

Innovative Research on Physical Education Teaching Design in Colleges and Universities from the Perspective of Core Literacy

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ABSTRACT

The main battlefield for schools to cultivate students' core literacy is the classroom, especially in physical education classes. It is crucial to develop students' core literacy through teaching, and the primary task is to optimize the teaching design. This paper adopts research methods such as literature review and logical analysis to study the significance, predicament and countermeasures of the innovation of physical education teaching in colleges and universities under the background of core physical literacy. Research suggests that under the background of core sports literacy, the innovation of physical education teaching in colleges and universities is a key element in implementing the principle of fostering virtue and nurturing talent, promoting high-quality talent development, and serving the construction of a healthy China and a sports power. However, in the current teaching in colleges and universities, there are problems such as the disconnection between the target system and core literacy, serious homogenization of course content, traditional teaching methods, and a single evaluation mechanism. It is suggested to reconstruct the multi-dimensional objective system, develop modular courses, innovate teaching methods, and build a teaching evaluation system featuring the collaboration of multiple subjects.

KEYWORDS

Core literacy; College physical education; Physical education teaching

Under the overall requirements of implementing the strategy of rejuvenating the country through science and education and strengthening the talent support for modernization, college physical education, as an important part of higher education, urgently needs to enhance its educational function. With the promulgation and implementation of the overall framework of "Core Literacy for Chinese Students", the cultivation of core literacy in physical education has become a key focus of the reform of physical education teaching in colleges and universities. It covers three dimensions: athletic ability, healthy behavior and sports morality, emphasizing the all-round development of students' knowledge, ability and character through physical education. Under this background, it is of great significance to study the innovation of physical education teaching in colleges and universities.

1 The significance of innovation in college physical education teaching under core literacy

1.1 Implement the fundamental task of fostering virtue and nurturing talent

From the perspective of core sports literacy, the innovation of physical education teaching in colleges and universities is an inevitable requirement and specific practical path for the implementation of the fundamental task of fostering virtue and nurturing talent in physical education in colleges and universities. This system systematically integrates the connotation of core literacy into teaching objectives, contents and evaluation systems. Through scientific physical education teaching practices, it comprehensively cultivates students' sports ethics (such as fair play, teamwork, perseverance and other qualities), healthy behaviors (such as developing scientific exercise habits and doing a good job in sports injury prevention and other behaviors) and sports abilities (such as specialized skills and physical fitness). Furthermore, in the process of enhancing physical fitness and tempering willpower, it effectively shapes students' ideological and moral qualities as well as their sound personality.

1.2 Enhance the high-quality development of talents

The innovation of physical education teaching in colleges and universities under the guidance of core sports literacy aims to enable students to achieve the following goals through systematic education: to form a lifelong sports awareness that understands the value of sports and internalizes it as a life concept; Master the scientific exercise methods for formulating and implementing personalized exercise prescriptions; Form a regular and persistent exercise habit. Establish an active and healthy lifestyle that encompasses a balanced diet, adequate rest and stress management. This can not only directly enhance students' physical and mental health, but also cultivate their qualities of striving for progress and pursuing excellence at the level of sportsmanship, and train their communication, leadership and cooperation skills in teamwork.

1.3 Serve the strategies of healthy China and a sports power

Building an innovative system for physical education teaching in colleges and universities oriented towards core sports literacy can systematically enhance college students' athletic ability, healthy behaviors and sports ethics. Meanwhile, colleges and universities should consolidate the foundation of sports culture among college students through systematic course teaching, sports activities, competition organization and cultural creation, stimulate their enthusiasm for sports participation, form a stable interest group, and discover and cultivate reserve talents for competitive sports, mass sports and the sports industry.

2 The predicaments faced in college physical education teaching under the core literacy

2.1 The target system is disconnected from core competencies, and there is insufficient integration of specialties

In physical education teaching in colleges and universities, the teaching objectives overly focus on achieving students' physical health standards and imparting basic sports skills, while paying insufficient attention to and cultivating students' comprehensive abilities, especially those needed for their future career development. This is mainly reflected in the following aspects.

First, the setting of basic goals has not fully taken into account the correlation with future professional physical fitness, resulting in a lack of career orientation in the development of students' basic motor abilities. For instance, the core strength, endurance and movement pattern training required for carrying heavy objects have not been specifically strengthened, causing students to face the predicament of insufficient physical strength in their actual work after graduation.

Second, at the level of development goals, the cultivation of adaptability to professional scenarios is particularly weak. The course design fails to effectively simulate or integrate the physical labor scenarios that may be encountered in future work, such as the handling demands of different industries and positions, and different working environments, which makes it difficult for students to quickly adapt to and be competent for actual work after graduation.

Thirdly, the training objectives lack innovation, especially in the cultivation of interdisciplinary research capabilities and students' autonomous development abilities. There is a lack of practical projects in teaching that integrate physical education knowledge with professional knowledge such as engineering mechanics, ergonomics, and health management. Meanwhile, the cultivation of sports ethics mostly remains at the theoretical explanation level, lacking practical application in real or simulated professional scenarios.

2.2 The course content is highly homogeneous and lacks professional relevance

At present, the content of physical education courses in colleges and universities is highly homogeneous and lacks professional adaptability, which greatly affects students' interest in participating in physical education learning. This is mainly reflected in the following aspects.

First, the curriculum structure is overly rigid. There is a significant disconnect between the general basic modules of physical education, such as track and field and ball games, and the specific needs of students' majors. A modular curriculum system that students can choose independently has not been formed according to the characteristics of the professional group, resulting in a disconnection between basic physical education teaching and the cultivation of professional abilities.

Second, the development of professional core sports modules tailored to the demands of specific industries or positions is seriously lagging behind. For instance, there is a serious shortage of physical education courses with job characteristics for industries such as manufacturing, logistics, and construction, which have high requirements for physical fitness and specific operational skills, and thus cannot meet the differentiated needs of students from different majors.

Third, the innovation of the cross-integration module is insufficient. The traditional sports projects have not been deeply explored and effectively combined with regional industrial culture and corporate culture, lacking regional and industry characteristics. There are still some emerging sports courses, such as sports and modern technology, sports management, sports marketing and other interdisciplinary courses, which have extremely low offering rates in colleges and universities.

2.3 The teaching methods are traditional and the practice in vocational situations is weak

One of the important reasons affecting the current development of physical education in colleges and universities is

the traditional teaching methods and the weak practice in professional contexts. The main reasons for the weakness of the practical teaching links integrated into professional contexts are as follows.

First, traditional classroom teaching in colleges and universities still centers on teacher-led skill explanations, demonstrations, and repetitive training for students. For instance, in basketball teaching, many teachers only emphasize the repeated practice of standard shooting movements, while neglecting to cultivate students' teamwork, spatial judgment, quick response and other abilities in simulated or real confrontations.

Second, the ability of modern information technology to empower teaching is insufficient. In college teaching, the application of technologies such as virtual reality (VR) and augmented reality (AR) to build immersive vocational scenarios, such as the development and application of technologies in logistics, warehousing, handling, and high-altitude operations, is still relatively lagging behind. As a result, students find it difficult to learn skills through immersive experiences.

Thirdly, the depth and breadth of collaboration between schools and enterprises are insufficient. Due to the lack of stable and efficient cooperation mechanisms (such as jointly building courses, mutual employment of teachers, and resource sharing, etc.), real projects, cases and the latest demands in the industry are difficult to be effectively introduced into classroom teaching. For instance, the work break exercises or training programs of logistics enterprises to optimize the physical distribution of workers and reduce handling injuries cannot be promptly transformed into valuable teaching cases for students to analyze and practice.

3 Innovative countermeasures for college physical education teaching design under the three core competencies

3.1 Reconstruct the multi-dimensional goal system and focus on core competencies

Based on the Outcome-oriented Education (OBE) concept, the three-dimensional goal system of physical education courses is reconstructed, aiming to adapt to the diversified and individualized development needs of students, promote the deep integration of physical education and professional education, and lay a solid foundation for the sustainable development of students' future careers. This system is specifically divided into the following three goals.

First, strengthen the foundation of physical constitution. For all students, ensure that they meet the basic requirements of the "National Student Physical Health Standard". The key point lies in enabling students to master the basic physical skills and knowledge related to their future careers. For instance, conduct specialized upper body strength training for students majoring in manufacturing. By systematically offering courses covering core health elements such as cardiorespiratory endurance, muscle strength, and flexibility, we help students build a solid foundation for physical health and meet the basic physiological needs of professional activities.

Second, enhance specialized capabilities. For the majority of students who have further improvement needs, closely integrate their professional characteristics to optimize their athletic performance abilities. For instance, design sports courses for students majoring in logistics management that incorporate handling skills, efficiency improvement and safety operation norms. By simulating real professional scenarios (such as team collaboration and transportation task drills), students' adaptability, operational efficiency and market competitiveness in future jobs can be effectively enhanced.

Third, stimulate autonomous development. For student groups with sports specialties or strong interests, more challenging innovative practical projects are carefully designed, such as participating in the improvement design of sports equipment and organizing inter-school physical fitness challenges, to cultivate their spirit of inquiry, innovative thinking and practical abilities. At the same time, in the goal of cultivating sports ethics, emphasis is placed on strengthening teamwork and the willpower of perseverance, and efforts are made to establish a long-term mechanism for in-depth collaboration between professional learning and physical exercise, to achieve seamless connection between the two at the educational goal and practical level.

3.2 Develop modular course content to align with professional demands

Build a modular physical education curriculum system of "general foundation + professional core + cross-integration" to comprehensively enhance students' core physical education literacy and improve their adaptability to future majors.

First, general basic modules to consolidate the foundation of health. Compulsory general education courses such as basic fitness theory and sports nutrition and health are offered to students of all majors in the school. The aim is to cultivate students' scientific, regular and lifelong physical exercise habits, and provide solid theoretical support and practical guidance for them to meet the general physical fitness requirements of various professional activities.

Second, professional core modules to precisely match positions. Based on the core competence requirements of

different majors and typical working scenarios, the content of physical education courses is designed in a targeted manner. For instance, courses on enhancing explosive power and optimizing movements are offered for the sports training major. Courses such as on-site assessment, treatment and protection of sports injuries are offered for the Rehabilitation Therapy Technology major. Such courses directly target the core operational skills and professional physical fitness requirements of specific industries.

Third, cross-integrate modules to enrich the course features. Actively develop interdisciplinary "Sports +X" characteristic courses, such as sports big data analysis, e-sports management, and application of sports psychology, etc. At the same time, introduce and pass on traditional ethnic sports with profound cultural heritage (such as martial arts routines, dragon boat racing, etc.), which not only enhances the interest and appeal of the courses but also strengthens students' cultural identity, inheritance ability, and adaptability to the characteristics of regional sports culture.

3.3 Innovate teaching methods and deepen situational practice

Introduce and apply innovative teaching methods, with a focus on strengthening the construction and simulation of professional scenarios, to promote the integrated development and comprehensive improvement of students' physical education knowledge, skills and professional qualities.

First, vocational contextualized teaching. Deeply embed physical education teaching activities into simulated professional scenarios. For instance, in the physical education courses of the nursing major, design drill tasks for the safe transportation and position management of injured people in first aid scenarios. By completing such challenging real tasks, students can effectively enhance their abilities to apply physical fitness, carry out operational procedures and collaborate efficiently in a team under high-pressure conditions.

Second, technology empowers blended teaching. Make full use of modern information technology means such as virtual reality (VR) and augmented reality (AR) to build a highly realistic virtual professional operation environment (such as simulating the specific position operation space during the maintenance and repair of mechanical and electrical equipment). By integrating theoretical learning on sports biomechanics and safety regulations through online platforms and closely combining it with practical skills in offline physical environments, students can significantly enhance the efficiency and accuracy of transferring and applying the knowledge and skills they have learned to complex real working scenarios.

Third, project-based learning through school-enterprise collaboration. In collaboration with leading enterprises in the industry, jointly develop practical physical education teaching projects based on real work requirements (such as cooperating with large logistics enterprises to develop the "Efficient and Safe Material Handling Operation Optimization" course). Guide students to form project groups and apply the sports science knowledge they have learned (such as ergonomics and fatigue recovery) to analyze and solve practical problems raised by enterprises (for example, optimizing the physical recovery plan for specific types of employees during work breaks), and truly achieve the integration of industry and education as well as the application of what they have learned.

3.4 Build a diversified evaluation system to enhance the effectiveness of education

Establish a multi-dimensional and multi-faceted evaluation mechanism covering the entire process of students' physical education ability development to scientifically assess learning outcomes, guide teaching improvement, and comprehensively enhance the practical effect and educational value of physical education.

First, establish a dual-dimensional evaluation of "process + result". Process evaluation comprehensively focuses on students' performance throughout the entire learning cycle, including their enthusiasm and quality of classroom participation, the extent of physical and skill improvement, the formation of extracurricular self-exercise habits, and the specific manifestations of sports ethics (such as sense of responsibility, rule awareness, respect for opponents and teammates). Result-oriented evaluation focuses on measuring the degree of achievement of key results, including the scores of physical health tests, the results of specialized sports skills assessments, and the quality and efficiency of completion in simulated or real occupational scenario tasks.

Second, conduct differentiated and stratified evaluations. Implement evaluation strategies based on individual differences among students. Set up more challenging high-level evaluation projects for outstanding students with a solid foundation in sports and spare capacity for study (such as participating in specialized skills competitions and evaluating innovative plan designs). Provide more adaptive assessment content and standards for students with learning difficulties or physical limitations (such as adjusting the difficulty of movements, extending the assessment time, and emphasizing the evaluation of progress), and make dynamic and personalized adjustments to the evaluation standards in combination with students' self-assessment and reflection.

Third, implement multi-subject collaborative evaluation. Break the limitations of single teacher evaluation and introduce multi-dimensional evaluation subjects. Integrate teacher evaluation (from a professional guidance perspective),

student self-evaluation (reflection and goal management), peer evaluation (perceived teamwork), and expert evaluation from industry and enterprises (focusing on the consistency between practical job operation ability and professional quality), and jointly participate in the evaluation process to form a more comprehensive, objective, and practice-oriented multi-dimensional feedback network. Provide rich basis for the all-round development and continuous improvement of students.

4 Conclusion

Building an innovative system for physical education teaching in colleges and universities oriented towards core sports literacy is an important measure to cultivate high-quality talents with all-round development. In view of the current problems existing in physical education teaching in colleges and universities, such as lagging concepts, rigid models and weak practice, professional sports colleges and universities should pay special attention to integrating with professional characteristics in the process of innovative development, adopt diversified methods to cultivate students' sports ability, healthy behavior and sports ethics, and at the same time strengthen professional physical fitness and professional ethics. During the implementation process, it is necessary to reconstruct teaching content, innovate teaching methods, improve the evaluation mechanism, and provide necessary conditions and guarantees.

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