized. These specific problems not only put forward higher requirements for the intelligent construction of sports in universities, but also the key problems that must be faced and solved in the digital development of university sports.

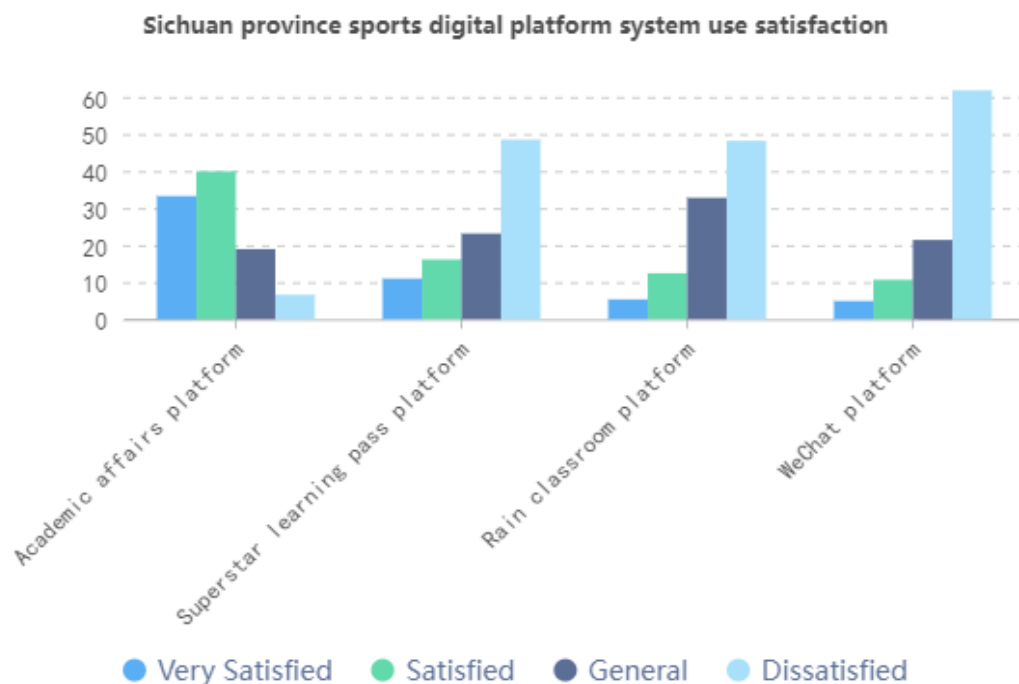


Figure 3: Satisfaction Of Sichuan Sports Digital Platform System

4. DISCUSSION

The Construction Of The Digital Mode Of College Sports

The Guiding Ideology Of The Digital Mode Of College Sports:

In January, 2022, China Education Work Conference clearly put forward the implementation of education digital strategic action measures; In March of the same year, The national Smart education public service platform was officially put into use; In April, The Ministry of Education and eight other departments jointly issued the Plan for Strengthening Basic Education in the New Era, Clearly put forward the requirements for in-depth implementation of artificial intelligence to boost the construction of teachers; In October, The Party's 20th annual report clearly requires the promotion of the digitization process of education, Committed to building a lifelong learning learning society, learning country; In November, The Ministry of Education has issued the education industry standard for Teachers' Digital Literacy, To standardize the training and evaluation of teachers' digital literacy, It aims to build an excellent teaching team to meet the needs of education digital transformation strategy [7]. Prior to this, China has planned and deployed for the development of information digital education. In 2017, The State Council issued the Development Plan for the New Generation of Artificial Intelligence, which clearly proposed that intelligent technology should be used to promote the reform of talent training mode and teaching methods, and build a new education system, including intelligent learning and interactive learning, [7]. Under such a time background, university physical education should actively respond to the development trend of digital information technology, commit to building a physical education system with personalized learning and lifelong development, and promote the transformation of university physical education from low level and extensive to high level and accurate.

The Significance Of Constructing The Digital Mode Of College Sports:

As the cradle of national outstanding talents, universities are duty-bound to implement the new mission and new responsibility of talent training in the new era [8]. In the past, the construction of physical education in colleges and universities mostly focused on the reform of teaching methods, such as the early "three independent" physical education teaching mode, talent training mode and online physical education teaching, which has attracted much attention in recent

years, which are all in line with the historical needs and trend of China's educational reform. However, with the promulgation of the 10-year Development Plan for Education Informatization (2021-2030), we clearly realize that we must adhere to the development orientation ^[1] based on the construction of "quality education resources and information learning environment, with the innovation of learning mode and education mode as the core". The construction of digital campus aims to promote the deep integration of information technology and education and teaching, and improve the effect of learning and teaching. Relying on advanced technologies such as the Internet of Things, cloud computing and big data analysis, it builds a teaching, scientific research, management and life service environment integrating comprehensive environment perception, intelligence, data, network and collaboration, so as to realize in-depth insight and scientific prediction of education, teaching and management. Under the background of the current campus digital construction, the single physical education teaching mode has been short, it is difficult to give full play to the due function of college physical education, and can it not adapt to the trend of the smart campus construction. Therefore, college physical education should actively embrace digital information technology, explore open and inclusive teaching methods, promote sports interactive learning and personalized learning, and truly implement the teaching concept of "student-centered". At the same time, with the help of big data, artificial intelligence and other technical means, it provides scientific digital management, service and security guarantee for teachers and students, and promotes the innovative development of the digital mode of school sports. In addition, the digital mode of school sports should be combined with the management of smart campus to achieve the goal of change on demand, cooperation and unity, and enabling innovation, so as to contribute to the overall construction of smart campus. Through this series of measures, we are expected to promote the digital transformation of university sports, improve the quality of education and teaching, and lay a solid foundation for cultivating outstanding talents in the new era.

The Premise Of The Construction Of University Sports Digital Mode:

The fundamental premise of the construction of university sports digital mode lies in the digital transformation of university sports. The development of college physical education always focuses on the improvement of teaching efficiency and effect, as well as the improvement of management and evaluation system. The goal of digital transformation is to enhance the efficiency and effect of physical education, optimize the sports management system, meet the growing demand for sports services, and build a set of scientific, accurate and efficient evaluation mechanism ^[9]. This transformation process, based on the basis of digital transformation and digital upgrading, aims to further strengthen the core function of university sports and build a digital system covering B end (inter-school) and C end (teachers and students), so as to lay a solid foundation for the construction of digital mode of sports. The digital transformation of university sports involves two dimensions. In the vertical dimension, we accurately use diversified digital technology means according to the needs of different sports scenarios. For example, with the help of artificial intelligence technology, optimize the physical education course selection system, use cloud processing technology to realize the interactive video teaching, and improve the physical function adaptation intensity and goal setting through big data analysis. In the horizontal dimension, we fully integrate the Internet of Things, cloud computing, artificial intelligence, big data and other technologies to realize the deep link of physical education teaching resources, teachers and students' teaching, sports management, sports evaluation, sports service, sports safety and other aspects, so as to build a digital relationship between all elements. At the same time, through mining the big data generated in the process of internal service (B2C) and external communication (B2B), we strive to establish an open and shared new mode of digital sports management and service. In short, the purpose of digital transformation of university sports is to break the previous situation of decentralization and isolation, realize the mutual support and synergy among various elements, so as to promote the comprehensive and coordinated development of physical education in universities.

The Basic Idea Of The Digital Transformation And Construction Of College Sports:

Promoting the scientific development of university physical education and the application of digital information technology provide feasible solutions and methods for a series of problems faced by the current university physical education. At present, there is an urgent need for interconnection and efficiency in the planning, application, evaluation and expansion of college sports. With its unique advantages, the digital mode can provide strong support and help for the development of university sports in multiple dimensions of scientific planning, efficient utilization, intelligent education and space expansion. The construction of sports digital mode cannot be separated from the [4] of advanced technological means such as the Internet of Things, artificial intelligence and big data. These technical means jointly build a comprehensive management and service platform, integrating sports resources, physical education teaching, sports management and service, as well as extracurricular (off-campus) sports and other links. Through the optimal allocation of resources, real-

time sharing of information and accurate analysis of data, we can more effectively use and expand sports resources, improve the teaching efficiency and effect of teachers and students, and make objective and scientific evaluation of teaching results. To sum up, the application of digital information technology is of great significance for promoting the scientific development of university physical education, and it is an important field worthy of our in-depth research and exploration.

5. CONCLUSION

Recommendations

The construction of university sports digital mode is a systematic project, which requires the joint efforts of many aspects. Based on the research results, according to the current situation of university sports digital construction in Sichuan Province, the following specific suggestions are put forward:

Digital Transformation Of Sports Resources:

In the context of the Internet, the teaching activities of colleges and universities will be fully integrated into the digital platform mode in the future, so that all kinds of business activities of schools will be transformed into the relationship of mutual cooperation between platforms. Universities only need to make full use of their own digital platform to realize the seamless connection with the internal and external sports resource platform, so as to achieve the goal of resource sharing. With the rapid progress of digital information technology, colleges and universities have a solid foundation for reconstructing the sports digital mode, which has laid an important foundation for the future educational innovation and development. In the construction of campus digitalization, colleges and universities realize the close connection of each link through the unified digital platform to improve the operation efficiency and save resources. The key to digitalization lies in the transformation of the intermediate management function to realize the efficient connection between colleges and universities, inter-school and teachers and students. Introduce the digital information technology system, build a complete sports management system, reduce the management level, improve the efficiency, and optimize the allocation of resource. This kind of digital connection has a far-reaching impact on the development of university sports, and is expected to achieve a qualitative leap, and inject new vitality into the sustainable development.

Digital Transformation Of Physical Education Teaching And Evaluation:

The digital idea of teaching is that teachers use digital technology to video the content and upload it to the cloud. Students choose online projects for learning, and the credit hours are included in the system to improve the flexibility and convenience of learning, and reduce the burden of repeated teaching by teachers. Offline classroom, teachers spend more time to answer questions and correct errors, and improve the quality of practical practice. Teachers need to adapt to the teaching concept of the new era and shift from indoctrination teaching to students' deep learning and personalized learning. Students can choose their own content according to their level. For example, in football teaching, students with good foundation can skip the primary learning and directly enter the tactical learning, so as to improve efficiency and save resources. The role of teachers is changed from the leader to the auxiliary, and students become the subject of learning. Teachers guide students to solve understanding problems. To change the sports evaluation system can be understood as: in offline courses, teachers should evaluate students' online learning situation and organize offline practical training. Students should evaluate teachers' online video teaching level and offline interaction level, and feedback the teaching quality^[11]. The content of the teaching video tests teachers' ability, and students can also choose high-level courses from other schools to expand their learning. This reform of the evaluation system can improve the professional requirements of teachers and highlight the main body status of students. The Internet + model can avoid the traditional disadvantages and break through the teaching restrictions. The role change of teachers and students challenges the traditional system of college education and also brings new development opportunities.

Physical Education Management And Service Functions Coexist:

A survey of some universities in Sichuan shows that most universities are still in the primary stage, mainly focusing on interest options, attendance and examination statistics. This management mode has a single function and requires digital transformation to adapt to the needs of the new era. We are committed to building a sound student big data management system, including sports data, physiological data, physical quality and physical fitness test, etc. At the same time, multiple information of interests, hobbies and disciplines is included to build a comprehensive database. Mining and analyzing big

data, helping to accurately formulate teaching plans, and providing personalized suggestions. Set up a movement early warning mechanism to ensure the safety of students. Digital transformation promotes the construction of smart campus, and helps make medical, health and epidemic prevention decisions. The survey shows that the participation of physical education teachers is low, so it proposes to build an open platform, encourage the uploading of teaching videos, and establish a database. Inter-school interconnection helps teachers' business learning and communication, big data and AI technology support scientific research, and promotes innovation in physical education.

Under the "digital mode of sports", the display of management function benefits from a wide range of data support. The application of digital information technology makes the traditional management mode intelligent, so as to effectively eliminate the interference of human factors and transcend the limitation of simple column of data ^[12]. Through the deep management and integration of massive data sources, a more comprehensive and rich information aggregation has been formed. This aggregation process not only breaks through the limitation of relying solely on course assessment under the traditional mode, but also aims to realize the expansion and improvement of functions.

Compared with the traditional model, the sports digital mode is fully demonstrated by the strong data support and analysis system. Specifically, this model plays a significant role in several ways:

(1) In terms of sports planning services, students can choose suitable sports items and sports intensity according to the accurate results of their own physical quality and biochemical data analysis system, so as to achieve more personalized learning experience and significantly improve the learning efficiency and effect.

(2) In terms of sports knowledge service, through B2B inter-school link, both students and teachers can access massive sports knowledge resources push, which not only contributes to the comprehensive training of sports talents, but also plays a significant role in promoting the improvement of individual core literacy. At the same time, teachers can also get more professional technical support, so as to continuously improve their teaching and research ability.

(3) In terms of sports safety service, in view of the diversity of physical fitness and the existing health problems, college sports has put forward higher requirements for the health protection of college students. According to the basic standards of physical education work requirements, through the student body biochemical, physical and other comprehensive data digital transformation, combined with large data analysis and artificial intelligence technology, schools and teachers can more accurately predict students movement risk and physical hazard, to take effective measures to avoid and adjust, to ensure that the students' sports safety and health.

6. CONCLUSION

Through the investigation and analysis of the physical education work in some universities in Sichuan Province, this paper aims to reveal the problems still existing in the current college physical education work, and suggests to build a comprehensive digital mode of college physical education with the help of digital information technology. After demonstration and analysis, we come to the conclusion that the urgent need for college physical education is to improve the efficiency and effect of "teaching and learning", realize scientific and safe management, and build an accurate and effective evaluation system. The improvement of these aspects needs to comprehensively promote the digital transformation of college sports. Sports digital mode is on the basis of digital transformation, using digital technology, the school sports resources utilization, teaching methods, management and service for systematic, holistic transformation and of change, and build to individual and team, students and schools, school and society as one of the multi-dimensional sports management and service mode. "China's Education Modernization 2035" clearly points out that "information technology has a revolutionary impact on the development of education" ^[1]. Under the background of the current big data era, the university sports construction should actively embrace the digital information technology in the campus digital construction, and actively promote the digital upgrading and transformation. However, at present, the digital mode of university sports is still in the stage of theoretical discussion and exploration, which urgently needs to be verified and improved through extensive practical work. In this way can we better implement the national school physical education work plan and development policy, that is, "innovate education and teaching methods, guide students to exercise scientifically, and enhance the attractiveness, characteristics and effectiveness of physical education teaching. Establish physical education teaching and research, scientific research system, form a high-level research team, and carry out multi-channel strategic, forward-looking and applied project research with the goal of improving students' physical health, teaching quality, after-school training, and sports culture level, so as to promote the overall level of school physical education work".

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