

Research on the Practice of Ideological and Political Theories Teaching Innovation in College Mathematics Courses Under the Concept of Comprehensive Development

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This paper first analyses the reasons for the low effectiveness of ideological and political education in the current college mathematics courses, and then puts forward the contents, methods, and approaches of integrating ideological and political education into college mathematics courses under the concept of comprehensive development, and finally finds out the matters needing attention of integrating ideological and political education into college mathematics courses under the concept of comprehensive development.

Keywords: college mathematics courses, contents of ideological and political education, methods of ideological and political education, approaches of ideological and political education

Introduction

The idea of ideological and political theories teaching in all courses has already sprouted in the traditional educational ideas of ancient China, and its presentation in different dynasties has its own characteristics. After the establishment of the People's Republic of China, the formulation of ideological and political education for students has gone through various stages, including "political and ideological education", "ideological and political work", "moral education", "disciplinary moral education", and finally the idea of "ideological and political theories teaching in all courses". The Shanghai Municipal Party Committee and Government issued and implemented the "Shanghai Comprehensive Education Reform Plan (2014-2020)" at the end of 2014, which explores digging deeper the ideological and political education resources of various courses in colleges, and promotes collaborative education of various courses and ideological and political theory courses. The implementation path of ideological and political theories teaching in all courses has begun to take shape, and the collaborative education mechanism of various courses in pilot colleges has also shown initial results. This is the beginning of exploring the transformation from ideological and political courses to ideological and political theories teaching in all courses. Under the guidance of Chinese Ministry of Education, the idea of ideological and political theories teaching in all courses was proposed firstly in Shanghai. Starting from the second half of 2017, ideological and political theories teaching in all courses has become a model of ideological and political

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education that helps to promote all-round education, and has been promoted and implemented on a larger scale throughout the country. In fact, ideological and political theories teaching in all courses is a new idea, method, and model (Hao, 2021a). On May 28, 2020, Chinese Ministry of Education issued the “Guidelines for Curriculum Ideological and Political Construction in Institutions of Higher Learning”, which pointed out that comprehensively promoting curriculum ideological and political construction is a strategic measure to implement the fundamental task of establishing morality and cultivating people. In November 2021, Wu Yan, who was then the Director of the Higher Education Department of Chinese Ministry of Education, gave a report on “comprehensively promoting the high-quality construction of ideological and political theories teaching in all courses in college”, emphasizing the promotion of ideological and political theories teaching in all courses to higher quality. Implementing ideological and political theories teaching in all courses not only enhances the ideological and humanistic aspects of the curriculum, but also endows knowledge with the correct value orientation. To build the “San Quan” Education Mode, it is necessary to do a good job in ideological and political theories teaching in all courses.

In recent years, ideological and political theories teaching in all courses has still been the key and hot spot of close attention and in-depth research by colleges and teachers in the teaching reform, but ideological and political theories teaching in college mathematics courses has always been a difficult point, its research results are still relatively limited compared to humanities and social science courses, and the research of ideological and political theories teaching in college mathematics courses is still in the trial and exploration stage. At present, significant achievements have been made in ideological and political education for college students, and the mainstream of the ideology among them is good. However, with the changes in domestic and international situations in the new era, the development of social economy and culture, the application of new media, and the arrival of a period of social transformation, various ideological trends and mainstream culture collide with each other, bringing negative impacts to college students. At present, there are problems among college students, such as dishonesty, lack of gratitude, and poor sense of responsibility. Individualism, utilitarianism, and liberalism are serious. The ideological and political positioning of college mathematics courses should be based on the basic concepts, theories, and methods of mathematics, emphasizing the training of scientific thinking, the application of scientific methods, the cultivation of scientific spirit, the establishment of scientific norms, the education of scientific ethics, the sublimation of humanistic sentiments, and so on. This is crucial for students to lay a solid mathematical foundation, establish correct scientific concepts, cultivate good study habits, and so on. At the same time, the various aspects presented in and outside the classroom of college mathematics courses will have a profound impact on students’ entire college life and even the longer-term future. Therefore, college mathematics teachers should make every effort to do a good job in ideological and political theories teaching in these courses. College mathematics can improve their mathematical literacy, and also cultivate scientific attitude of concentration, adherence to truth and tracing the source, scientific style of seeking truth from facts, seriousness and meticulousness, and scientific methodology of students, and still cultivate their humanistic spirit and correct three perspectives. College mathematics courses play an important role in creating, transmitting, exchanging, and developing human culture, containing rich ideological and political education resources, having rich humanistic values, and important educational functions, and can cultivate students to form dialectical philosophical thinking, pragmatic scientific spirit, and a patriotic sentiment of serving the country by science and technology; the courses included in them have a large number, a wide range of content, wide audience, many participants, high credits and high difficulty, and they

are important public basic courses for all science, engineering, agriculture, medicine, economics, and management majors, as well as public elective courses for other majors, and bear the heavy responsibility of the times of providing quality education to students, cultivating their innovative spirit and ability; most of these courses are offered in the first few semesters, and the target audience is young and adaptable. In the implementation process of ideological and political theories teaching in college mathematics courses, our fundamental goal is to enable students to not only learn necessary knowledge and skills in college mathematics, but also understand the ideological methods and spiritual essence of mathematical science; to enable students to be trained in both formal logic and abstract thinking, as well as be influenced by dialectical thinking and humanistic spirit; to help students in their future lives, and even if they forget some specific theorems and formulas, the spirit of mathematical science, as well as the thinking methods of analysing and solving problems, will still help them. If teachers introduce appropriate ideological and political elements during their teaching process, it can not only increase the fun of the course, improve students' learning initiative, but also enrich the content of ideological and political education. Therefore, the research on the practice of ideological and political theories teaching innovation in college mathematics courses under the concept of comprehensive development will have a positive impact on students and promote their comprehensive development.

In domestic literature on ideological and political theories teaching in college mathematics courses, Chen, Qiu, and He (2022), Xuan, Lu, and Yuan (2022), and Chu (2021) analysed the problems, necessity, ideas, and approaches of integrating ideological and political education into the current college mathematics courses, and proposed top-level designs, such as constructing a basic normative system for ideological and political education in college mathematics courses and improving the evaluation system for ideological and political education in college mathematics courses. Specifically for various mathematics courses, in the field of calculus, Kong (2020), Zhang, Jing, Li, and Wei (2020), Zhang, Wang, and Gao (2020), Shi, Feng, and Xing (2020), Liu (2020), Li and Pei (2020), Zhu, Chen, and Si (2021), Liu, Li, and Dou (2024), Dong (2024), Lu, Shen, and Feng (2024), and Hao (2020; 2021a) analysed the difficulties and advantages, goals, positioning, necessity, principles, content, strategies, methods, approaches, cases, precautions, reflections, and evaluations of ideological and political theories teaching in calculus; in the field of linear algebra, Che and Zhu (2020), Cao, Su, and Cao (2020), Yang et al. (2020), Li (2020), Jiang, Luo, and Chen (2020), Fan, Ke, and Cao (2024), and Hao (2021b) explored the current situation, goals, concepts, necessity, content, methods, approaches, cases, precautions, reflections, and evaluations of integrating ideological and political education; in the field of probability theory and mathematical statistics, Wu, Huang, and Ji (2021), Yang (2021), Han, Xia, Pang, and Li (2020), Li and Chen (2021), Fang (2021), You and Li (2021), Feng, Shi, and Xing (2021), Sun et al. (2021), Zhang (2021), Gao (2021), Zhang, Huang, and Li (2020), Chen (2022), Gu, Sun, and Ma (2021), and Hao (2022) studied the significance, necessity, content, methods, approaches, cases, precautions, and evaluation of integrating ideological and political education. ... In summary, these literatures mainly study the current situation, goals, concepts, significance, necessity, principles, ideas, content, methods, approaches, cases, precautions, reflections, evaluations, and top-level design of integrating ideological and political education into college mathematics courses. At present, no literature on ideological and political education in college mathematics courses has been found abroad, but there are also educational practices similar to domestic ideological and political education and even ideological and political theories teaching in all courses, such as civic education in American universities (Zhang, 2018; Yang, 2018), common values education in Singaporean universities (Chen, 2018; Huang, 2018), personal quality education in Japanese universities (Wang, 2015), and

invisible education in British universities (Chen, 2020). Each country has proposed a comprehensive moral education training program suitable for its own universities based on its own social culture and national conditions at the time, emphasizing the combination of theory and practice from multiple perspectives, such as the classroom, society, and family, to promote the cultivation of outstanding talents with both moral and talent qualities in universities. Various countries strongly support universities to carry out ideological and political education, and have adopted a method that emphasizes implicit education. From the above research, it was found that the research on the practice of ideological and political theories teaching in college mathematics courses is not systematic enough and the research methods are not rich enough; with the development of the economy and the changes in the environment, relying solely on existing theories and experiences can no longer solve the new situations and problems that arise in ideological and political theories teaching in college mathematics courses. For a long time, mathematics teaching in domestic colleges has placed more emphasis on imparting theoretical knowledge, cultivating thinking abilities, and improving application abilities, but the effectiveness of integrating ideological and political education is not high. Therefore, there is insufficient research and practice on ideological and political theories teaching in college mathematics courses at home and abroad.

This paper first carefully and comprehensively analyses the reasons for the low effectiveness of ideological and political education in the current college mathematics courses, then on the basis, puts forward the contents, methods, and approaches of integrating ideological and political education into college mathematics courses under the concept of comprehensive development, and finally finds out the matters needing attention of the integration under the concept of comprehensive development.

The Reasons for the Low Effectiveness of Ideological and Political Education in Current College Mathematics Courses

It is a highly challenging systematic project to integrate ideological and political education into college mathematics courses. Although certain achievements have been made, the effectiveness is still not high. After careful investigation and analysis, the main reasons for the low effectiveness are the following two aspects.

Internal Reasons

Characteristics of courses. College mathematics courses study objective laws, which are universal, logical, and abstract, often presented in systematic content and deductive form, and some of the content in the courses is independent of ideology, and lacks a clear suitable carrier and effective combination of ideological and political education; college mathematics courses have a wide range of content and high difficulty, but their class hours are very limited, making it difficult for teachers to consider ideological and political education; in traditional college mathematics courses, some teach too much technical content, such as argumentation, reasoning, and calculation, while others mainly focus on storytelling or conceptual teaching, and the effect of integrating ideological and political education is not ideal.

Some teachers have problems in cognition, thinking, and action. A few college mathematics teachers have an inaccurate understanding of the essence of “ideological and political theories teaching in all courses”, and a very small number of college mathematics teachers still do not fully recognize the practice of ideological and political theories teaching in all courses. Some college mathematics teachers have a certain fear of difficulties, and are not good at exploring elements of ideological and political education. At present, the

ideological and political idea of college mathematics courses has not yet been transformed into conscious actions of all college mathematics teachers.

The syllabus is highly generalized, the contents of integrating ideological and political education are outdated, and the methods are not effective enough. At present, most colleges do not fully integrate ideological and political education into the syllabus of their college mathematics. The contents of integrating ideological and political education are not sufficiently aligned with the national policy orientation, current hot topics, and the life reality and focus of attention of students, and its attractiveness is not strong. In the current ideological and political education in colleges, there still are the methods of preaching and indoctrination, and students are in a passive state of acceptance. Due to insufficient learning, lack of deep understanding, insufficient exploration, inadequate design and other reasons, the situation of “hard copy after cutting and splicing” often occurs.

The atmosphere of ideological and political education is not strong, and there are problems with family education. At present, the implicit educational role of campus culture and so on in some universities in creating an atmosphere of ideological and political education is not obvious enough, making it difficult to stimulate students' interest. With the rapid development of China's economy, the educational concepts of families have undergone changes. Some excellent traditional ideological and political education concepts, such as honesty and trustworthiness, hard work and thrift, have been weakened in the education of some families. Some parents prioritize intellectual education over moral education, and pay little attention to ideological and psychological changes, the cultivation of a sense of responsibility, and so on of their children. Some bad educational methods still exist in family education. Especially in the college stage, many parents have less communication and interaction with their children, relaxing the management of their children.

External Reasons

Have not formed a sound working mechanism. At present, many universities have not established a working mechanism of curriculum ideological and political construction for the unified leadership of the Party Committee, joint management of the Party and government, leadership by dean's office, linkage between relevant departments, and implementation and promotion by departments.

Have not formed synergistic effect between college mathematics courses and ideological and political theory courses. The prerequisite for achieving mutual complementarity and high collaboration between college mathematics courses and ideological and political theory courses is to have both divisions of labor and cooperation. However, in the process of implementing the idea of ideological and political theories teaching in some college mathematics courses, due to the lack of scientific understanding of division of labor, there is a mechanical repetition in the function of ideological and political education, and the supporting role between them and ideological and political theory courses is not obvious.

The influence of ideological and political education environment such as the era environment, social environment, and new media environment. In the current era of economic globalization, political diversity, and cultural diversity, active social trends have a significant impact on students, resulting in some college students lacking lofty ideals, social responsibility, and civic consciousness. The current Chinese society is in a period of transformation, with a complex and ever-changing social environment. Under the socialist market economy system, people are more concerned about efficiency and their self-awareness is constantly increasing. Some college students strongly pursue personal interests and weaken collective consciousness. The widespread

application of new media, such as the Internet, WeChat, and Weibo in the new era has provided people with more means and ways to obtain information. The richness of information has a profound impact on the ideological and political concepts of college students.

The assessment, evaluation, and feedback system suitable for ideological and political theories teaching in college mathematics courses has not been established. At present, most colleges focus more on promoting the idea and process of ideological and political theories teaching in the course, and do not do enough in the assessment, evaluation, and feedback of implementation effects, failing to design scientific assessment methods, evaluation indices, and feedback systems.

The Contents, Methods, and Approaches of Integrating Ideological and Political Education Into College Mathematics Courses Under the Concept of Comprehensive Development

Based on a careful and comprehensive analysis of the reasons for the low effectiveness of ideological and political education in current college mathematics courses, the contents, methods, and approaches of integrating ideological and political education into college mathematics courses are proposed under the concept of comprehensive development.

Set the Goals for Ideological and Political Theories Teaching in College Mathematics Courses and Fully Excavate the Resources of Ideological and Political Education in College Mathematics Courses

The goals of ideological and political theories teaching in college mathematics courses can be set based on the training plan and value goals, student learning situation, etc.: to improve mathematical aesthetic ability through the knowledge content, thinking methods, and thinking training of college mathematics; to learn to communicate, collaborate, innovate, and so on in learning activities, such as group cooperation, thematic discussions, sharing and display, and literature collection and reading, to improve mathematical literacy, to enhance cultural identity, to inspire patriotism, social responsibility, and sense of mission for the times, and to promote scientific spirit and humanistic spirit. Adding the content on mathematical culture to college mathematics courses can help students understand the background of some of the content and stimulate their enthusiasm for learning. By exploring the concepts, symbols, formulas, and theorems of college mathematics, we aim to explore their beauty in symmetry, balance, form, and logic, allowing students to appreciate the beauty of mathematics; through the infiltration of mathematical culture, students can understand the laws of the emergence, growth and development of mathematics, understand the close connection between mathematical development and human culture, understand how mathematicians understand the objective world from a mathematical perspective, master mathematical thinking methods, and appreciate the cultural value of mathematics; and by studying mathematicians, students can be cultivated with a positive, optimistic, ambitious, and persevering attitude towards life, cultivating a kind and honest code of conduct, a scientific and rigorous attitude towards handling things, and a bold and innovative critical spirit.

In the introduction of college mathematics courses, we can guide students to correct their learning attitude, enabling them to understand how to learn and what learning is for; can also inspire students to experience mathematical thinking methods and apply them to the thinking of practical problems.

Before discussing calculus, it can be introduced that the West began to establish calculus in the 17th century, while China only began to contact it in the late Qing Dynasty. However, in recent years, Chinese people have recognized the importance of mathematics, such as Huawei establishing research institutes

worldwide and Alibaba launching global mathematics competitions. When teaching functions, the concept of functions can be introduced using the law of children's acceptance ability changing over time in psychology, mathematical, modeling methods and mathematician Euler can also be introduced. When discussing limits, we can introduce the dialectical thinking contained in limits, mathematical thinking and language, as well as the ancient Greek mathematician Archimedes and the Chinese thinker Zhuang Zhou and mathematicians Liu Hui and Zu Chong-zhi. When discussing the two important limits, we can introduce the issue of "campus loans". When talking about infinitely small quantity and infinitely large quantity, we can allow students to generate cognitive conflicts through the visual impact of Koch snowflakes and Sierpinski sails in visualization, we can introduce how Newton handled infinitely small quantity in solving physics problems and the relationship between infinitely small quantity and function limits, we can also introduce that Kepler has repeatedly used the infinitesimal argumentation method to calculate area and volume. When discussing continuity, we can introduce that continuity and discontinuity are opposed and unified. When teaching derivatives, we can introduce the concept of derivatives by tangent and velocity, and we can also introduce the dialectical ideas contained in derivatives, mathematical abstractions, and mathematician Newton. When discussing high-order derivatives, we can inspire students that significant changes or developments are the result of the efforts of numerous individuals. When talking about the applications of derivatives, we can introduce that several mean value theorems not only reflect people's general cognitive law, but also reflect the unity of opposites between local and global properties of functions, and we can also introduce mathematical construction methods and mathematician Fermat. When discussing differentials, we can remind students not to underestimate the impact of the high-order infinitesimal, and to study rigorously. When teaching indefinite integrals, we can introduce that the dialectical idea of contradiction transformation is contained in them, reflecting the process from quantitative change to qualitative change, and we can also introduce the method of relationship mapping inversion and mathematician Leibniz. When discussing definite integrals, we can introduce the concept of definite integrals by the area of curved trapezoid and the distance of variable speed linear motion, we can also introduce that the process of finding definite integrals reflects the law of unity of opposites, the law of mutual change of quality and quantity, and the law of negation of negation, and we can also make students realize that only by accumulating small virtues can great virtues be achieved. When talking about the Newton-Leibniz formula, we can encourage students to frequently diverge their thinking, analyze problems from different perspectives, and flexibly apply the knowledge they have learned to solve problems. When discussing the concept of infinite series, we can introduce it by the paradox problem "Achilles and the Turtle" proposed by the ancient Greek philosopher Zeno, and we can also introduce the issue of drug dosage in medicine. When teaching the convergence of infinite series, we can explain that it embodies the unity of opposites between finite and infinite. When discussing Taylor's formula, it can be emphasized to be patient, careful, and work hard in order to learn it. When talking about power series expansion, we can introduce Chinese mathematician Li Shan-lan. When discussing calculus in multiple variables, we can introduce mathematical creation as well as French mathematician Descartes and Chinese mathematician Hua Luo-geng. When teaching the extremum of multivariate functions, the honeycomb problem can be introduced. When discussing the calculation of double integrals, we can introduce by mathematical historical material "Mou He Fang Gai", and we can also introduce the Zu Geng principle.

Before teaching linear algebra, when discussing the learning methods of it, we can encourage students to think hard, establish lofty ideals, and study diligently for them; when discussing the essence of it, we can

introduce that it deals with the mathematical problems of linear relationships; when discussing the applications of it, we can introduce synchronous accelerators, cloud computing, and search algorithms. When teaching the concept of determinant, we can start with the historical background of proposing determinants and introduce it using systems of binary and ternary linear equations. When discussing the writing and calculation of determinants, we can allow students to develop a rigorous academic attitude. When talking about the concept of matrices, we can introduce mathematician Cayley and construct special matrices containing ideological and political elements. When discussing the difference between matrices and determinants, we can introduce the dialectical relationship between “phenomena and essence”. When discussing identity matrices, we can guide students to go wherever they are needed. When teaching elementary transformations of matrices, we can introduce them by the corresponding content of the ancient Chinese mathematical classic “Nine Chapters of Arithmetic”. When discussing the reversibility and irreversibility of matrices, the linear correlation and linear independence of vector systems, the solvability and non-solvability of linear equation systems, and the diagonalization and non-diagonalization of matrices, we can introduce the dialectical thinking of “quantity determines quality” and the dialectical relationship of “opposition and unity”. When talking about the diversity of matrix forms and the importance of matrices, we can lead to the uniqueness of students themselves and their significance for national development in the future. When discussing linear equation systems, we can allow students understand that the process of striving is far more important than the final outcome, and learn how to face success and failure. When teaching the representation of n-variable linear equation systems in matrix form, we can introduce that the matrix form embodies simplicity beauty and coordination beauty of mathematics. When talking about the applications of linear equation systems, we can introduce that our lives cannot be separated from mathematics. When discussing the solution of linear equation systems, it is necessary to use the rank of matrices, and we can emphasize the completeness and progression of the mathematical knowledge system, and tell students to be down-to-earth in their learning. When teaching the geometric meaning of vectors, we can inspire students to study hard for the prosperity of our country.

Probability theory and mathematical statistics are a discipline that studies the quantitative regularity of random phenomena, mainly focusing on the problems that chance contains necessity. Some basic concepts in it embody the law of unity of opposites, such as random phenomena and deterministic phenomena, basic events and composite events, inevitable events and impossible events, frequency and probability, probability and conditional probability, independence and non-independence, dispersion and continuity, population and sample. Before discussing the discipline, we can introduce mathematical observations and experiments, as well as some probabilistic scientists and statisticians, such as Hsu Pao-lu and Wang Zi-kun from China. When teaching simple probability theory, we can introduce some examples involving possibilities in traditional Chinese culture, such as Tian Ji’s horse racing. When discussing probability theory in the 19th century, we can introduce Laplace, Gauss, Maxwell, Gibbs, and others. When talking about the development of modern mathematical statistics, we can introduce Bayes and Galton. When discussing the extremely important period in the development history of mathematical statistics from the 19th century to the end of World War II, we can introduce K. Pearson and Fisher. When discussing the statistical definition of probability, we can introduce De Morgan, Romanovsky, and others. When discussing the classical definition of probability, we can use classical probability model to explain the probability of winning a lottery ticket. When discussing the geometric definition of probability, we can introduce Buffon. When discussing the axiomatic definition of probability, we can introduce Bernstein and Kolmogorov. When teaching the formula of total probability, we can introduce the

idea of breaking the whole into parts. When discussing Bayes' formula, we can introduce Bayes, and we can also say that one can continuously improve human cognition by integrating previous human knowledge and updated data in a field using the formula. When talking about the independence of events, we can analyse the proverb "Two heads are better than one". When discussing the Bernoulli probability model, we can introduce Bernoulli, and we can also explain that it contains the law of mutual change of quality and quantity of small probability events. When teaching random variables, we can introduce the relationship between random variables and functions. When discussing the Bernoulli distribution, we can introduce the contribution of the Bernoulli family in scientific development to help students understand the importance of atmosphere and environment. When talking about binomial distribution, we can explain that although some things may seem insignificant, if we persist in doing them, there will be unexpected results. When discussing the Poisson distribution, we can introduce the French mathematician Poisson. When teaching normal distribution, we can introduce De Moivre, especially Gauss. When discussing the t -distribution, we can introduce that its discovery has opened up a new era of small sample statistical inference. When talking about distribution functions, we can extract the connections among the distribution functions of random variables, the distribution functions of random variable functions and conditional distribution functions, and we can also help students feel rational thinking of "seeing the essence through phenomena". When discussing mathematical expectations, we can allow students to experience the charm of probability knowledge combining the "pool testing and grouping" problem in nucleic acid testing and stimulate their patriotic feelings. When teaching Chebyshev's law of large numbers, we can introduce Chebyshev. When discussing Bernoulli's law of large numbers, we can introduce the philosophical principle that quantitative change leads to qualitative change, inspiring students to persevere and accumulate knowledge. When teaching Khintchine's law of large numbers, we can introduce Khintchine. When discussing the central limit theorems, we can introduce the law of mutual change of quality and quantity. When talking about interval estimation, we can point out that strengthening quality management requires the introduction of statistical thinking and methods. When discussing maximum likelihood estimation, we can introduce its inventor Fisher. When teaching hypothesis testing, we can introduce Neyman and E. S. Pearson. When discussing statistical inference, we can explain "seeing the whole through a small part".

Eliminate Students' Fear of Mathematics; Use Various Teaching Ways and Methods to Fully Stimulate Their Learning Interest; Adopt Ideological and Political Education Methods that Are Close to Their Lives, Adapted to Their Personalities, Hobbies, and Growth Characteristics, and Constantly Improve Them

We should eliminate students' fear of mathematics and transform them from passive learning to active learning. We need to make students deeply aware of the important role that mathematics plays for them and experience the beauty of mathematics. We need to combine practical needs and adopt teaching methods such as inquiry based, heuristic, interactive, etc. Based on the different characteristics of group learning, case analysis, situational teaching, emotional cultivation, role model demonstration, reasoning and guidance, moral practice, etc., we should select them in a targeted manner, fully stimulate students' interest in learning, and enable them to experience the cultural value, application value, and aesthetic value of mathematical knowledge. We should design ideological and political education methods based on new problems, new focuses, and new hotspots, adopt the methods that are close to students' lives, adapted to their personalities, hobbies, and growth characteristics, and continuously improve the methods with the changes of the times, society, and educational object.

Integrate Ideological and Political Education Elements Into the Syllabus of College Mathematics; Deeply Excavate the Ideological and Political Resources in College Mathematics Courses; Guide Students to Participate in Extracurricular Math Competitions; Provide Timely Ideological and Political Education to Address the Problems that Arise Among Students; Give Full Play to the Influence of Environmental Edification and the Role of Cultural Cultivation

Based on the characteristics of college mathematics courses, we should integrate the value, spirit, and ideas behind knowledge into the syllabuses. We should deeply excavate the ideological and political resources in the courses, integrate the ideological and political education elements contained in the contents of college mathematics courses into corresponding chapters, and formulate specific methods and approaches for teaching activities. Combining with practical problems, we should carefully search for ideological and political cases that are suitable for college mathematics courses, closely related to real life, and easy for students to understand, and conduct case teaching. By offering elective courses, regular tutoring, pre-competition training, etc., we can guide students to participate in extracurricular mathematics competitions, such as the Chinese Mathematics Competitions, China Undergraduate Mathematical Contest in Modeling, and so on, in order to cultivate their comprehensive application ability of advanced mathematics and promote their teamwork skills. Freshmen may not be able to adapt to the new college life as they have just stepped out of endless exercise and left their parents. Some students have participated in too many community activities and lost their direction in learning; some students lack motivation to learn and lose interest in learning; some students encounter difficulties in their daily lives and studies, which they cannot solve alone and become lethargic; some students have suffered setbacks in certain aspects, leading to a loss of confidence. This requires teachers to encourage students in a timely manner, guide them to establish a positive and optimistic attitude towards life, and help them pass through this critical turning point in their lives. Colleges should give full play to the advantages of gathering talents and famous teachers, let students accept the influence of the environment, release the role of cultural cultivation, and imperceptibly integrate ideological and political education into college mathematics courses.

The Matters Needing Attention of Integrating Ideological and Political Education Into College Mathematics Courses Under the Concept of Comprehensive Development

Based on the research and practice in the first two sections, the following four matters needing attention of integrating ideological and political education into college mathematics courses are found under the concept of comprehensive development.

Follow the Laws of Ideological and Political Education, the Laws of Imparting Knowledge and Educating People, and the Growth of College Students, and Improve the Attraction, Infectiousness, and Pertinence of Integrating Ideological and Political Education Into College Mathematics Courses

We should follow the laws of ideological and political education; the integration of ideological and political education in college mathematics courses must be combined with the educational goals, environment, and reality, and keep up with the times; we should follow the laws of imparting knowledge and educating people, improve professional quality, ideological and political cultivation, and ideological and political education level of college mathematics teachers; we should follow the growth laws of students, and pay attention to cultivating their emotional psychology and shaping their values; we should actively care

about politics, strengthen political theory learning, and continuously improve political literacy; we should participate in more training of ideological and political theories teaching in college mathematics courses, and enhance the awareness and ability of ideological and political theories teaching in college mathematics courses; we should strive to organically combine the theory and ideology of teaching contents with the acceptability of teaching methods, and constantly enhance the attraction and appeal of ideological and political education; and we should continue to pay attention to the development of cutting-edge science and technology and changes in the environment of the times, update ideological and political elements and their integration methods as necessary, and continuously enhance the pertinence of ideological and political education.

Integrate Ideological and Political Education Into College Mathematics Courses Based on the Characteristics of College Mathematics and College Students, and Pay Attention to the Methods of Ideological and Political Education

Due to the abundance and difficulty of college mathematics contents, students often have feelings of fear and rejection when learning, and teachers should integrate ideological and political education into the teaching process based on these characteristics. Firstly, the ideological and political education contents in college mathematics courses should be timely and adaptable to students' psychology. Secondly, teachers should not superficially link teaching contents with ideological and political education contents in their teaching. The methods of ideological and political education should be close to the students' reality and meet their needs. First of all, the integrating of ideological and political education into college mathematics courses should neither affect teaching progress nor "copy mechanically". Secondly, teachers should use their own examples to influence students more.

Strengthen Process Assessment, and Reform the Evaluation Ways and Feedback System of the Courses

We should strengthen process assessment, so that students can spend more time on learning and learn more effectively. The assessment ways should focus on knowledge learning and the cultivation of logical thinking ability of students, and promote the improvement of their comprehensive quality, practical ability, and innovation ability. Process assessment can be highlighted through in class quizzes, case assignments, course papers, and so on. We should construct a scientific curriculum evaluation system where both form and effect are comprehensively considered. The evaluation of the effectiveness of ideological and political education in college mathematics courses can be carried out from the aspects of teaching design, teachers, students, and so on. With the help of some software and platforms, accurate information can be obtained through information collection and big data analysis. Then, students' cognition, emotions, values, and other contents can be included in the evaluation system to form a diversified evaluation system. The contents, methods, and approaches of ideological and political education can be adjusted and improved through feedback from students after class and at the end of the semester.

Conduct Teaching Reflection

Teaching reflection on the integration of ideological and political education can be conducted after college mathematics courses through various means, such as communication, observation, recording, transposition, and so on. We need to reflect on both successes and shortcomings, as well as on the questions and suggestions raised by students.

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