

# Exploration of integrating curriculum ideology and politics into the teaching of higher mathematics

Heng Xu

Jiangsu Maritime Institute, Nanjing 211170, China

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**Abstract:** The integration of curriculum ideology and politics in the teaching of higher mathematics is helpful to cultivate students' correct outlook on life and values, and improve students' comprehensive quality and development potential. By guiding students to think about the connection between mathematical knowledge and life practice, it can help students better understand the meaning and value of mathematics and enhance their initiative and enthusiasm for learning. At present, there is often a lack of guidance for ideological and political education in the teaching of higher mathematics, which leads students to only pay attention to the mastery of skills and ignore the cultivation of ideological and moral literacy. Therefore, this paper discusses the importance, existing problems and coping strategies of integrating curriculum ideology and politics into the teaching of higher mathematics, and puts forward corresponding suggestions.

**Keywords:** Advanced Mathematics; Curriculum Ideology and Politics; Ideological and Moral literacy; Student Development

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Advanced Mathematics is a basic course in university education, which aims not only to impart mathematical knowledge and problem-solving skills, but also to cultivate students' mathematical thinking ability and problem-solving ability. However, in the current university education, more and more attention is paid to the teaching of knowledge and the cultivation of skills, while the cultivation of students' ideological and moral literacy is often neglected. Therefore, how to integrate curriculum ideology and politics into the teaching of higher mathematics and guide students to establish a correct outlook on life and values has become an important topic in the current teaching reform.

## 1. The importance of integrating ideology and politics into the curriculum in the teaching of higher mathematics

As an important mathematics foundation course, advanced mathematics plays an important role in university education. However, in the current social context, the simple teaching of mathematics can no longer meet the needs of students' all-round development. Therefore, it is of great significance to integrate curriculum ideology and politics into the teaching of higher mathematics. On the one hand, advanced mathematics, as an abstract and theoretical subject, often makes it difficult for students to connect it with real life. By integrating ideology and politics into the curriculum, students can be guided to pay attention to the impact and application of mathematical knowledge on social life in the process of learning mathematics, and cultivate students' practical application ability and innovation ability<sup>[1]</sup>. On the other hand, advanced mathematics, as an independent subject, often requires students to put in a lot of effort in the learning process. By integrating ideology and politics into the curriculum, students can be guided to establish correct learning values and outlook on life, stimulate students' enthusiasm and initiative in learning, and cultivate students' self-conscious learning ability and independent thinking ability<sup>[2]</sup>. In addition, the integration of ideology and politics into the curriculum can also help students pay attention to humanistic feelings and social responsibility while learning advanced mathematics. The combination of higher mathematics teaching and ideological and political education can enable students to gradually form a correct outlook on life and society, and cultivate students' sense of social responsibility and good citizenship<sup>[3]</sup>.

## 2. Problems in integrating ideology and politics into the curriculum in the teaching of higher mathematics

### 2.1 Insufficient attention to ideological and political education in the curriculum

Some teachers may think that advanced mathematics is a highly specialized discipline and pay attention to the learning of mathematical methods and skills, so they ignore the role of curriculum ideology and politics in teaching. They may focus more on teaching specific mathematical knowledge and problem-solving skills, and neglect to cultivate students' ideological and moral qualities and values. Some teachers

may feel that the content of ideological and political education in the curriculum is not directly related to the teaching content of advanced mathematics, and think that there is a gap between the two. They may think that integrating curriculum ideology and politics into teaching will increase the course burden and affect the normal teaching progress. Some students may have a sense of rejection of the content of course ideology and politics, believing that these contents have nothing to do with their professional learning, and thus have a sense of resistance to the study of course ideology and politics. This will also lead to teachers not paying enough attention to curriculum ideology and politics in teaching.

## **2.2 The teaching content lacks in-depth thinking and discussion**

When integrating ideology and politics into the curriculum in the teaching of advanced mathematics, the teaching content is often limited to the teaching of basic concepts and theorems, and lacks in-depth thinking and discussion. To a certain extent, this situation runs counter to the original intention of ideological and political education, and it is impossible to achieve a comprehensive cultivation of students' comprehensive quality. First of all, the teaching process of teaching content is often too mechanical and cumbersome, and there is a lack of in-depth explanation and discussion of mathematical ideas and principles. Students can only passively receive knowledge, and cannot actively think about and explore the nature and meaning of mathematics. This kind of teaching method can easily make students bored with learning and reduce their enthusiasm for learning. Secondly, the lack of in-depth thinking and discussion leads to the inability of students to effectively cultivate their critical thinking and innovation ability. Mathematics is a subject that requires a combination of logical thinking and creative thinking, but if it only stays at the superficial understanding of concepts and theorems, it is difficult for students to form their own independent thinking and opinions. This will have a serious impact on their ability to solve practical problems in the future. Finally, the lack of in-depth speculation and discussion in the teaching content cannot achieve the cultivation of students' ideological and political quality. Ideological and political education aims to cultivate students' correct outlook on life, values and worldview, but the lack of explanation of the philosophical thinking and social significance behind mathematical knowledge makes it difficult for students to obtain more profound enlightenment and reflection in learning.

## **2.3 Students only stay at the acquisition of knowledge and skills**

As a rational discipline, higher mathematics often places more emphasis on the mastery and application of knowledge points and problem-solving methods, which makes students ignore the importance of ideological and political education. Students may regard advanced mathematics courses as purely theoretical subjects, focusing only on learning mathematical principles and problem-solving skills, while ignoring the ideological concepts and social significance of mathematics. The emergence of this phenomenon may lead to students' negative attitude towards the ideological and political content of the curriculum, and it is difficult to truly understand and internalize the concept of ideological and political education. When students are only at the stage of acquiring knowledge and skills, they may only complete homework and exams mechanically, without thinking deeply about the internal connection between mathematical knowledge and ideological and political content. This not only affects students' understanding and knowledge of the content of ideological and political education, but also limits their learning to the superficial level of knowledge and skills, making it difficult to cultivate all-round talents.

## **2.4 Teachers lack effective methods and means**

When teachers integrate curriculum ideology and politics into the teaching of higher mathematics, they often face the problem of lack of effective methods and means. This is mainly manifested in the following aspects: First, teachers may lack the understanding and practical experience of how to integrate ideological and political elements into the mathematics curriculum. Due to the great difference in the nature of mathematics and ideological and political education, teachers may not know how to organically combine the content of ideological and political education in specific mathematics teaching, and how to adjust the teaching content and methods, so that students can feel the influence of ideological and political education while learning mathematics. Second, teachers lack relevant training and guidance, which makes them lack systematic knowledge and skills when integrating ideology and politics into the curriculum. Without systematic training and guidance, it may be difficult for teachers to master how to design mathematics teaching content rich in ideological and political elements, and how to guide students to think about world view, values and outlook on life in the teaching process. Therefore, when teachers integrate curriculum ideolo-

gy and politics into the teaching of higher mathematics, it is necessary to strengthen the discussion and research of methods and means.

### **3. Strategies for integrating curriculum ideology and politics into the teaching of higher mathematics**

#### **3.1 Improve the importance of ideological and political education in the curriculum**

In order to improve the importance of ideological and political education in the curriculum, mathematics teaching content and cases with ideological and political attributes can be designed to guide students to think about the connection and influence of mathematics and humanities and society. For example, through the application of mathematics in scientific research, economic development, and social management, students will be made aware of the important role of mathematics in promoting social progress and solving practical problems. Integrate some topics and discussions related to ideology and politics into classroom teaching, such as social justice, environmental protection, morality and ethics, etc., so that students can think about the relationship between mathematics and social ethics through discussion and interaction, and guide them to establish a correct outlook on life and values. Regularly organize lectures and academic exchange activities on the theme of mathematics and ideology and politics, invite experts, scholars and business representatives to share the important role of mathematics in social development and innovation, stimulate students' interest in mathematics research and social practice, and enhance their sense of social responsibility and mission. By increasing the importance of ideological and political education in the curriculum, higher mathematics education can be closer to the needs of students' life and society, cultivate students' all-round development and comprehensive literacy, and lay a solid foundation for their future growth and social development.

#### **3.2 Enhance the in-depth thinking and discussion of the content**

Enhancing the in-depth thinking and discussion of the content means not only to enable students to master mathematical knowledge and skills, but also to guide them to think deeply about the principles and ideas behind mathematics, as well as the application of mathematics in social life and scientific research. To achieve this, teachers can design open-ended questions to guide students to analyze the problem-solving thinking process and develop their critical thinking skills and creative abilities. At the same time, teachers can guide students to read some mathematics-related literature or news reports, so that they can understand the application and impact of mathematics in different fields, and stimulate students' interest and curiosity. In addition, teachers can also guide students to participate in some mathematical modeling or research projects, so that they can experience the application and role of mathematical knowledge in practical problems, so as to deepen their understanding and knowledge of mathematics. Through these discussions and practical activities, students can not only improve their mathematical ability, but also cultivate a sense of responsibility, cooperation and innovation, so that they can become excellent mathematical talents with a sense of social responsibility and creativity.

#### **3.3 Guide students to think about the connection between mathematical knowledge and real life**

It is very important to integrate curriculum ideology and politics into the teaching of advanced mathematics and guide students to think about the connection between mathematical knowledge and real life. By combining mathematical theory with practical life, it can help students understand the application and significance of mathematics more deeply, and at the same time, it can also cultivate students' practical application ability and innovative thinking. In teaching, teachers can illustrate the application of mathematical knowledge by giving some real-life examples to make students aware that mathematics is everywhere. For example, when learning calculus, real-life problems can be introduced, such as using calculus to solve the volume or surface area of an object, so that students can feel the power of mathematics in real calculations. In addition, it can also guide students to think about how to use mathematical knowledge to solve these problems in combination with current social hot issues, so as to cultivate students' sense of social responsibility and innovation. Through this teaching method, students can not only deepen their understanding and mastery of mathematical knowledge, but also understand the close connection between mathematics and real life, cultivate a solid mathematical foundation and innovative thinking, and at the same time, enable students to be more actively engaged in learning, and improve their enthusiasm and initiative in learning. In this way, the teaching of advanced mathematics will no longer be a boring accumulation of knowledge, but a process that can lead students' cognition and practice, so that students can gain more

harvest and growth in mathematics learning

### **3.4 Adopt project-based research methods and means**

Purpose-based research is a teaching method that focuses on students' independent inquiry, practice and cooperation, which can guide students to think and solve practical problems, and cultivate students' innovation ability and teamwork spirit. In advanced mathematics courses, projects related to social reality or engineering practice can be designed, so that students can use the mathematical knowledge and methods they have learned to analyze and solve problems. For example, you can design a project about an optimization problem and have students optimize a real-world engineering problem by building a mathematical model and applying optimization algorithms. Through such projects, students not only gain a deep understanding of the practical application of mathematical knowledge, but also develop their problem-solving skills and critical thinking. In addition, project-based research fosters collaboration and interaction among students. In a project, students often work together to complete tasks. Through teamwork, students can communicate and collaborate with each other, improving their communication skills and teamwork skills. In addition, students can also promote learning and growth with each other by sharing experiences and discussing issues.

## **4. Conclusion**

The integration of curriculum ideology and politics in the teaching of higher mathematics is one of the important directions of current education reform and development. At present, there is a neglect of ideological and political education in the teaching of higher mathematics, and the teaching content lacks in-depth thinking and discussion, and students only stay at the acquisition of knowledge and skills, while ignoring the cultivation of ideological and moral literacy. Teachers also have deficiencies in how to integrate curriculum ideology and politics into teaching, and lack effective methods and means. This paper proposes strategies such as designing problem situations, guiding discussion and thinking, and emphasizing the social significance of mathematics. Only through the integration of ideological and political education and subject knowledge in the curriculum should we not only cultivate students' professional quality, but also pay more attention to the cultivation of students' ideological and moral qualities, so that they can become talents with a sense of social responsibility and innovative ability.

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