

Practice and Reflection on the Interdisciplinary Teaching in Primary and Secondary Physical Education Programs

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ABSTRACT

This paper discusses the importance, practical strategies, advantages and challenges of implementing interdisciplinary teaching in primary and secondary physical education programmes and makes recommendations. Interdisciplinary teaching promotes students' all-round development by integrating knowledge from different disciplines. The article introduces practical cases of combining physical education with science, art, social humanities and other disciplines, and suggests that the advantages of interdisciplinary teaching include broadening horizons and enhancing fun and motivation, but it also faces the challenges of insufficient teachers' knowledge reserves and difficulties in integrating resources. To cope with these problems, this paper puts forward the following suggestions: strengthening interdisciplinary training for teachers, building teaching platforms, innovating teaching modes, and paying attention to individual student differences. Continuously promote the practice of interdisciplinary teaching, improve the quality of education, and cultivate future members of society with comprehensive qualities.

KEYWORDS

Interdisciplinary Teaching; Physical Education; Integral Quality; Quality of Education.

1. INTRODUCTION

In recent years, interdisciplinary teaching is gradually becoming a key way to develop students' comprehensive quality. It breaks through the traditional boundaries between disciplines and promotes students' cognitive, emotional and social development by integrating the knowledge and skills of different disciplines [1]. On 21 April 2022, the Ministry of Education's revised Physical Education and Health Curriculum Standards for Compulsory Education (2022 Edition) added a new unit called "Interdisciplinary Thematic Learning". In the revised Physical Education and Health Curriculum Standards for Compulsory Education (2022 Edition) of the Ministry of Education on 21 April 2022, "Interdisciplinary Thematic Learning" was added to the curriculum, with special emphasis on horizontal cooperation between disciplines, optimising the organisation of curriculum content, integrating the teaching content of different disciplines in the form of themes, projects, tasks, etc., and giving full play to the holistic function of the curriculum in order to comprehensively educate people, enhance the cultivation of students' common qualities and develop quality education [2].

In view of the importance of interdisciplinary teaching and the potential of interdisciplinary teaching in primary and secondary physical education programmes, this paper aims to explore how to effectively implement interdisciplinary teaching in primary and secondary physical education programmes and put forward corresponding practical strategies and reflections. By analysing the existing teaching models, this paper will propose innovative teaching methods, explore how to integrate teaching resources and teachers from different disciplines, as well as how to face and solve

the challenges that may be encountered in interdisciplinary teaching. This paper expects to provide valuable references and insights for the reform and development of physical education teaching in primary and secondary schools.

2. THE PRACTICE OF INTERDISCIPLINARY TEACHING IN PHYSICAL EDUCATION PROGRAMS

2.1. Integration with Science Programmes

Integrating physiological principles into physical education helps students gain a deeper understanding of the positive effects of exercise on the human body. For example, by learning how muscles respond to exercise, students can perform physical exercise more scientifically and improve exercise efficiency and safety [3]. Teachers can design experiments to allow students to experience and observe physiological changes before and after exercise, such as changes in heart rate, blood pressure and other indicators. Data-driven teaching methods can increase students' interest and participation in sports activities. By collecting and analysing sports performance data, students are able to assess their own athletic ability more objectively and develop personalised training plans [4]. The introduction of scientific experiments, such as testing the effects of different sports on physical fitness, allows students to learn the methods of scientific enquiry in practice.

2.2. Integration with Art Programmes

The combination of sports with dance and music can enrich students' experience of physical education programmes. By choreographing gymnastics or dance that incorporates musical rhythms, students can not only improve their physical coordination, but also develop artistic perception [5]. This kind of integrated teaching helps students to experience the beauty of art in physical activities and improve their overall artistic cultivation.

Encouraging students to perform creative choreography and performances can stimulate their creativity and expressiveness. In physical education classes, students can freely combine movements to create their own dances or gymnastics and then perform them. Such activities not only exercise students' creative thinking, but also enhance their self-confidence and teamwork.

2.3. Integration with Social Humanities Programmes

The development of sportsmanship is one of the important objectives of physical education. Through sports activities, students can learn moral codes such as fair play, respect for opponents and observance of rules. The teaching of these values is crucial to the development of students' personal character and social responsibility. Teamwork is an integral part of physical activity. Through team sports, students are able to learn how to function in a team and how to collaborate with others to achieve a common goal. This experience of teamwork is important for students' future social and professional development.

2.4. Examples of Integration with Other Cultural Programmes

Currently, the research on interdisciplinary integration of school physical education and different disciplines is mainly divided into two directions: on the one hand, physical education is used as an auxiliary tool and integrated into other cultural programmes to achieve interdisciplinary teaching; on the other hand, physical education is used as the core of teaching and combined with the contents of other disciplines, aiming at cultivating students' core physical education qualities and comprehensive abilities [6].

In the interdisciplinary teaching of "sports + mathematics", Song Huiying, a frontline teacher, cleverly combines sports and mathematical knowledge. In the physical education class, she combines line formation, number reporting, ball cognition and the measurement of high jump and long jump to achieve the organic combination of mathematical knowledge and physical education [7]. In the exploration of the interdisciplinary integration teaching of "Sports + English", teachers Zhu Bo and Sun Peijuan proposed innovative teaching methods. They integrated English oral teaching into the formation training of physical education class, and at the same time cleverly combined the running training with the content of English teaching materials, realising the effective integration of physical education and English teaching [8]. In the practice of interdisciplinary teaching of "sports + geography", Cai Qiling, a front-line teacher, put forward an innovative teaching model. She advocates the organic combination of physical education and geography teaching with the theme of "love of nature", and carries out interdisciplinary integrated teaching research with task orientation [9]. Scholar Zhong Hongyu integrates the knowledge of music and language into the teaching of physical education and health in the practice of interdisciplinary integration teaching in physical education, aiming to promote the cultivation and improvement of students' overall quality through the integration of knowledge between disciplines [10].

3. ADVANTAGES AND CHALLENGES OF INTERDISCIPLINARY TEACHING

3.1. Advantages of Interdisciplinary Teaching in Physical Education

3.1.1. Broaden Students' Horizons and Enhance Their Overall Quality

The interdisciplinary teaching mode provides students with a broader vision of learning by integrating knowledge and skills from different disciplines. This mode of teaching encourages students to go beyond the boundaries of a single discipline and explore the connections and integration points between different fields. For example, in a course that combines physical education and science, students not only learn motor skills, but also understand the physiological and mechanical principles behind the movement, thus enhancing their scientific literacy in practice. In addition, interdisciplinary teaching also contributes to the enhancement of students' comprehensive quality, including critical thinking, innovation and problem-solving ability, which are key indispensable abilities in the 21st century [11].

3.1.2. Enhancing the Interest of the Curriculum and Improving Learning Motivation

Incorporating content from different disciplines into physical education courses can make the courses themselves more lively and interesting. For example, by incorporating music and dance into physical education activities, physical exercise can be made more appealing and students' interest in physical education classes can be increased⁵. The addition of art not only enriches the content of physical education, but also provides a platform for students to display their creativity and individuality. This increase in interest directly affects students' motivation to learn and makes them more willing to participate in the learning process, thus improving learning efficiency and teaching effectiveness.

3.2. The Challenges of Interdisciplinary Teaching and Learning in Physical Education

3.2.1. Teachers' Insufficient Interdisciplinary Knowledge Reserves

Although interdisciplinary teaching has obvious advantages, it also brings a series of challenges, and at the same time, subject to multiple factors, teachers face cognitive dilemmas, competence dilemmas, resource dilemmas and evaluation dilemmas in the process of implementing interdisciplinary thematic teaching, which makes it difficult to highlight the nurturing value of interdisciplinary thematic teaching [12]. Teachers need to have sufficient interdisciplinary knowledge reserves to

effectively implement interdisciplinary teaching. However, the reality is that many physical education teachers may lack expertise in other disciplines, which limits their ability to design and implement interdisciplinary lessons [13]. To overcome this challenge, teachers need to enhance their interdisciplinary knowledge through professional development and continuous learning.

3.2.2. Difficulty of Integration of Instructional Resources and Curriculum Design

Another challenge is the integration of teaching resources and curriculum design. Interdisciplinary teaching requires teachers to be able to integrate resources from different disciplines and design a curriculum that meets the teaching objectives and stimulates students' interest. This requires not only teachers' interdisciplinary knowledge, but also their ability to innovate and design curricula. In addition, coordination and cooperation among different disciplines is also a challenge, requiring support from school management and effective communication among teachers of different disciplines.

4. REFLECTIONS AND RECOMMENDATIONS

4.1. Strengthening Interdisciplinary Training for Teachers to Enhance Professionalism

Interdisciplinary training for physical education teachers should cover basic scientific knowledge, art appreciation, social science and other aspects. For example, scientific knowledge such as physiology and sports mechanics can help teachers better understand the effects of sports on the human body; art appreciation courses can enhance teachers' aesthetic ability and enrich the form of sports teaching. Educational administrations should organize interdisciplinary training on a regular basis, inviting experts and scholars in related fields to give lectures and seminars. At the same time, teachers are encouraged to participate in online courses and seminars to continuously update their knowledge structure and enhance their interdisciplinary teaching ability. Teachers should take the initiative to participate in the practice and research of interdisciplinary teaching, and constantly improve their professionalism by writing teaching cases and participating in teaching competitions [14].

4.2. Building an Interdisciplinary Teaching Platform to Promote Resource Sharing

Establish an interdisciplinary teaching and research community at the school level and set up an incentive mechanism to effectively mobilize teachers of different disciplines to collaborate in interdisciplinary teaching [15]. The platform can include functions such as teaching resource library, online seminar area, and teaching case sharing. Through the platform, teachers can share teaching videos, lesson plans, experimental materials and other resources. For example, science teachers can share experimental videos about sports mechanics, and physical education teachers can integrate these videos into their teaching. Teachers from different disciplines are encouraged to establish partnerships on the platform to develop interdisciplinary curricula and teaching programs. School management should support such collaborations by providing teachers with the necessary time and resources.

4.3. Innovate Interdisciplinary Teaching Modes to Stimulate Students' Interest

Explore and practice diversified interdisciplinary teaching modes, such as project-based learning, inquiry-based learning, flipped classroom, etc., in order to adapt to the learning needs of different students [16]. Design specific interdisciplinary teaching cases, such as combining the "Exercise and Health" program of physical education and science, so that students can learn scientific knowledge in practice and exercise their bodies at the same time. Encourage students to participate in the design and implementation of teaching and learning activities, and give full play to their creativity and initiative. For example, students can design their own sports activities, with teachers providing the necessary guidance and assistance.

4.4. Focusing on Individual Differences of Students and Teaching According to Their Abilities

Each student has different physical conditions, interests and learning abilities, and teachers should fully understand and respect these differences to provide individualized instruction. According to the different characteristics of students, design a differentiated teaching program. For example, for students who are more athletic, more difficult training programs can be provided; for students who need to improve their physical fitness, targeted exercise programs can be designed. Establish a diversified evaluation system that evaluates not only students' sports skills, but also their learning attitudes, teamwork abilities, and innovative thinking. Establish a good communication and cooperative relationship with parents to jointly focus on students' growth and development. Parents can participate in the school's sports activities and work together to promote the overall development of students.

5. CONCLUSION

5.1. The Unlimited Potential and Value of Interdisciplinary Teaching in Primary and Secondary Physical Education Programs

Interdisciplinary teaching shows great potential and value in primary and secondary physical education programs. It breaks through the boundaries of traditional physical education, combines physical education activities with knowledge of science, art, social humanities and other disciplines, and provides a comprehensive and integrated learning platform for students. Through interdisciplinary teaching, students are able to learn the principles of physiology, sports mechanics and other scientific knowledge in sports activities, and at the same time, they are able to cultivate artistic perception and creativity in the integration of sports with dance and music. In addition, the combination of sportsmanship and moral education, as well as the practice of sports activities and teamwork, helps students form correct values and a sense of social responsibility. Interdisciplinary teaching can also stimulate students' interest in learning and increase their motivation to participate in sports activities. It meets the learning needs of different students by providing diversified learning experiences, thus enhancing students' motivation and participation. More importantly, interdisciplinary teaching helps to cultivate students' comprehensive qualities, including teamwork, problem-solving and innovative thinking, which are indispensable to their future social life.

5.2. Interdisciplinary Teaching Practices Should Be Continuously Promoted in the Future to Enhance the Quality of Education

In order to further enhance the quality of education, interdisciplinary teaching practices in primary and secondary physical education programs need to be continuously promoted. First, education administration and school management should emphasize the implementation of interdisciplinary teaching and provide the necessary policy support and resources. Second, teachers' professional development is the key to promoting interdisciplinary teaching, and teachers' interdisciplinary knowledge base and teaching ability need to be strengthened through regular training and seminars.

At the same time, schools should build an interdisciplinary teaching platform, strengthen the top-level design, optimize the integration environment of interdisciplinary teaching of information technology and physical education courses; adopt school-based resources to carry out accurate training for physical education teachers to improve the use of information technology; strengthen the collaborative exchanges of various industries to expand the breadth of interdisciplinary teaching of information technology and physical education courses [17]. In addition, innovative teaching mode is also an important way to promote interdisciplinary teaching, educators should continue to explore

and practice new teaching methods, such as project-based learning, inquiry-based learning, etc., in order to adapt to the changing educational needs.

Finally, the implementation of interdisciplinary teaching needs to pay attention to the individual differences of students and implement tailor-made teaching. Teachers should design individualized teaching programs according to students' interests, abilities and learning styles to ensure that every student can grow and develop in interdisciplinary learning.

In summary, interdisciplinary teaching has important significance and value in primary and secondary physical education programs. By continuing to promote the practice of interdisciplinary teaching, we are able to provide students with higher quality education and train them to become future members of society with comprehensive qualities.

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