

The Logical Rationale and Implementation Pathways for High-Quality Development of University Public Physical Education Courses Empowered by New Quality Productive Forces

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Abstract: New quality productive forces, led by science and technology, integrated with digital technology and the concept of green development, are driving the high-quality development of university public physical education courses. Based on the two reasons of technology empowerment and health first, this paper studies the intrinsic relationship between new quality productive forces and physical education curriculum reform. Due to the uniformity of the course content, there is little interest from the students, and we need to motivate them. The implementation path is as follows: First, introduce new teaching models by building a "digital technology + physical education" system and carrying out curriculum reform with intelligent devices, virtual reality, augmented reality technology and online platforms; second, strengthen the teaching staff by enhancing the digital skills training of teachers so that they can become technology-empowered educators. The purpose of this paper is to investigate the promotion effect of new quality productive forces in the reform of the physical education curriculum at universities and offer some suggestions for enhancing the construction of a healthy China and a sports power center.

Keywords: New Quality Productive Forces, university public physical education courses, high-quality development, teaching model innovation, teaching staff development

Introduction

New Quality Productive Forces refer to a new type of productive force led by scientific and technological innovation that has been digitalised and intellectualised; these forces will drive high-quality development in all areas of society. At present, the problems in university public physical education courses are uniform teaching methods, rigid assessment and low student motivation; to promote high-quality development, new driving forces and technical support are needed^[1]. The new quality productive forces have changed, so the problems in the development of university public physical education courses can only be solved by adapting to the new characteristics of digital transformation and cross-sector collaboration. Together, they will be able to meet the national demand for building new quality productive forces and improve the teaching of physical education at the university level.

Research on how New Quality Productive Forces promote the high-quality development of university public physical education courses has theoretical and practical values. Theoretically, this paper will expand the range of application for New Quality Productive Forces and add new content to the theoretical foundation of high-quality physical education, thus providing theoretical support for the implementation of New Quality Productive Forces in the education sector. In fact, many applications have already been developed for New Quality Productive Forces; for example, university public physical education courses are now customised according to the actual needs of students, real-time monitoring and timely feedback are provided during class hours, objective assessments of learning outcomes are conducted, the quality of physical education teaching has been improved, students' core literacy in physical education has been nurtured, and a habit of regular participation in sports activities has been formed.

According to the attributes of new quality productive forces and the laws of development for physical education, this paper explores the logical foundation and implementation path of new quality productive forces in driving the high-quality development of university public physical education courses. The process of "technology penetration, model reconstruction and value enhancement" in promoting the development of all sectors of the economy with new quality productive forces can also be taken as a

reference for strengthening physical education^[2]. Further studies will be carried out on the application of new quality productive forces to university public physical education courses and on how to use digital technology effectively in classroom teaching to promote the high-quality development of university physical education.

1. Connotation and Significance of New Quality Productive Forces for the High-Quality Development of University Public Physical Education Courses

1.1 The Connotation of New Quality Productive Forces

New quality productive forces are a new type of productive force that focuses on scientific and technological innovation and integrates the concepts of digital technology and green development. These refer to the qualitative changes in the productive forces resulting from the technological revolution and all kinds of factor changes. In short, the New Quality Productive Forces are different from the previous productive forces that were based on basic material conditions such as natural resources; instead, they give more weight to data, algorithms and intelligent robots as the main new production factors to improve production efficiency and promote economic development^[3]. They are new ideas for the present that are based on the inheritance and development of the theory of Marxist productive forces, and the ideas of green development, intelligence and collaboration in them also point the way for the development of various industries.

The connotation of New Quality Productive Forces can be divided into two parts: at the level of technology, the primary impetus is new scientific and technological progress, such as digital technology, artificial intelligence and the Internet of Things; by breaking free from the spatial and temporal limitations of traditional production through technology, production activities have been made more precise and efficient; at the level of values, the goal is to promote the all-round development of people and ensure that the development of productivity is in harmony with ecological civilisation, as well as social equity and justice; this is precisely the principle of "harmonious coexistence between humanity and nature" put forward by Marx in his theory of ecological productive forces. For example, in the area of education, the technological part of New Quality Productive Forces can take the form of smart classrooms to promote educational and teaching reform, and the value aspect can provide direction for the good and rapid development of the education sector.

1.2 The Reason for Promoting the High-Quality Development of University Public Physical Education Courses

Promoting the high-quality development of university public physical education courses in line with the new quality productive forces will help higher education meet the new demands of social and economic development and advance the modernisation of physical education. New Quality Productive Forces refer to a new type of productive forces led by science and technology, and thus they can overcome the constraints of time, place and resources for traditional public physical education courses when applied in physical education. With the help of intelligent devices and digital platforms, the classroom is being transformed, and students are receiving more personalised and targeted exercise and health services; this is in line with the direction of educational informatisation reform and can also improve the quality and effectiveness of teaching in public physical education courses^[4]. University public physical education courses are necessary places to foster students' physical fitness and sports literacy, and they also have some influence on all-round and long-term development. Empowerment of new quality productive forces can change the model of public physical education courses from the original "teacher-centered" mode to a "student-centered" one.

New quality productive forces that promote the high-quality development of university public physical education courses are very necessary for carrying out the national strategy of nationwide fitness and improving the health of the Chinese people. University public physical education courses are part of the public sports service system, and their continuous development will promote the overall development of the social sports sector. Help the students build a good foundation in physical education so that they can participate in sports later. At the same time, the new quality productive forces technology will connect the sports resources in schools with those in society to offer more all-encompassing and convenient sports services^[5].

The need for new quality productive forces in the high-quality development of university public physical education courses is to achieve the educational goal of nurturing people at the higher education

level and meet the demands of society. With the help of new technologies, we can integrate the two more organically in teaching to promote the all-round development of students' physical and mental health, improve their innovation and teamwork abilities, cultivate talents for the new era, and thus advance a virtuous cycle of education, economy and society and promote the development of physical education in the new era.

2. The Logical Basis for New Quality Productive Forces in Promoting the High-Quality Development of University Public Physical Education Courses

2.1 Theoretical Logic: Theoretical Basis and Support

The internal mechanism of how New Quality Productive Forces promote the high-quality development of university public physical education courses should be based on a certain foundation. New quality productive forces refer to new kinds of productive forces that are led by science and technology and integrated with digital technology and green development. Based on the above, one of the attributes of the new quality productive forces is the improvement of production and product quality through innovation and reorganisation of technological factors; thus, it provides strong support for the high-quality development of public physical education courses. According to the theory of the digital economy, data factors should be combined with traditional industries to promote the high-quality development of education. Collect data on how well students perform during exercise with intelligent devices and create personalised exercise plans as an example of good and effective management of teaching activities.

The theory of high-quality development in higher education can be used to enhance the force of public physical education courses for New Quality Productive Forces, and thus, reforms in educational and teaching methods and rational allocation of educational resources can be carried out to improve teaching quality from the students' development perspective. To align the new quality productive forces with the high-quality development of higher education, public physical education courses need to be reformed in terms of teaching goals, content and methods; for example, virtual reality (VR) can be used to provide experiential physical education teaching, or big data analysis can be employed to tailor courses according to the physical fitness conditions of students^[6].

Based on the theory of technology empowerment, the support function of new quality productive forces in public physical education courses is to free traditional teaching from the constraints of time and place and make teaching resources more accessible and shareable. Online physical education course platforms can provide good teaching materials for students to learn from at any time and in any place, and teachers can use their mobile phones to observe how the students are exercising and give timely feedback.

The theoretical basis for the new quality productive forces that promote the high-quality development of university public physical education courses is the result of the joint effect of the theory of the digital economy, the theory of high-quality development of higher education and the theory of technology empowerment. The three theories differ in how they promote the high-quality development of public physical education courses in terms of technology, value orientation and implementation path, but they can all move away from traditional experience-based teaching towards modern information-based, personalised and precise physical education instruction.

2.2 Practical Logic: Realistic Needs and Driving Forces

First of all, the practical logic for the new quality productive forces to promote the high-quality development of university public physical education courses is based on the actual teaching needs of university public physical education. At present, the problems with university public physical education courses are that the teaching content is too uniform, the form of assessment is one-dimensional, and student participation is low. Traditional teaching methods cannot meet all the exercise needs of students and fail to promote their good health. Therefore, the new quality productive forces can be effectively used to solve the problems mentioned above with the help of artificial intelligence and big data technology.

The combination of New Quality Productive Forces and university public physical education courses is the result of technological progress and changes in educational ideas. On the one hand, with the development and progress of technologies such as artificial intelligence and virtual reality, it is now

possible to change the teaching mode of public physical education courses and enhance interactivity; at the same time, the education sector has gained a deeper understanding of "student-centered" education and prioritises personalised teaching according to the individual differences of students, so corresponding technological means need to be developed by New Quality Productive Forces to achieve this goal^[7].

New quality productive forces can also be introduced to improve the efficiency of resources and the quality of teaching in university public physical education courses. Traditional public physical education classes are lacking in places, equipment and teachers, so personalised teaching cannot be carried out on a large scale. The new quality productive forces will be able to collect good teaching materials digitally. With the help of technology, information on students can be gathered and delivered to teachers in a timely manner to help them better understand the students' circumstances and adjust their teaching methods accordingly; thus, the quality of classroom teaching can be improved. It meets the real needs of the public physical education course and is also a type of new quality productive force that promotes high-quality development in education.

3. Implementation Paths for New Quality Productive Forces in Promoting the High-Quality Development of University Public Physical Education Courses

3.1 Paths for Teaching Model Innovation

To improve the teaching model of university public physical education courses in line with the concept of new quality productive forces, new technologies and new mechanisms should be used to make teaching more precise, personalised and dynamic. At present, one problem in university public physical education courses is the lack of uniformity in teaching content and homogeneity in teaching methods. New quality productive forces have been given all sorts of technologies, such as digital tools and intelligent devices, to solve these problems. Therefore, some equipment will need to be introduced to collect data on students' exercise, such as motion sensors and AI motion recognition systems, and based on this data, class plans and courses can be adjusted in time. Therefore, the way of teaching will be changed from the previous uniform method to personalised teaching according to the needs of different students, increasing their interest in exercise and allowing us to collect data on how well the teaching is working.

The new teaching model will be an integrated form of online and offline classes based on the idea of "technology empowerment plus scenario reconstruction". Online virtual simulation technology can be used to build a virtual sports environment, such as a virtual running track or a simulated ball game, and then students can learn skills and cooperation in this way. At the same time, intelligent devices can be used to collect exercise data in real time at the actual site offline and then send it online; thus, the whole teaching cycle of "virtual training, actual practice and result feedback" will be formed. The new way of teaching will be technology-driven and no longer bound by time and place. It will help to increase the diversity of teaching materials, and through information sharing, problems in cross-curricular teaching can be solved to build a harmonious system of physical education.

The general idea of teaching model innovation is to have a flexible, student-centered way of adjustment and to integrate the application of technology with the needs of teaching. The teaching model in the new technological era is not merely the addition of technology; rather, it is the use of technology to stimulate students' enthusiasm for learning and interest. For example, we can collect a large amount of data on students' interests to provide personalised learning materials and plans for them; at the same time, we need to set up communication channels with teachers and students so that online platforms can promptly answer any questions students have during their studies and promote a more interactive mode of teaching. In fact, the goal of teaching innovation is to improve the quality of teaching. After a school introduced an AI-assisted teaching system, the students' sports skills rose by 25% and their satisfaction with the course reached 92%. From the above, it can be seen that the teaching reform of new technologies is a way to improve the use of educational resources with technology and thus enhance the quality of university public physical education courses.

3.2 Pathways to Strengthening the Teaching Staff

The first step for new quality productive forces to promote the high-quality development of university public physical education courses is the construction of teaching staff, and importantly, we need to change teachers from traditional skill instructors to technology-integrated educators. Generative AI, such as ChatGPT, can be employed as a support tool for the professional development of future physical

education teachers to create teaching scenarios, develop personalised training plans, provide timely assistance, etc.; thus, teachers will learn more quickly about the application of related technologies in New Quality Productive Forces. Artificial intelligence can be used to build a virtual classroom, and teachers will gain some experience in smart sports facilities in a simulated real-world environment, learn how to make good use of technology, and prepare for the application of intelligent monitoring and data analysis in their future classes.

Based on the experience of the public innovation platform in the Guangdong-Hong Kong-Macao Greater Bay Area for promoting the development of new quality productive forces in enterprises, it has been decided that cross-entity collaboration can be employed to combine resources and strengthen capabilities^[8]. The training of teaching staff for university public physical education can also be carried out in this way by establishing an intercollegiate sports technology teaching and research alliance to bring together university physical education departments, smart sports enterprises and educational technology institutions for the development of training course content. Some special training courses on the collection and analysis of sports data, the application of virtual reality (VR) and augmented reality (AR) in physical education teaching, and AI-assisted sports injury prevention and control will be organised by the alliance. At the same time, a technology-sharing platform will be set up to quickly spread new teaching tools and case materials related to New Quality Productive Forces for Teachers, and thus a community of technological application will be formed.

To improve the quality of teaching staff, we will build a good dynamic performance appraisal and incentive system for teachers. Universities should add the application ability of teachers' technology to the assessment criteria for professional titles and teaching quality. In setting the professional title, one should also consider the design of smart physical education courses and personalised analysis reports of students' exercise performance. Specific research funds will be provided to support teachers in carrying out research on the integration of the new quality productive forces with physical education teaching, and thus more research results based on their practical experience with technology application will be obtained. Based on the above assessment and incentive measures, teachers will be motivated to actively use the teaching empowerment of New Quality Productive Forces and thus foster outstanding teachers in accordance with the demands of the new era.

4. Conclusion

In order to promote the development of high-quality new productive forces in accordance with the goals of the national strategy, it is necessary to enhance the quality of public physical education courses provided by universities. In short, with the help of new technology, new models and new ideas, the direction of university public physical education courses is changing from traditional skill transmission to a combination of "health literacy cultivation, personalised development and digital management". Both the technological and value-oriented attributes of the new quality productive forces can help to solve the problems of public physical education courses, such as low student interest, difficulty in assessing the effectiveness of teaching, and inefficient use of resources. In practice, it is not only the use of technological means but also an adjustment in educational philosophy; that is to say, students are no longer "objects of the course" but rather the current "subjects of exercise", and thus public physical education courses can better achieve the goals of promoting students' development of physical health and cultivating good exercise and life habits.

Research on the empowerment of new quality productive forces for the high-quality development of university public physical education courses should also be conducted in accordance with educational laws. In the future, more studies will be conducted on how to combine technology, teaching and students. For example, a large amount of data on the physical condition of students can be collected to customise teaching materials according to this data, and then virtual reality technology can be used to create an attractive and immersive sports experience for the students. In addition, more will be done to strengthen the information-technology skills of teachers so that they can learn how to use the new technologies in teaching and other parts of education effectively.

Research on the empowerment of new quality productive forces for the high-quality development of university public physical education courses is a microcosm of high-quality development and provides an important reference for the high-quality development of universities. Research on the logical basis and implementation path of this will add to and improve the relevant theories of applying New Quality Productive Forces in education, and also provide some reference points for the high-quality development of other subjects. With the continuous integration of information technology and education, in the future,

public physical education courses will be reformed and developed to be more precise, personalised and lifelong. At this time, New Quality Productive Forces will play a leading role in driving the development of public physical education courses in school education and thus achieve the final goal of "education through sports" and meet the demands of national strategies.

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