

Application Research of Inquiry Learning Method in Secondary School Physical Education Teaching

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Abstract:

This study takes inquiry-based learning as a starting point to conduct a systematic analysis of its application in secondary school physical education teaching, delving into the subject from multi-level theoretical perspectives. The research employs methods such as literature review and logical analysis. Key findings include: enhancing teachers' professional competence; strengthening home-school collaboration; refining the implementation of inquiry-based learning methods in schools; and deepening students' understanding of inquiry-based learning approaches. These conclusions aim to provide valuable insights for the application research of inquiry-based learning methods in physical education teaching.

Keywords:

Inquiry-based Learning Method, Secondary School Physical Education, Physical Education Teaching, Physical Education

1. Introduction

The “Guidelines for Teaching Reform in Physical Education and Health (Trial)” (hereinafter referred to as the “Guidelines”), issued by the General Office of the Ministry of Education in 2021, outlines reform objectives centered on enjoyment, physical fitness enhancement, personality development, and willpower cultivation. Key tasks include updating teaching concepts, optimizing instructional content, innovating teaching processes, and refining evaluation systems. Emphasis is placed on both the implementation and outcomes of physical education reforms, aiming to create high-quality classrooms that foster students' core competencies in athletic skills, healthy behaviors, and sports ethics. Modern physical education must advance along the path of high-quality educational system development, with the “middle school stage” serving as a critical phase. This stage requires not only attention to students' physical fitness but also prioritized focus on mental health development. This underscores the need to strategically integrate teaching methodologies from other disciplines into physical education practices, driving continuous innovation in pedagogical approaches [1]. Based on in-depth analysis of students' learning conditions and physiological/psychological characteristics during this stage, the

author proposes applying inquiry-based learning methods to middle school physical education, seeking to provide actionable insights for advancing high-quality physical education development.

2. Current Status of Exploratory Learning Method Application

2.1. Domestic Research Status

The inquiry-based learning approach has been effectively implemented across multiple disciplines. It refers to a learning methodology and process where students acquire knowledge and skills, enhance investigative and practical abilities, and gain emotional experiences through problem identification, research investigations, and other inquiry-based activities within academic domains or real-life contexts. Liu Qing emphasizes that this method prioritizes student initiative and participation, adopting a problem-oriented approach that encourages independent exploration, collaborative communication, and deep reflection. By identifying issues, gathering information, and conducting analysis, students effectively develop critical thinking and problem-solving capabilities [2]. While applying inquiry-based learning in teaching practice presents certain challenges, it significantly boosts student engagement. Through teachers' encouragement and guidance, learners develop autonomous learning skills to achieve deeper understanding and mastery of core knowledge. This methodology cultivates students' independence, enabling them to independently solve and address problems in academic and daily life scenarios, thereby promoting comprehensive educational development.

Through analyzing practical cases across disciplines, it is evident that inquiry-based learning methods can be effectively implemented in secondary school physical education. Physical education classes focus not only on imparting sports knowledge but also on cultivating students' athletic intelligence through enhanced physical capabilities. This necessitates in-depth research into optimal teaching methodologies [3]. The alignment between inquiry-based learning and physical education requirements makes it particularly suitable for current secondary school curricula. Well-designed teaching approaches can significantly improve both the quality of physical education instruction and students' overall development.

2.2. Current Research Status Abroad

The United States places great emphasis on cultivating students' inquiry skills in both academic and daily life, reflecting a strong commitment to fostering divergent thinking and moving beyond one-way knowledge transmission. Design-based and application-oriented learning courses are implemented across elementary and secondary schools nationwide, significantly enhancing students' self-directed learning capabilities and practical competencies. In his seminal report "Science Teaching as Inquiry," Professor Schwab—a renowned U.S. curriculum and biology expert—proposed the concept of "inquiry-based learning," defining it as "a proactive, autonomous process of acquiring knowledge through exploration, developing inquiry skills, building life experiences, and nurturing a mindset for independent research" [4].

Japan began adopting inquiry-based learning methods in its teaching approaches as early as 1998, requiring the design and implementation of "curriculum-based inquiry learning activities" and "experiential learning activities." It also mandated that primary and secondary schools must incorporate "integrated learning time" into their curricula.

In Germany, inquiry-based learning manifests as free learning, referring to students' autonomous selection of learning activities in accordance with curriculum requirements, including the choice of learning content, methods, tools, locations, and organizational formats.

In conclusion, the early exploration of inquiry-based learning abroad has evolved into a mature teaching method through the accumulation of different countries. This provides a theoretical basis for the application of inquiry-based learning methods in physical education teaching in Chinese middle schools. By combining China's national conditions and the actual situation of school physical education, an inquiry-based sports learning method with Chinese characteristics can be formed.

2.3. Current Application of Inquiry-Based Learning Method in Secondary School Physical Education Teaching

Traditional teaching methods remain predominant in current middle school physical education, resulting in declining student interest in PE classes. With the implementation of holistic education and quality-oriented development, the new curriculum standards emphasize prioritizing health education while effectively fulfilling requirements such as instruction, regular practice, and frequent competitions. This necessitates comprehensive curriculum design and teaching method reforms. The shift from "knowledge and skill-centered" to "student development-centered" approaches advocates creating engaging sports scenarios and activities. Integrating teacher demonstrations, key concept explanations with students' autonomous learning, collaborative learning, and inquiry-based learning creates dynamic yet substantive PE classes. Research indicates that inquiry-based learning methods effectively enhance classroom engagement, achieve lesson objectives, and provide ample opportunities for independent study and group discussions. This approach significantly improves students' physical health while promoting balanced development of physical, mental, and cognitive abilities.

3. The Role of Inquiry Learning Method in Secondary School Physical Education Teaching

3.1. The Role of Inquiry-Based Learning in School Physical Education Instruction

The inquiry-based learning approach represents a pedagogical reform designed to effectively implement the new Physical Education and Health curriculum standards. Integrating this methodology into secondary school physical education classes primarily serves to transform the previously monotonous and repetitive nature of traditional PE instruction. By fostering active student participation and providing ample opportunities for critical thinking, this approach significantly enhances the achievement of teaching objectives and facilitates comprehensive mastery of instructional content.

3.2. The Role of Inquiry-Based Learning in Social Sports Practice

The inquiry-based learning approach can be effectively implemented in social sports settings such as sports training institutions. By widely adopting this pedagogical method, students can access such teaching strategies outside traditional classrooms, significantly enhancing learning outcomes across different academic levels. This approach not only thoroughly embodies the essence of inquiry-based learning but also provides early exposure to innovative educational models.

Furthermore, it facilitates the exchange of advanced teaching methodologies with school sports programs, enabling continuous refinement of inquiry-based learning practices in physical education. These developments highlight its pivotal role in advancing social sports initiatives.

4. Analysis of Inquiry Learning Method in Secondary School Physical Education Teaching

4.1. The Relationship Between Inquiry-Based Learning Method and School Physical Education

The inquiry-based learning approach and school physical education share a mutually reinforcing relationship. As previously outlined, this methodology emphasizes students' ability to independently identify, analyze, and resolve problems. In contrast, school physical education primarily focuses on practical activities—such as traditional sports programs like dragon and lion dances widely practiced in primary and secondary schools—which prioritize students' cognitive and manual skills. These observations demonstrate that inquiry-based learning can be effectively integrated into physical education instruction, with its application manifesting in two key aspects.

First, examining the intrinsic drivers of inquiry-based learning and school physical education. Current school sports programs face a paradox where students enjoy sports activities but show disinterest in physical education classes. Field studies by researchers have identified primary causes including monotonous lesson formats and repetitive teaching methods, indicating that educators fail to employ effective strategies to engage students' initiative and motivation, resulting in suboptimal teaching outcomes [5]. The application of inquiry-based learning fundamentally transforms traditional pedagogical models by shifting focus from teacher-centered instruction to student-centered learning. This approach continuously enhances students' engagement while enabling them to develop systematic methodologies for acquiring knowledge through sports skill exploration.

Secondly, the inquiry-based learning approach and external drivers of school physical education. Autonomous exploration does not imply disorganization but rather refers to self-directed learning conducted within well-structured sports environments. For instance, in dragon dance instruction, teachers first impart the core techniques of the "eight-character dragon dance" to students. After mastering these fundamentals, learners can engage in independent exploration, progressively developing additional movements such as marching formations and boat-rowing maneuvers. This process enhances interest in physical education through external motivation. The inquiry-based learning method and school sports education maintain a mutually reinforcing relationship, collectively driving the high-quality development of physical education programs.

4.2. Application of Inquiry-Based Learning Method in Secondary School Physical Education Teaching

The application of inquiry-based learning methods in secondary school physical education can effectively stimulate students' learning interest and facilitate in-depth exploration of sports knowledge and skills. Secondary school students typically range in age from 12 to 18 years old. When implementing inquiry-based learning

approaches in physical education during this stage, it is essential to consider both their psychological development status and the integration with specific sports disciplines.

4.2.1. Theoretical Foundations for Applying Inquiry-Based Learning Methods in Secondary School Physical Education Instruction

Firstly, grounded in cognitive learning theory, students are positioned as active participants in the classroom, capable of conducting purposeful knowledge exploration rather than passive knowledge absorption. This theory resonates deeply with inquiry-based learning methods in secondary school physical education, not only expanding students' existing understanding of PE classes but also stimulating their curiosity about sports knowledge [6]. Secondly, drawing from constructivist learning theory, we create tailored learning environments where students actively construct knowledge under teacher guidance, forming their own understanding. For instance, when teaching football inside-foot kicks, traditional instruction follows a "teacher-taught, student-learned" approach. In contrast, constructivist inquiry learning involves teachers designing curriculum models, guiding students through collaborative group discussions while ensuring safety, followed by peer analysis and teacher feedback. This approach significantly enhances student engagement and interest. Finally, humanistic learning theory emphasizes respecting students' self-worth and dignity, advocating for student-centered pedagogy that focuses on progress, develops intrinsic potential, and fosters self-directed learning habits. These principles effectively harmonize inquiry-based learning applications in secondary physical education, encouraging teacher-student collaboration through student-centered perspectives to achieve true "teaching how to fish" – equipping learners with practical skills rather than just knowledge.

4.2.2. Basic Requirements for the Application of Inquiry-Based Learning Method in Secondary School Physical Education Teaching

First, the understanding and comprehension of inquiry-based learning methods by physical education teachers are critical to their application. Since the implementation of this approach not only enhances the traditional physical education teaching model but also increases the knowledge reserve capacity of physical education teachers, it is essential for them to strengthen their theoretical knowledge base and develop a correct understanding of inquiry-based learning methods.

Secondly, the effective implementation of inquiry-based learning in secondary school physical education requires coordinated efforts between families and schools. Schools must provide teaching resources and ensure optimal learning environments for both teachers and students, while families should move beyond the "grades-only" mindset prevalent among parents. By prioritizing physical education and fostering students' critical thinking skills, inquiry-based learning can be successfully integrated into physical education curricula. This approach not only significantly enhances the quality of secondary school sports education but also drives the advancement of school sports programs.

5. Advantages and Limitations of Exploratory Learning Method in Secondary School Physical Education Teaching

5.1. Advantages of Exploratory Learning Method in Secondary School Physical Education Teaching

Firstly, students become active participants in the classroom, acting as problem solvers who identify, analyze, and acquire knowledge—processes that align seamlessly with sports learning. This approach cultivates self-directed learning and practical skills, significantly enhancing educational outcomes. By exploring sports-related knowledge, students develop core sports literacy, laying a solid foundation for lifelong physical engagement. Secondly, teachers employ inquiry-based learning methods to transform classroom dynamics, shifting from rigid instruction to exploratory learning that encourages independent thinking and extrapolation. This not only enriches sports curriculum content but also strengthens students' athletic exploration capabilities. Finally, schools can design inquiry-based physical education programs as flagship courses, effectively integrating sports education with the development of critical thinking skills.

5.2. Limitations of Exploratory Learning Method in Secondary School Physical Education Teaching

The identified shortcomings include: Firstly, whether physical education teachers can effectively guide student-centered classrooms to foster critical thinking rather than causing drowsiness or excessive playfulness. Secondly, the depth of teachers' mastery of inquiry-based learning methods and their ability to seamlessly integrate these approaches into instruction, which requires profound understanding and continuous refinement of their knowledge systems. Lastly, lack of awareness regarding emerging teaching methodologies from family perspectives may hinder implementation. Therefore, addressing these deficiencies through iterative improvements will be crucial to advancing physical education development in secondary schools.

6. Pathways for Enhancing Inquiry-Based Learning Method in Secondary School Physical Education Teaching

6.1. Enhancing Teachers' Professional Competence

Teachers serve as primary mentors guiding student development, with their instructional competence being the decisive factor in student progress. The integration of inquiry-based learning approaches into physical education inevitably requires comprehensive professional development for educators to continuously enhance teaching capabilities and adapt to dynamic educational environments. It is essential to align with current curriculum standards while strengthening teachers' foundational skills, innovating teaching methodologies based on solid technical expertise, and adopting a student-centered approach that emphasizes practical application to refine professional competencies [7]. Therefore, elevating teachers' professional standards not only improves teaching quality but also forms the foundation for ongoing educational reform. Only through continuous exploration of inquiry-based learning principles, implementation of optimized simulation courses, and persistent professional development can educators effectively apply this methodology in secondary school physical education practices.

6.2. Strengthening Home-School Communication and Cooperation

Implementing home-school collaboration is essential for achieving high-quality development in the new-era education system. Only through meticulous cooperation between families and schools can educational implementation and improvement be

effectively promoted, particularly in physical education for primary and secondary schools [8]. As an innovative teaching approach, inquiry-based learning may be unfamiliar to students. To address potential resistance or confusion, schools and families should collaborate to provide preliminary guidance, helping parents internalize the methodology before implementing it at home and subsequently disseminating it across schools. Therefore, schools and families must form a united front to effectively drive educational reforms without hindrance from any single party. The successful application of inquiry-based learning in secondary school physical education requires robust home-school partnerships to achieve its full potential.

6.3. Improving the Implementation of Inquiry-Based Learning Methods in Schools

School education serves as the primary platform for inquiry-based learning methods, and their application in physical education has significantly enhanced students' autonomous exploration of sports knowledge. The proposed home-school collaboration and communication should be primarily implemented by schools, making implementation the key to development. First, schools should promote the widespread adoption of inquiry-based learning across all disciplines and summarize practical experiences [9]. Second, these accumulated insights should be shared institution-wide, with particular emphasis on integrating inquiry-based approaches into physical education classroom practices through focused discussions. Finally, simulated teaching sessions should be conducted to demonstrate the implementation of inquiry-based learning methods across various educational projects, leveraging accumulated experience.

6.4. Enhancing Students' Understanding of Inquiry-Based Learning Methods

Teachers should take the lead in implementing inquiry-based learning and effectively integrate accumulated teaching experiences into classroom instruction. With students as the core participants, educators from various disciplines need to systematically introduce inquiry-based learning methodologies, enabling students to clearly recognize their advantages. When this approach is reintroduced in physical education classes, it allows for rapid thematic engagement and seamless coordination with instructional practices. Such implementation can serve as a model for secondary school physical education programs, establishing a mature framework to enhance teaching quality.

7. Conclusions

This study systematically explores the application of inquiry-based learning in secondary school physical education, demonstrating its potential to transform traditional teaching paradigms. The findings reveal that this approach stimulates student engagement, fosters autonomous learning, and aligns with cognitive, constructivist, and humanistic learning theories. When effectively implemented, inquiry-based learning enhances teachers' professional competence, enriches instructional content, and promotes students' holistic development. Successful integration requires coordinated efforts across multiple fronts. Enhancing teachers' professional competencies, strengthening home-school collaboration, refining school-level implementation strategies, and deepening students' understanding of inquiry-based methodologies are essential to overcoming existing limitations. Inquiry-based learning constitutes a viable pedagogical innovation for secondary school physical

education. With systematic institutional support and collaborative partnerships, its broader application can significantly advance instructional quality.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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