



On the Integration of Higher Mathematics Curriculum and Ideological and Political Education in Colleges and Universities Under the Background of Cultural Perspective

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Abstract. The fundamental goal of education is to build morality and cultivate people. In the context of cultural perspective, ideological and political education should be added to higher mathematics courses in colleges and universities, to state the achievements of Chinese mathematics, and to stimulate students' patriotism. This paper mainly studies the advantages and contents of the integration of higher mathematics and ideological and political education, and carries out teaching design according to the theory of mathematical knowledge, and cultivates students' dialectical materialism and exploration spirit through the discussion of examples and problems. Therefore, mathematics teachers in colleges and universities should carry forward the spirit of mathematics and guide students to develop rational thinking. At the same time, in the classroom, teachers should guide students to ask questions boldly and actively participate in ideological and political discussions in order to establish correct concepts.

Keywords: curriculum ideology and politics · advanced mathematics · integration · instructional design

1 Introduction

The ideological and political education resources contained in advanced mathematics courses should be paid enough attention and effectively explored. Excavate the historical and cultural resources in mathematics courses to stimulate students' enthusiasm for patriotism; through the teaching of calculus, help students to establish a dialectical materialist worldview; through advanced mathematics teaching, cultivate students' good spiritual quality. Therefore, the ideological and political education of college students is inseparable from the mathematics teachers in colleges and universities. In the National Conference on Ideological and Political Work in Colleges and Universities, General Secretary Xi Jinping mentioned that it is necessary to adhere to the educational policy of cultivating people with morality, integrate ideological and political courses into the whole teaching process, educate people in all directions and the whole process, and promote the development of a new pattern of education in our country. Based on this,

various colleges and universities have carried out ideological and political education; and advanced mathematics is a required course for science and engineering, economics and management (except mathematics), which has the feasibility of ideological and political integration with the curriculum. Therefore, higher mathematics teachers should actively implement the educational requirements of the coordinated education of higher mathematics and ideological and political theory, lead the integration of knowledge transmission throughout the whole teaching process, actively explore the reform of ideological and political teaching in the curriculum, and give full play to the educational value of morality and cultivating people.

2 The Significance of Integrating the Ideological and Political Concepts of Courses into the Teaching of Advanced Mathematics

Advanced mathematics is one of the compulsory basic courses for science and engineering college students. It is very important to master this subject. However, the knowledge points of advanced mathematics are relatively abstract and complex. College students must have a solid mathematical foundation, and college students must have super computing ability, spatial imagination and logical thinking ability, only in this way can we thoroughly grasp the theoretical knowledge and practical problems of advanced mathematics. Therefore, if college students want to truly understand this course, they must spend a lot of time and energy, and relevant statistical results show that the failure rate of the advanced mathematics course is extremely high. The reason is that this course is inherently difficult to learn, and at the same time, many college students do not fully devote themselves to learning, or feel that they are not good at this course, and start to give up halfway through learning, which is why the failure rate of the course is caused. higher. As the saying goes: "You have to endure hardships, and you will be a superior person." For college students, if they want to stand out among their peers, they must have super-high skills, but they must follow the trend and have the ability to not give up easily and determination to overcome difficulties. The purpose of ideological and political education is to improve the ideological awareness and moral literacy of college students, to guide students to establish correct three views, and to lay an important foundation for future development. However, the nature of this course is slightly different from other courses, because ideological and political education is mainly to educate students' thoughts, not to impart theoretical knowledge to students alone, so there are still some difficulties in implementing it into the teaching process of various disciplines. In fact, changing the thinking of college students cannot only rely on the limited classroom time of simple ideological and political education; for this, long-term educational preparations must be made, and educational methods must be used to help college students establish correct ideological concepts and curriculum thinking. Political ideas are born in such a situation [1].

As a mathematics teacher in colleges and universities, you must accurately position yourself, fully recognize your special education position, and at the same time clarify your teaching goals, what kind of people you want to train, how to train them, and for whom you train them. Only by understanding clearly can you become a qualified people's teacher. From a certain level, the educational quality and final result of Lide Shuren are

the ultimate criteria for judging the cultivation of talents by college teachers. In order to implement the educational tasks and goals of Lide Shuren in practical teaching, the first task is to organically integrate knowledge imparting, ability improvement and value cultivation, which is also the correct way to integrate moral education and intellectual education. Incorporating the ideological and political concepts of the curriculum into the teaching of advanced mathematics requires teachers of higher mathematics to conduct correct value guidance, implement ability improvement and knowledge transfer in all aspects of classroom teaching, and guide students to establish correct three views from action. This is also a college teacher teaching tasks and teaching directions. On the whole, the integration of ideological and political concepts into the teaching of advanced mathematics courses will have a corresponding impact on the long-term stability of the country and the realization of the Chinese dream of the great rejuvenation of the Chinese nation. Therefore, colleges and universities must seize this opportunity, take the cultivation of ideological and political courses as the ultimate goal of education, and build the main lineup of ideological and political education in each advanced mathematics classroom, and make each classroom an ideological and political education. The main channel, and ultimately promote the scientific development of education. In this regard, as long as all colleges and universities, teachers of all disciplines and all courses fulfill the responsibility of educating people, the sameness of courses of ideological and political education in all disciplines can be achieved, so as to carry out explicit education and implicit education, and improve education in an all-round way. Quality, develop all-round education pattern of all members in the whole process [2].

3 The Ideological and Political Concepts of the Curriculum Are Integrated into the Teaching Design of Higher Mathematics

3.1 Teaching Design Ideas

The corresponding teaching design is designed according to the teaching theory and learning theory. The teaching theory can ensure the comprehensiveness of the teaching design, improve the regularity of the teaching design, and allow the advanced mathematics teachers to design scientific teaching content, teaching tasks, and teaching methods from a higher perspective and the ideological and political concept of the curriculum. College students' study of ideological and political theory can help them fully understand, understand and recognize mathematical problems in situational teaching, and at the same time they can build mathematical knowledge, and finally apply mathematical knowledge reasonably in practice [3].

Teaching Methods

Guided by questions, students are inspired to think deeper and explore teaching methods at the same time. In classroom teaching, students are the main body of learning, teachers mainly play a guiding role, and knowledge is the bridge connecting the teaching links. The purpose of classroom teaching is to develop thinking. By creating situational problems, under the guidance of teachers, students can fully grasp analogies Relevant knowledge, so as to summarize and get the concept of derivative, guide students in

the process of experiencing mathematical knowledge and exploring knowledge, when they acquire knowledge, think and perceive mathematical content, they can naturally understand the teaching goal of this class, that is, learning knowledge, Improve ability, cultivate ideological and moral quality.

Teaching Methods

Use multimedia, MOOCs and other information technology to assist teaching. With the help of advanced technology, the traditional teaching mode is optimized to make the abstract knowledge points of advanced mathematics more concrete, so that students can more easily understand the content of the ideas, so as to explore the essence of mathematics. For example, showing the video of China's high-speed rail for students to improve students' patriotic feelings and strengthen students' spirit of scientific exploration. After understanding the background and history of advanced mathematics knowledge points, it can improve students' interest in learning, and at the same time, with the assistance of multimedia technology, it can emphasize the important and difficult teaching points of this class.

Ideological and Political Education

In-depth exploration of ideological and political elements in mathematics textbooks, clever use of examples and problems, and highlighting the combination of teaching content and ideological and political education content. For example, first play the video of my country's high-speed rail for students, and ask the corresponding questions, how to calculate the instantaneous speed of variable-speed linear motion and the tangent slope of the curve, and guide students to think and explore to get two answers. The high-speed rail video can stimulate students' patriotism Love, problem guidance can help students develop correct dialectical materialism thinking, and apply mathematical knowledge to practical problems. Then focus on discussing these two issues, and give the corresponding historical background, because these two issues gradually formed differential calculus, which is also the main research content of advanced mathematics. Through these examples, we summarize and summarize, so as to obtain the definition of derivative, and finally Review the geometrical and physical meanings of the derivative derived from these two examples, and then combine the derivative judgment function and the definition to calculate [4].

3.2 Teaching Process

Ask Questions

That is the high-speed rail in my country mentioned above. The first problem is that when the high-speed rail is in operation, the driver's electronic screen will display the running speed. The running speed of each time period is different. How to find this speed? The second question is that when the high-speed rail turns, in order to ensure the stable operation of the high-speed rail, the corresponding curve tangent rate is crushed by Nakamura in the track design, so how should the tangent slope of this curve be calculated?

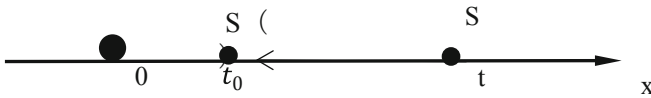


Fig. 1. Abstraction of high-speed rail linear motion

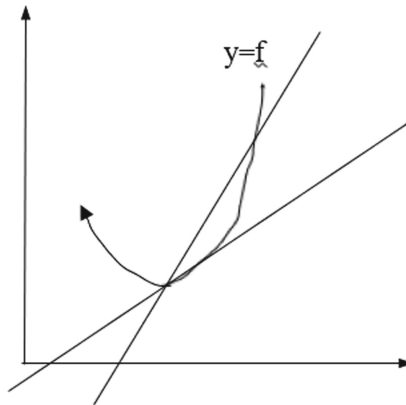


Fig. 2. Abstraction of train curve stability experiment

Problem Solving

For the calculation of instantaneous speed, the high-speed rail is regarded as a solid dot (as shown in Fig. 1), and the mass point is used as a variable-speed linear motion. The only function expression is $S = S(t)$, which mainly calculates the instantaneous speed at the moment.

To find the instantaneous speed at the moment, another time t needs to be taken. First, the average speed of the time interval between t and t_0 must be found, that is $\bar{v} = \frac{S(t)-S(t_0)}{t-t_0}$.

Find the slope of the tangent line on the curve, set the curve C as the function $y = f(x)$, the image is shown in Fig. 2, when the high-speed train turns and runs, its running route can be regarded as M on the curve moving with the curve., the direction of the high-speed rail turning motion is set to calculate the slope of the tangent MT .

Note: Fig. 2 is calculated according to the formula $y = f(x)$ function.

Calculate the slope of the tangent MT , note $M(x_0, f(x_0))$ on the curve C , take another point $N(x, f(x))$ on the curve, as the secant MN , its slope is $K_{MN} = \frac{f(x)-f(x_0)}{x-x_0}$.

According to the above two examples, when the interval is small, the upper limit of the average speed of the high-speed rail is the instantaneous speed, and the phase line of the secant slope is the tangent slope. The world is constantly developing, so we must look at problems with a developmental perspective, and the methods used to deal with problems must also develop and change, and emotions are also temporary, so we must see the correct side and use scientific solutions. Program, everything will go in the right direction.

3.3 Reflections on Teaching

To increase the ideological and political concepts of courses in the teaching of advanced mathematics, as teachers of advanced mathematics, we must actively participate in and host, and correctly understand and understand the ideological and political content of the courses, so as to help the later teaching work. Therefore, as a teacher of higher mathematics, I will actively participate in the relevant training of the school, consciously learn the ideological and political concepts and related content of the curriculum after class, formulate corresponding ideological and political teaching plans, and improve the integration of the major of higher mathematics and ideological and political construction [5]. In actual teaching, I will analyze specific problems in detail, closely follow the development requirements of disciplines, clarify the training goals and development directions of mathematics talents, and build a higher-level ideological and political curriculum system for students with increasing levels and rich types.

4 Conclusion

All in all, under the background of cultural perspective, the ideological and political education of college students has higher and updated educational requirements, and colleges and universities must take corresponding educational measures to continuously optimize and innovate ideological and political education. The content of each subject has the function of educating people, and each teacher needs to take the responsibility of ideological education of students. Different courses have their own personalities, ideas and political elements. Teachers can integrate ideological and political concepts into advanced mathematics teaching, which can not only help students develop a good learning attitude, but also encourage them to actively study mathematics and improve their mathematical ability. In addition, this teaching model can improve the traditional education model, clarify the development direction of students, and guide them to establish the correct three viewpoints.

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