

# Utilizing Scientific Information Technology to Promote the Modernization of Physical Education in Rural Schools

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**Abstract:** *Scientific information technology provides development space for the development of modern education, but also provides a driving force for the modernization of rural school physical education, but scientific information technology can't be simply imposed on the governance of rural school physical education, logical integration into the practical application of rural school physical education is to become an effective process to drive its operation, development and improvement. This paper adopts the research method of a literature and logical analysis, takes the scientific information technology to empower the modernization development of physical education in rural schools as the background and the integration trend of the modernization development of physical education in rural schools as the basis, and analyzes the integration relationship between scientific information technology and the modernization development of physical education in rural schools. This paper recognizes the problems of the modern development of physical education in rural schools enabled by information technology, and provides corresponding solutions.*

**Keywords:** *science information technology, rural school physical education, modernization*

## 1. Introduction

At this moment, scientific information technology is of great significance to the modernization of PE teachers' career development, teaching and research activities, classroom teaching reform, and the use of multimedia technology to improve education and teaching in rural schools. In the era of modern information technology empowerment, education management departments at all levels need to coordinate the early development results, strive to transform the substantive effect, rationalize the important position of rural school physical education in education, use information technology to strengthen the effectiveness of later work, and better play the basic role of rural school physical education, which fully reflects the only way for China's rural school physical education to modernization.

## 2. The relationship between science information technology and the modernization of physical education in rural schools

### 2.1 Scientific information technology enables the transformation and modernization of physical education in rural schools

The maturity and comprehensive application of scientific information technology is the basis for the integration and development of scientific information technology. Scientific information technology is a series of various forms of information integration, which belongs to the results of continuous application of scientific information technology in practice. Scientific information technology is essentially a transformation process, processing material information into a standard computer language, and then turning the computer language into instructions, reprocessing the information, obtaining the processing results and then applying them to the material, playing a role in improving quality and efficiency. The improvement of scientific information technology enables it to penetrate into all aspects of society, and it has the need to continuously optimize itself while using existing functions to independently and continuously mine new data [1]. Entering the age of science and information technology, science and information technology will further promote the development of education. At present, strengthening the integration of science information technology and rural school

sports is needed for comprehensive modernization development. If we want to change the backward situation of rural school sports and realize the modernization of rural school sports, the participation of science and information technology is indispensable. In the process of scientific information technology participating in the governance of rural school sports, scientific information technology can effectively strengthen the supervision process, link up with the modernization of national governance means, and make the governance process into a reasonable and controllable dynamic governance behavior. The modernization of national governance capacity requires that rural school sports governance capacity should keep pace with the times, governance policies should be gradual, timely adjustment of the parts that cannot be adapted, reasonable removal of the parts that do not meet the current rural conditions, and reasonable evaluation of the policies being implemented to ensure effective implementation[2]. With the development of the modernization of physical education in rural schools enabled using scientific information technology, it will have the following positive effects on the governance ability and governance means: expanding the scope of supervision, optimizing the evaluation standards and principles; Improve the efficiency and level of sports services in rural schools to meet the needs of students; Strengthen the strength and breadth of school control of sports activities to form a full range of physical exercise monitoring coverage; Timely warning of the development of students' physical function and promoting the overall development of students' physical education are the only way to realize the all-round modernization of rural school physical education.

### ***2.2 Science and information technology enables the modernization of physical education exchanges in rural schools***

It is difficult for rural schools to make a qualitative leap in physical education, mainly because the rural terrain is blocked, the traffic is blocked, the internal and external exchange activities are less carried out, new ideas, vocational training, home-school linkage is difficult to introduce rural schools, so the quality of physical education in rural schools is difficult to be not high, and does not meet the meaning of modern development. Scientific information technology enables physical education in rural schools to diversify the channels of communication. The improvement of education and teaching activities can't be separated from effective communication mechanisms and means. Physical education teachers in rural schools are difficult to update teaching concepts, participate in vocational training, and promote communication between family and school due to limited external communication and narrow channels of information acquisition. Sports in rural schools has ushered in a new stage of development under the empowerment of scientific information technology [3]. First of all, the updating of teaching concepts has accelerated. More and more professional colleges, famous teachers in the industry and well-known experts have taken the lead in establishing a learning community learning platform for teachers, using scientific information technology and Internet platforms to build a scientific information exchange platform and provide team exchange activities for rural physical education teachers. Increase the opportunities of scientific research and teaching research of rural PE teachers, update their own PE teaching concepts, improve the original PE teaching concepts, and enhance the efficiency of PE teaching. Secondly, with the improvement of rural infrastructure, the ways of teacher training are more diverse, and online independent learning and offline training have become the main ways for rural teachers to improve their professional literacy. The online way can save the cost of traveling back and forth, and can choose training courses according to their own needs, and maintain a good learning momentum. Finally, scientific information technology promotes communication between families and schools, school physical education and family physical education complement each other, and family physical exercise is often difficult to guarantee. Scientific information technology is used to strengthen exercise feedback, track and diagnose after-school home exercise for rural students, and communicate with parents in a timely manner, so that students who exercise in different families can communicate with each other. Create direct, student-to-student communication between home and school.

### ***2.3 Scientific information technology enables the modernization of physical education and health in rural schools***

Enabling rural students' physical health by scientific information technology can effectively improve their physical health. The role and efficiency of traditional physical education in rural schools are not high mainly due to the inability to accurately monitor physical activity indicators. Classroom teaching is mainly based on the physical activity indicators of some students, and there are certain errors or even misjudgments in the monitoring and evaluation activities of physical education teachers. It is difficult for physical education teachers to lead students to participate in sports activities while

paying attention to each student's sports situation, making it difficult to teach accurately. After the modernization of physical education in rural schools is enabled by scientific information technology, electronic sports equipment provides guarantee for sports monitoring, enabling physical education teachers to monitor the process of students' sports [4]. Even a higher-level sports intelligence system can connect the changes of students with the changes of the environment in the process of sports detection by new technology, and provide the next teaching plan for physical education teachers. In physical education classroom teaching and physical exercise, students can obtain their own exercise heart rate feedback by monitoring real-time data of students' exercise and conducting statistical analysis, and physical education teachers can obtain students' overall exercise feedback and safety warning. Students whose exercise intensity does not reach their own ability level should increase the intensity and amount of exercise. In the past, students' sports enthusiasm was reduced due to lack of challenges, and rapid response was made at different nodes of students' sports ability improvement, and more scientific content of physical improvement was formulated to keep students' sports growth effectively stimulated and in a changing process. The important significance of scientific information technology to enable physical education students in rural schools to improve their physical health lies in the precise, procedural, objectified, visualized and automated presentation of students' exercise process, which is conducive to realizing the dynamic management of school physical education process and results, optimizing the teaching mode and improving the efficiency of school physical education.

### **3. Methods of modernization development of physical education in rural schools enabled by science and information technology**

#### ***3.1 Realize the organic combination of "empowerment"***

Scientific information technology has been able to empower social public management departments to get better results. For example, during the epidemic, the "health code" system based on big data innovation was rapidly and widely promoted from the Yuhang District of Zhejiang Province from point to point, which well met the needs of epidemic prevention and control [5]. The process of "empowerment" is so fast that it cannot be separated from the positive promotion of "empowerment". At present, the "two channels" to achieve "empowerment" need to open up, including institutional empowerment and technical empowerment.

Institutional empowerment: it is the core and guarantee of the empowerment process, which depends on the change of institutional environment. It is necessary to empower rural school sports at the national level and use the legal system to confirm the right to ensure that the power and responsibility of rural school sports in the process of information technology development are clear. In the newly revised "Sports Law" in 2022, the content of the youth and school sports activities has been re-formulated and modified, so that the rural school sports governance in the new era will be a new reference. "Rule by law" is the symbol of the modernization of sports governance in rural schools[6]. Without a perfect system of rule by law, sports governance in rural schools cannot be modernized. The newly revised Sports Law contains several new contents, including promoting the construction of a strong sports country and a healthy China, giving priority to the development of youth sports and school sports, implementing a plan to promote youth sports activities, and ensuring that all physical education classes are not occupied in accordance with regulations. The state has included physical education subjects into the scope of high school academic level examination and a series of legal provisions on school physical education. If the rural school sports is not implemented according to the regulations, it will face the illegal situation, which is the most essential function of the system empowerment, but also the most basic guarantee of technology empowerment, so that technology can serve the school sports to implement the "Sports Law".

Technology empowerment: To promote the implementation of the information right, participation right and supervision right of rural school sports subjects through scientific information technology. Under the guidance of law, the "power" and "right" granted by scientific information technology to rural school sports governance subjects is to achieve the best state of scientific information technology, and further promote the modernization of rural school sports. It includes two aspects: one is the multi-centralized "power" and the efficient overall organization; The integration of science and information technology into sports governance of rural schools has brought about the decentralization of "power" and made it more centralized, avoiding the disadvantages of the previous single-center mode of government, making decision-making more in line with the interests of multiple parties and efficient. Multi-centralization has formed an efficient whole with the support of science and

information technology, and information sharing and transmission have become convenient and rapid. The decentralized decision-making bodies are united and the decision-making costs are reduced. The second is free and equal citizen "rights" and social organizations that check and balance with state power. The social organizations spontaneously formed by citizens represent their own social interests, and these social interests come together to produce checks and balances on public "power". Citizens urge and supervise sports governance in rural schools through the form of "family committee". The government builds an equal rights relationship and a mutual promotion process through algorithms and methods, system and rule of law, and then realizes the modernization of rural school physical education driven by science and information technology innovation and system and mechanism reform.

### ***3.2 Build a bridge to enrich management means by information technology***

At present, the phenomenon of administrative management of sports in rural schools in China is relatively serious, which is manifested by the obvious management characteristics of "strong administrative order, weak democratic consultation" left over from the era of planned economy, and the decision-making process is less involving the individual sports in rural schools, and the logic of good governance cannot be reflected. The emergence of this phenomenon in the past 40 years of reform and opening up has its historical background. There is a huge difference between rural social development and urban social development. The government can only promote the development of public welfare projects such as rural school sports through administrative means, and its government-led decision-making and supply methods were undoubtedly reasonable and easy to operate at that time. However, with the advent of the information age, information transmission is unimpeded, and the scope of government management is getting wider and wider, but the hierarchical management structure has seriously affected the management efficiency. With the construction of the overall government, the government will change from the hierarchical system to the flat system. Science and information technology to promote the transformation of rural school sports management mode to flatten is conducive to reducing the intermediate management level and broadening the information interaction and exchange between horizontal departments. Scientific information technology forces the closed rural school sports management process to become more open and flexible, and promotes the transformation of rural school sports governance from power oriented to responsibility oriented, from management oriented to service oriented. In order to improve the accuracy and fairness of sports decision-making and supply in rural schools, ensure the scientific decision-making and effective implementation, sports management in grassroots rural schools should collect and pay more attention to the needs of students, so as to make decision-making more scientific. Use information platform to establish incentive mechanism.

Incentive mechanism construction: It is mainly to stimulate social subjects' public investment in rural school sports, and public investment is the best way to build a positive image of social subjects. However, public investment in rural school sports produces small social benefits, and the social identity of school sports is not high, which is limited by the lack of attention to rural school sports publicity and attracts less public investment. As the country attaches great importance to sports in rural schools, the information platform can strengthen the publicity and convening role of sports in rural schools, and the social benefits generated by social public welfare investment continue to improve. Rural governments cooperate with the introduction of more incentive policies, so that social companies and enterprises with sufficient public welfare investment in the region can obtain more local economic policy support and social publicity. Social companies and enterprises are encouraged to invest part of their economic benefits in the construction of physical education in rural schools.

### ***4. Enhance information thinking to facilitate the application of scientific information technology in rural school physical education***

The benefits of enhancing information thinking to the development of physical education in rural schools are as follows: First, with the participation of scientific information technology, more terminal devices can participate in the collection and monitoring of students' system and health data. In traditional ways, physical fitness and health require a lot of manpower and material resources, and physical education classes are used to carry out testing, statistics and uploading. At present, the informatization rate of physical fitness inspection and monitoring equipment in urban schools has reached more than 80%, reducing the cost of human and material resources for data collection. With the comprehensive rollout of scientific information technology, the physical health monitoring of rural students is directly uploaded and analyzed by professional testing instruments to provide more

time-effective analysis data, which has a guiding role in the next step of governance. The second is to innovate the training model and actively use the "Internet + professional learning community". "Internet + professional learning community" is a new learning community model born in response to social requirements. The support of the Internet provides convenience for the online learning and training of rural physical education teachers and provides guidance for offline teaching activities. In the future, rural areas will establish or join the "Internet + professional learning community" under the leadership of urban central schools. The third is to enrich the modernization of physical education in rural schools by scientific information technology. With the participation of science and information technology, the process of policy implementation is transformed into the process of information collection, and policy incentives are constantly transformed into effective information. Through big data analysis, the actual effect of policy implementation can be achieved in what proportion, the effectiveness can be improved by finding out the limitation of information, and the policy can be adjusted in real time to maximize the effect, effectively save limited sports resources, and maximize the resources, ensure the sustainable development of rural school sports.

## 5. Conclusion

With the continuous optimization of the institutional environment, a series of measures such as realizing the organic combination of scientific information technology "enablement" and "empowerment" in rural school sports governance, building a bridge of information technology to enrich management means, and enhancing information thinking to facilitate the application of scientific information technology in rural school sports will certainly innovate the modern governance ability of grassroots governments.

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