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Research on the reform of mathematics teaching in the new form of ideological and political education in the curriculum

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Abstract: With the development of society and progress of the times, ideological and political education within the curriculum has become an integral part of education in China. Mathematics, as a fundamental subject, holds a pivotal position in the realm of ideological and political education. This paper aims to research the reform of mathematics teaching in the new form of ideological and political education within the curriculum. It explores how to integrate ideological and political education into mathematics teaching to enhance the quality and effectiveness of mathematics education.

Key words: ideological and political education within the curriculum; mathematics teaching; educational reform; academic value

1 Introduction

Ideological and political education within the curriculum is a crucial component of higher education in China, holding significant importance in the cultivation of well-rounded socialist builders and successors with moral, intellectual, physical, and aesthetic qualities. In recent years, as the nation's emphasis on ideological and political education within the curriculum has grown, universities and colleges across the country have actively explored ways to integrate this form of education with various subjects to achieve better educational outcomes. Among these subjects, mathematics, as one of the fundamental courses in higher education, plays a crucial role in ideological and political education within the curriculum. The research on the reform of mathematics teaching based on the new form of ideological and political education within the curriculum aims to investigate how to effectively integrate ideological and political education into mathematics teaching, thereby improving the quality and effectiveness of mathematics education. This paper will commence by examining the essence and characteristics of ideological and political education within the curriculum, analyzing the significant position and role of mathematics courses within this educational framework, and discussing specific methods and strategies for incorporating ideological and political education into mathematics teaching. Ultimately, this research aims to provide theoretical support and practical guidance for the reform of mathematics teaching in higher education [1].

2 Research background

As global economies and politics continue to develop, countries worldwide are focusing on educational reform, particularly on how to cultivate students with socialist core values during the educational process. In China, ideological and political education within the curriculum is recognized as a vital educational task and has garnered extensive attention

and discussion. Research on ideological and political education in foreign countries mainly centers on values education, moral education, and social responsibility education. Many nations attempt to integrate ideological and political education into their curriculum systems by reforming curriculum design, teaching methods, and evaluation mechanisms to foster students' moral values and social responsibility. For instance, the United States employs methods such as civic education and moral education to instill democratic, liberal, egalitarian, and legalistic values in students. Meanwhile, the United Kingdom utilizes moral and religious education, civic education, and other approaches to develop students' moral concepts and sense of social responsibility [2].

In China, research on ideological and political education within the curriculum began in the late 1980s and early 1990s, primarily focusing on ideological and political education in higher education. As China's education reform deepens, ideological and political education within the curriculum gradually becomes a hot topic in educational research. In recent years, China has made many exploratory efforts in ideological and political education within the curriculum, including the formulation of a series of relevant policies and documents. These efforts emphasize the need to strengthen students' ideological and political education and cultivate their socialist core values. Simultaneously, many universities and research institutions conduct research projects to explore how to integrate ideological and political education within the curriculum with professional education and improve the practicality of ideological and political education.

In summary, both domestic and international research on ideological and political education within the curriculum has made significant progress. However, there are still many areas that require further exploration, such as how to integrate ideological and political education with specific academic disciplines and how to enhance the practical effectiveness of ideological and political education.

3 Research significance

The research on mathematics teaching reform based on the new form of ideological and political education within the curriculum holds several significant implications.

3.1 Clarifying the vital role of ideological and political education in mathematics teaching

The research aids in elucidating the critical position of ideological and political education within the curriculum in mathematics teaching. It promotes the deep integration of ideological and political education with mathematics teaching, achieving an organic unity between knowledge transmission and value guidance.

3.2 Enhancing student engagement and skills

The incorporation of the new form of ideological and political education within mathematics teaching is conducive to stimulating students' interest in learning, fostering independent thinking, and enhancing innovation capabilities. Consequently, it improves the quality and effectiveness of mathematics education.

3.3 Cultivating socialist core values

By integrating ideological and political education with mathematics teaching, it contributes to the cultivation of socialist core values among students. It elevates students' overall qualities, thereby contributing to the development of well-rounded socialist builders and successors.

3.4 Providing practical experience and theoretical guidance

The research findings can serve as a reference and inspiration for ideological and political education in other disciplines, promoting the comprehensive and in-depth implementation of ideological and political education. Simultaneously, the study can offer robust theoretical support and practical insights for the reform of mathematics teaching in higher education.

3.5 Enriching and improving the theoretical framework

Research on mathematics teaching reform based on the new form of ideological and political education enriches and refines the theoretical framework of ideological and political education within the curriculum. It provides a fresh research perspective and approach for curriculum-based ideological and political education in Chinese higher education [3].

In conclusion, the study on mathematics teaching reform based on the new form of ideological and political education within the curriculum holds significant theoretical and practical value. It actively contributes to the development of ideological and political education in Chinese higher education and the reform of mathematics teaching. Furthermore, it offers insights that can be applied to ideological and political education in other subjects [4].

4 Research methods

Through consulting relevant literature, the theoretical system and practical experience of ideological and political education are studied in depth to provide theoretical support for the research. Representative practice cases of ideological and political education are selected for specific analysis and research, and experience and lessons are summarized to provide reference for practice. Through questionnaire survey, interview and other methods, we aim to know the understanding and needs of students, teachers and school administrators on ideological and political education, so as to provide empirical basis for research. Comparing and analyzing the theory and practice of ideological and political education at home and abroad and drawing on advanced experience, we provide reference for the reform of ideological and political education in China. A comprehensive analysis from the objectives, content, methods and evaluation of curriculum ideological and political education, reveals the internal connection between the elements, and provides ideas for the systematic promotion of curriculum ideological and political education. In the actual process of education and teaching, we try to use different curriculum ideological and political education methods and means to explore the implementation path suitable for China's national conditions and school conditions. In the process of ideological and political education, we constantly reflect and summarize experience to provide power for constantly improving the theory and practice of ideological and political education.

5 The characteristics of the new form of curriculum ideological and political education

5.1 Student-centered approach

Under the new form of ideological and political education within the curriculum, mathematics teaching should prioritize students as the main focus. It emphasizes the cultivation of students' initiative and creativity, aiming to ignite their interest and motivation in learning.

5.2 Emphasis on practical teaching

The new form of ideological and political education within the curriculum places a strong emphasis on practical teaching. In mathematics education, this entails integrating real-world issues and scenarios, nurturing students' ability to solve practical problems effectively.

5.3 Focus on ideological and moral development

The new form of ideological and political education within the curriculum underscores the importance of ideological and moral development. In the context of mathematics education, it highlights the cultivation of students' ethical qualities and adherence to socialist core values.

6 The strategies for reforming mathematics education based on the new form of ideological and political education

6.1 Integration of ideological and political education elements

During the mathematics teaching, teachers should explore the ideological and political education elements within the teaching materials and incorporate them into classroom instruction to enhance students' ideological and moral qualities.

6.2 Scenario-based teaching

Teachers should create scenarios for teaching that allow students to develop socialist core values and ethical qualities while solving real-world problems.

6.3 Practical activities promotion

Teachers should organize practical activities for students to develop their practical and innovative abilities, ultimately enhancing students' overall quality.

7 Ideological and political teaching analysis of mathematics curriculum

Analyzing the implementation of ideological and political education within the curriculum for university-level mathematics courses, we can refer to the following practical teaching case.

In university-level mathematics courses, introducing ideological and political education within the curriculum is illustrated through the integration of ideological and political education with the characteristics of mathematics as a discipline. This integration guides students to apply mathematical thinking for analyzing and solving problems while nurturing their socialist core values. By combining ideological and political education with mathematics education, students not only acquire mathematical knowledge, methods, and skills but also enhance their ideological and political qualities, foster a sense of national pride, social responsibility, and innovative spirit. Within mathematics courses, teachers can flexibly incorporate elements of ideological and political education based on teaching content and students' cognitive characteristics [5].

For instance, while teaching mathematical formulas, theorems, and methods, teachers can interweave introductions to the contributions of Chinese mathematicians in relevant fields to ignite students' national pride and historical mission. When addressing practical problems, socialist core values can be introduced to guide students in using mathematical thinking for problem analysis and resolution, so as to cultivate their sense of social responsibility. Leveraging the characteristics of mathematics courses, a variety of teaching methods, such as problem-driven approaches, case studies, and discussions, can be employed to stimulate active thinking and engagement, ultimately enhancing the effectiveness of ideological and political education.

Establishing a diversified assessment system is crucial, focusing not only on students' mastery of mathematical knowledge and skills but also on their performance and growth in terms of ideological and political education. Assessment formats may include classroom participation, homework assignments, teamwork, and research reports, comprehensively evaluating students' performance in knowledge, skills, and qualities [6].

Encouraging students to participate in mathematical modeling competitions, research projects, and practical activities and further combining ideological and political education with practical application will cultivate students' ability to apply mathematical knowledge to real-world issues and consequently elevate their ideological and political qualities.

In summary, introducing ideological and political education within university-level mathematics courses and exemplified by the case of advanced mathematics, will serve to enhance students' mathematical literacy while boosting their ideological and political qualities, fostering a sense of patriotism, social responsibility, and innovation. Teachers should flexibly incorporate elements of ideological and political education, employ various teaching methods, and establish comprehensive evaluation mechanisms to ensure the effectiveness of this integration within mathematics education.

8 Suggestions and prospects for reforming ideological and political education in mathematics teaching

In mathematics education, it is essential for teachers to emphasize the seamless integration of ideological and political education with the transmission of mathematical knowledge and skills. This integration aims to achieve an organic unity

between knowledge dissemination and value guidance. Innovations in mathematical teaching methods and tools are imperative. Modern educational technologies such as the Internet and multimedia should be utilized to provide rich teaching resources and means, thereby enhancing the effectiveness of ideological and political education within mathematics.

Further research into the theoretical framework of ideological and political education is necessary to offer more comprehensive theoretical support for ideological and political education within Chinese higher education. It is equally important to strengthen teacher training and guidance, elevate teachers' awareness and pedagogical competence in ideological and political education, thereby ensuring the quality of ideological and political education within mathematics courses.

Based on the educational new era, the reform of ideological and political education within mathematics courses aims to combine ideological and political education with mathematics education to foster students' mathematical literacy and socialist core values. As educational reforms continue to deepen, it is anticipated that the reform of ideological and political education within mathematics courses will achieve further breakthroughs in the following aspects:

Curriculum content and textbook reform: Within the development of mathematics course materials, there will be an increased emphasis on strengthening the content of ideological and political education, seamlessly integrating it with the learning of mathematical knowledge, methods, and skills. Simultaneously, the contributions of Chinese mathematicians to the history of mathematics in China will be highlighted to cultivate students' national pride and a sense of historical mission.

Pedagogical methodology reform: Teachers will employ various teaching methods, including problem-driven approaches, case studies, and discussions, to guide students towards active thinking and participation, thus enhancing the effectiveness of ideological and political education. Additionally, modern educational technologies such as the Internet and big data will provide rich teaching resources and convenient teaching tools for ideological and political education.

Assessment system reform: A diversified assessment system will be established, focusing not only on students' mastery of mathematical knowledge and skills but also on their performance and growth in terms of ideological and political education. Assessment formats may include classroom participation, homework assignments, teamwork, research reports, among others, comprehensively evaluating students' performance in knowledge, skills, and qualities.

Teacher development: Efforts will be made to strengthen teachers' awareness and competence in ideological and political education through training, and enable them to better grasp the essence and requirements of ideological and political education in their teaching. Encouragement of teachers to engage in research related to ideological and political education will further drive innovative development in ideological and political education.

Practical teaching components: The inclusion of practical teaching components will be reinforced, encouraging students to participate in mathematical modeling competitions, research projects, practical activities, and more. This will further integrate ideological and political education with practical application, so as to cultivate students' ability to apply mathematical knowledge to real-world issues and, in turn, enhance their ideological and political qualities.

In the future, the reform of ideological and political education within mathematics courses will continue to propel the development of China's education sector and nurture more high-quality talents with both morality and competence who will contribute to the prosperity and development of the nation. Within ongoing educational reforms, ideological and political education will become more deeply integrated into teaching across all subjects, realizing comprehensive education. Leveraging modern educational technologies, ideological and political education will be more effectively implemented, thus offering students more diversified and personalized learning resources and services.

As ideological and political education continues to advance, the evaluation system will become more comprehensive and objective, enabling the comprehensive and objective evaluation of the quality and effectiveness of ideological and political education. Ideological and political education will be further integrated with students' comprehensive development in morality, intelligence, physical fitness, and artistry, contributing to the cultivation of individuals with socialist core values. In the context of educational reform, innovations and practices related to ideological and political education will continually emerge, providing robust support for the improvement of China's education quality and the cultivation of individuals who will contribute to socialist construction as well as future generations.

9 Conclusion

The research on the reform of mathematics teaching based on the new form of ideological and political education (CSP) has significant theoretical and practical significance. It plays a crucial role in promoting the deep integration of CSP with mathematics teaching, enhancing the quality and effectiveness of mathematics education, and nurturing well-rounded socialist builders and successors. By integrating the new form of CSP into mathematics teaching, it can stimulate students' interest in learning, cultivate their independent thinking, and foster their innovation capabilities, thereby contributing to the development of individuals who excel in morality, intelligence, physical fitness, and artistry, as envisioned in socialist construction.

Furthermore, this research provides valuable references and insights for the integration of ideological and political education into other subject areas, contributing to the comprehensive and in-depth development of CSP. In future research, it is essential to explore how to effectively integrate CSP into specific subject teaching and how to enhance the practicality of CSP, providing stronger theoretical support and practical guidance for the reform of ideological and political education and mathematics teaching in Chinese universities.

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Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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