

# Strategies and Practices for Enhancing the Ideological and Political Teaching Ability of University Mathematics Teachers

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**Abstract:** This paper aims to explore how to enhance the ideologically and politically-oriented teaching abilities of college mathematics teachers. Through practical application and research, this study proposes effective teaching strategies and methods to improve teachers' ideological and political teaching levels, thereby fostering students' moral qualities and sense of social responsibility. The research and practice in enhancing college mathematics teachers' abilities in ideologically and politically-oriented teaching mainly focus on theoretical research in ideological and political education, curriculum design, teacher training, teaching practice, research support, and collaborative exchanges. By redesigning the teaching content and methods of mathematics courses, ideological and political education is organically integrated with the imparting of mathematical knowledge, enhancing the educational effectiveness of the course. Strengthening the training of teachers in ideologically and politically-oriented teaching will improve their professional competence in this area. Encouraging teachers to conduct research and projects related to ideological and political education provides research support for teaching practice and promotes the continuous development of ideological and political education. Through these research and practices, the ideological and political teaching capabilities of college mathematics teachers will be enhanced, contributing to the realization of the educational goals of mathematics courses.

**Keywords:** College Mathematics Teachers; Ideological and Political Course; Teaching Ability; Enhancement; Practice

## 1. Introduction

In recent years, with the rapid development of the economy and society, people's pursuit of moral quality and social responsibility has been increasing. In this context, the ability of college mathematics teachers in ideological and political teaching becomes particularly important. However, there are still some issues with college mathematics teachers' ideological and political teaching, such as monotonous teaching content, uniform teaching methods, and insufficient teacher quality. Therefore, this paper aims to propose effective teaching strategies and methods through practical application and research, to improve teachers' ideological and political teaching levels and better cultivate students' moral qualities and sense of social responsibility [1].

## 2. Analysis of the Current Situation of Ideological and Political Teaching in College Mathematics Courses

In recent years, domestic scholars have increasingly focused on the research of ideological and political teaching in college mathematics courses. Their attention centers on issues such as teaching strategies, methods, and evaluation mechanisms. Additionally, researchers are exploring ways to integrate ideological and political education elements into mathematics courses to enhance students' political literacy.

The current state of research in China primarily includes the following aspects:

**Insufficient Emphasis:** In traditional mathematics teaching, ideological and political education is often overlooked. Many mathematics teachers believe that mathematics courses are unrelated to ideological and political education, leading to a lack of attention to ideological and political teaching [2].

**Monotonous Teaching Content:** The content in ideological and political teaching is often limited to explicit ideological and political education elements, such as patriotism and socialist core values. There is a lack of deep integration with mathematical knowledge, mathematicians' biographies, and practical problems.

**Uniform Teaching Methods:** Many teachers still use traditional lecturing methods in ideological and political teaching, lacking interactive, discussion-based, and situational teaching methods. This leads to students' aversion to ideological and political education and reduces its effectiveness [3].

**Incomplete Evaluation Mechanism:** Currently, universities' evaluation mechanisms for ideological and political teaching are not comprehensive. Many universities do not include students' performance in ideological and political education in their evaluation systems, resulting in a lack of emphasis on this aspect by teachers.

Significant progress has been made in the field of ideological and political education in China in recent years. Under the policy promotion of the Ministry of Education and other departments, ideological and political education has gradually gained widespread attention.

Regarding the enhancement of college mathematics teachers' capabilities in ideological and political teaching, domestic researchers mainly focus on the following aspects: (1) theoretical research on the theoretical foundation, principles, and methods of ideological and political education; (2) curriculum design that integrates ideological and political education with mathematics courses innovatively; (3) teacher training, focusing on improving teachers' abilities in ideological and political teaching, including training in ideological and political education theory and teaching methods; (4) teaching practice, exploring specific implementation strategies and effect evaluation of ideological and political education in mathematics classrooms.

In terms of international research, the focus has been primarily on moral education, value education, and civic education. Many countries have also actively explored ideological and political teaching in mathematics courses. For example, the United States emphasizes developing students' critical thinking and problem-solving skills through mathematical modeling and other methods to integrate ideological and political education into mathematics courses. The United Kingdom advocates value education, encouraging teachers to guide students in exploring the ethical values behind mathematical knowledge [4].

Overall, domestic and international research on enhancing the capabilities of college mathematics teachers in ideological and political teaching has achieved certain results, but many aspects still require further research and exploration, such as long-term mechanisms for ideological and political education, professional development of teachers, and evaluation systems.

Currently, college mathematics teachers face several issues in ideological and political teaching:

(1) **Monotonous Teaching Content:** Most college mathematics teachers limit their ideological and political teaching to explaining mathematical knowledge, rarely involving ideological and political education content, leading to a lack of diversity in teaching content.

(2) **Uniform Teaching Methods:** College mathematics teachers predominantly use traditional lecturing methods in ideological and political teaching, neglecting student participation and lacking innovation in teaching methods.

(3) **Insufficient Teacher Quality:** Many teachers lack the necessary knowledge and skills in ideological and political teaching, affecting the quality and effectiveness of their teaching.

### **3. Strategies for Enhancing the Ideological and Political Teaching Capability of College Mathematics Teachers**

*From the perspective of universities, the following strategies can be employed:*

(1) **Strengthen Theoretical Training:** Organize college mathematics teachers to participate in theoretical training in ideological and political education. Improve their theoretical literacy to help them better understand the essence and significance of ideological and political education in courses. Additionally, teachers need to learn how to integrate ideological and political education into mathematics courses. College mathematics teachers should combine course content with ideological and political education, introduce relevant ideological and political education content, enrich teaching materials, and enhance the ideological content of the courses for better teaching outcomes.

(2)Optimize Curriculum Design: Based on the characteristics of the mathematics discipline, redesign course content to organically integrate ideological and political education with the teaching of mathematical knowledge. Emphasize inquiry-based teaching methods, guide students in independent thinking, and cultivate their dialectical thinking and innovation abilities.

(3)Strengthen Faculty Development: Colleges and universities should strengthen the construction of teachers, improve their teaching ability and professional quality, including the theory training of ideological and political education, teaching method training, etc. At the same time, teachers are encouraged to carry out research and topics related to ideological and political education to provide scientific research support for teaching practice. Universities should intensify training for mathematics teachers in the field of ideological and political education to improve their teaching abilities and better meet students' developmental needs.

(4)Improve Evaluation Systems: Colleges and universities should improve the evaluation system and establish a diversified and comprehensive evaluation system, which should not only pay attention to students' mathematical knowledge and skills, but also pay attention to their performance in ideological and political education. Through the reform of the evaluation system, to promote the effective implementation of the curriculum ideological and political education.

(5)Deepen Cooperation and Exchange: Colleges and universities should deepen cooperation and exchanges, strengthen cooperation and exchanges with enterprises, society and other educational subjects, share ideological and political education resources of courses, and improve the social influence of ideological and political education of courses. At the same time, teachers should strengthen communication and discussion, and jointly discuss the effective ways of ideological and political education.

(6)Emphasize Practical Teaching: Colleges and universities should organize teachers to carry out ideological and political teaching practice. Through classroom practice, teaching discussion, educational evaluation and other methods, college mathematics teachers should change the traditional teaching methods and adopt teaching methods such as discussion and case analysis to let students participate in teaching and enhance the interactivity of the curriculum. Constantly optimize the curriculum ideological and political teaching methods, improve the teaching quality.

***From the perspective of teachers, the following aspects should be considered:***

(1)Raise Awareness of Ideological and Political Education: College mathematics teachers should recognize the importance of ideological and political education in courses. They should integrate ideological and political education into mathematics teaching to not only enhance students' comprehensive qualities but also cultivate their patriotism and sense of social responsibility.

(2)Enrich Teaching Content: During the teaching process, teachers should integrate ideological and political education elements into mathematical knowledge. For instance, When explaining the life of mathematicians, college teachers can emphasize their patriotism, scientific spirit, challenge and exploration qualities; guide students to the connotation of the socialist core values; let students understand the national policies and development trends, and develop their sense of social responsibility and innovation ability.

(3)Improve Teaching Methods: Teachers should utilize inquiry-based, discussion-based, and situational teaching methods to encourage active thinking and participation among students, enhancing the effectiveness of ideological and political education. For example, teachers can pose open-ended questions, encouraging students to think and discuss from different perspectives, guiding them to establish correct worldviews, life philosophies, and values.

(4)Create Practical Teaching Activities: Teachers can organize students to participate in practical activities such as mathematical modeling and data analysis. Students can apply ideological and political education concepts while solving real-world problems, improving their practical skills and ideological literacy.

(5)Enhance Evaluation Mechanisms: Colleges and universities should establish a diversified and whole-process ideological and political education evaluation system, and bring students' ideological and political performance into the evaluation scope, so as to encourage teachers to pay more attention to the curriculum ideological and political education.

(6)Attend Training and Exchange: Colleges and mathematics education research institutions should regularly organize teacher training and exchange activities. These events will enhance teachers'

capabilities in ideological and political education in courses and allow them to share excellent teaching experiences and cases, promote mutual learning and progress among teachers.

In conclusion, college mathematics teachers should employ various strategies to enhance their ideological and political teaching capabilities. By doing so, they can provide high-quality mathematics education and cultivate well-rounded socialist builders and successors who excel in morality, intelligence, physical fitness, aesthetics, and labor. Through these strategies, college mathematics teachers' ideological and political teaching capabilities will be improved, contributing to the better achievement of the educational goals of mathematics courses.

#### **4. Practical Approaches to Enhancing the Ideological and Political Teaching Capability of College Mathematics Teachers**

This chapter presents practical research conducted on enhancing the ideological and political teaching capability of college mathematics teachers through case analysis and discussions. The results indicate that by enriching teaching content, improving teaching methods, and strengthening faculty development, the capability of college mathematics teachers in ideological and political teaching can be effectively improved. Practical approaches to enhancing the ideological and political teaching capability of college mathematics teachers can be explored in the following ways:

(1)Conduct Theoretical Training in Ideological and Political Education: Colleges and universities should organize college mathematics teachers to participate in the theoretical training of ideological and political education, to improve their theoretical literacy, so that they can better understand the connotation and significance of the curriculum ideological and political education. In addition, teachers also need to master the combination of mathematics curriculum and ideological and political education methods, in order to achieve better teaching results.

(2)Establish Research Topics for Ideological and Political Education: Colleges and universities should encourage college mathematics teachers to apply for research topics related to ideological and political education, carry out relevant research, and provide theoretical support for teaching practice. At the same time, it is provided with certain research funds and time support for teachers to ensure the smooth progress of the research.

(3)Organize Teaching Method Training and Workshops: Colleges and universities should regularly organize college mathematics teachers to participate in teaching methods training, learn advanced teaching methods, and improve their ideological and political teaching ability. At the same time, teachers are organized to conduct teaching seminars, share teaching experience and experience, and jointly explore the effective ways of ideological and political education.

(4)Implement Ideological and Political Education Practices: Colleges and universities should organize college mathematics teachers to carry out the ideological and political teaching practice, and constantly optimize the ideological and political teaching methods of the courses and improve the teaching quality through classroom practice, teaching discussion and educational evaluation.

(5)Establish a Diverse Evaluation System: Colleges and universities should establish a diversified evaluation system and reform the evaluation system of mathematics curriculum in colleges and universities. They should pay close attention to students' mathematical knowledge and skills, as well as to their performance in ideological and political education. Through the reform of the evaluation system, to promote the effective implementation of the curriculum ideological and political education.

(6)Strengthen Cooperation with Other Educational Entities: Colleges and universities should strengthen the cooperation with other educational subjects, strengthen the cooperation and exchange with enterprises, society and other educational subjects, share the curriculum ideological and political education resources, and improve the social influence of curriculum ideological and political education. At the same time, teachers should strengthen communication and discussion, and jointly discuss the effective ways of ideological and political education..

Through the aforementioned practical approaches, the ideological and political teaching capability of college mathematics teachers can be improved, contributing to the better achievement of the educational goals of mathematics courses.

***Specific Teaching Paths for Integrating Ideological and Political Education into College Mathematics:***

(1)Utilize the Life Stories of Mathematicians for Ideological and Political Education: When explaining mathematical theorems or concepts, teachers can introduce the life stories of famous mathematicians such as Chen Jingrun, emphasizing their perseverance in pursuing the Goldbach Conjecture. This approach can inspire students' patriotism and their pursuit of truth.

(2)Combine Mathematical Knowledge with Real-World Issues for Ideological and Political Education: While teaching topics like calculus and probability theory, teachers can link mathematical concepts to current societal issues such as environmental protection or pandemic control. Students can apply mathematical knowledge to solve real-world problems, fostering their sense of social responsibility and innovation.

(3)Emphasize Dialectical Thinking from Mathematical Perspectives: During the teaching process, teachers can highlight dialectical thinking within mathematics, such as discussing monotonicity and non-monotonicity of functions or employing contradiction analysis methods. This approach guides students to view problems from a dialectical perspective, enhancing their dialectical thinking abilities.

(4)Use Mathematical Modeling for Ideological and Political Education:

In mathematical modeling courses, teachers can organize students to model and analyze societal hot topics like economic development or education equity. This encourages students to apply ideological and political education concepts while solving practical problems, improving their ideological literacy.

(5)Incorporate Mathematical History into Ideological and Political Education: While teaching the history of mathematics, teachers can focus on the significant contributions of Chinese mathematicians to the field, such as "Nine Chapters on the Mathematical Art." This approach enhances students' national pride and nurtures their patriotism.

These teaching cases allow college mathematics teachers to integrate ideological and political education into their teaching practices, promoting students' ideological and political literacy and cultivating well-rounded socialist builders and successors who excel in morality, intelligence, physical fitness, aesthetics, and labor.

Here are two teaching cases that integrate ideological and political education into advanced mathematics:

Case One: Using the Spirit of Mathematicians for Ideological and Political Education

When teaching the concept of limits in advanced mathematics, teachers can introduce the story of mathematician Chen Jingrun, emphasize his perseverance and relentless efforts in tackling the Goldbach Conjecture, encouraging students to understand and learn from Chen Jingrun's spirit of daring to challenge and explore. Additionally, teachers can guide students to focus on the spirit of science in real-life situations. For example, during the COVID-19 pandemic, Chinese scientists actively researched the virus, making significant contributions to epidemic prevention and control, inspiring students' patriotism and scientific spirit.

Case Two: Applying Advanced Mathematics to Address Real-world Issues for Ideological and Political Education

While teaching calculus concepts, teachers can use environmental protection as a backdrop and design an optimization problem related to pollutant emissions. This task allows students to apply their knowledge of calculus to solve real-world problems. Throughout the problem-solving process, teachers can guide students to pay attention to China's achievements and challenges in environmental protection. This approach helps students realize the importance and value of mathematical knowledge in addressing practical issues, fostering their sense of social responsibility and innovation capability.

## 5. Conclusion

This article, through practice and research, proposes some effective teaching strategies and methods, with the aim of improving teachers' ideological and political education level and better cultivating students' ideological and moral qualities and sense of social responsibility. After researching and practicing the enhancement of ideological and political teaching abilities in university mathematics courses, it concludes that enhancing the ideological and political teaching capabilities of university mathematics teachers is an important task in current educational reform, which requires widespread attention. Effective improvement in teachers' ideological and political teaching abilities can be achieved through theoretical training, curriculum design, faculty development, and reform of the

evaluation system. In the practice of ideological and political education in courses, university mathematics teachers should focus on combining ideological and political education with the teaching of mathematical knowledge, guiding students to think independently, and cultivating their dialectical thinking and innovative abilities [5]. The establishment of a diversified evaluation system aids in the effective implementation of ideological and political education in courses. It is necessary to pay attention to students' mastery of mathematical knowledge and skills, as well as their performance in ideological and political education. Strengthening cooperation and communication with other educational entities and sharing resources for ideological and political education in courses can increase the social influence of such education. It also facilitates exchanges and discussions among teachers, jointly exploring effective approaches to ideological and political education in courses [6]. Research and practice in ideological and political education in courses are long-term, systematic processes that require the joint efforts of teachers, schools, and educational departments for sustained advancement.

In summary, the research and practice of enhancing ideological and political teaching abilities in university mathematics courses have significant practical significance and value. By continuously optimizing teaching strategies, improving teaching methods, and enhancing teaching quality, we can better achieve the educational goals of mathematics courses and cultivate well-rounded socialist builders and successors who are developed in moral, intellectual, physical, aesthetic, and labor education.

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