Research and Practice of Integrating Ideological and Political Education Into University Mathematics Courses—Taking Linear Algebra as an Example

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This paper first analyses the reasons for the low effectiveness of ideological and political education in the current university mathematics courses, and then puts forward the contents, methods, and approaches of integrating ideological and political education into linear algebra teaching, and finally finds out the points for attention of integrating ideological and political education into linear algebra teaching.

Keywords: ideological and political education, linear algebra, contents of ideological and political theories teaching in all courses, approaches of ideological and political theories teaching in all courses

Introduction

Ideological and political education is to enable people to establish correct thoughts and views through purposeful educational activities. In 2014, Shanghai Municipal Party Committee and Government issued the comprehensive reform programme of Shanghai Education (2014-2020), which began to explore the transformation from ideological and political courses to ideological and political theories teaching in all courses. Under the guidance of the Ministry of Education, Shanghai took the lead in putting forward the idea of ideological and political theories teaching in all courses. Ideological and political theories teaching in all courses is a comprehensive education idea, which constructs the pattern of “San Quan” Education, integrates all kinds of courses and ideological and political theory courses together to form a synergistic effect, and takes strengthening morality and cultivating young persons as the fundamental task of education. It integrates the elements of ideological and political education (including theoretical knowledge, value idea, spiritual pursuit, and so on) into all courses, and it has a subtle influence on students’ ideology and behaviour.

At present, the ideological and political education of college students has made remarkable achievements, and the mainstream of college students’ ideology is good. However, with the changes of the situation at home and abroad, the development of social economy and culture, and the application of new media, all kinds of thoughts and mainstream culture collide with each other, which not only enriches college students’ thoughts,

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but also brings them negative effects. At present, there are some problems in college students, such as lack of honesty, individualism, utilitarianism and liberalism. In the past, university mathematics courses mainly focused on the teaching of theoretical knowledge, the cultivation of thinking ability, and the improvement of application ability, but ignored the ideological and political education. University mathematics courses are important basic ones during university. It includes a large number of courses, a wide range of audiences, and a large number of students, which is a compulsory course for all the majors of science, engineering, agriculture, medicine, economics, and management; the subjects are young and flexible. Therefore, it is of great significance the research and practice of integrating ideological and political education into university mathematics courses.

In the domestic literature on integrating ideological and political education into university mathematics courses, the literature (Sun, Xue, & Qin, 2019; Cao, Su, & Cao, 2020; Yang, Chen, Liu, Gao, & Li, 2020; Li, 2020; Che & Zhu, 2020; Jiang, Luo, & Chen, 2020; Lu, Li, & Deng, 2021; Jia & Wang, 2021) mainly studies the current situation, necessity, ideas, contents, methods, approaches, cases, and matters needing attention of integrating ideological and political education into university mathematics courses. The literature does not comprehensively analyse the real reasons for the low effectiveness of ideological and political education in university mathematics courses. On the basis of careful and comprehensive analysis of the real reasons for the low effectiveness of ideological and political education in university mathematics courses, there is a little literature to find the contents, methods, approaches, and matters needing attention of integrating ideological and political education into linear algebra teaching. With the development of economy and the change of environment, the new situation and problems in ideological and political education cannot be solved only by the original theory and experience. At present, the effectiveness of ideological and political education in university mathematics courses is not high. Therefore, the domestic research and practice of integrating ideological and political education into university mathematics courses are not enough.

This paper first carefully analyses the reasons for the low effectiveness of ideological and political education in the current university mathematics courses, and then puts forward the contents, methods, and approaches of integrating ideological and political education into linear algebra teaching, and finally finds out the points for attention of integrating ideological and political education into linear algebra teaching.

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

After careful investigation and analysis, the reasons for the low effectiveness of ideological and political education in current university mathematics courses mainly include internal and external reasons.

Internal Reasons

University mathematics courses study the laws of objective existence, which are universal. Some contents of the courses are theoretical and not obvious in application, and lack of suitable carrier of ideological and political education. The contents of the courses are numerous and difficult, but the class hours of the courses are limited. These characteristics make it difficult for the courses to integrate into ideological and political education.

At present, the contents of ideological and political education are old, and they are not closely related to the national policy orientation, the current hot affairs and students’ actual life, and the attraction and infection
are not enough. In the current ideological and political education in colleges and universities, there are generally preaching based methods, and students are in a passive acceptance state.

With the changes of the times, the development of social economy and the coming of the social transformation period, problems in college students, such as lack of honesty, gratitude, and poor sense of responsibility can be found everywhere. Many colleges and universities have not formed a perfect mechanism in the ideological and political education work. Only part of the party and government cadres, university counsellors, and “Two Courses” teachers are engaged in ideological and political education, and these ideological and political education staffs often hold several posts simultaneously; their task is heavy; it is difficult to set aside special time and energy to carry out ideological and political education for students. The recessive educational role of campus culture in creating the atmosphere of ideological and political education is not obvious enough; it is difficult to stimulate students’ interest.

With the rapid development of China’s society and economy, the educational concepts of some families have changed. Some excellent traditional concepts of ideological and political education in China, such as hard work, honesty, thrift, and so on, are weakened in family education. Some parents pay more attention to intellectual education than ideological and political education, and pay little attention to their children’s ideological and psychological changes and the cultivation of sense of responsibility. Some bad ways of education still exist in family education, such as the lack of education in respect of rules and regulations, the simple and crude way of education, and so on. Especially in the university stage, due to the limitation of time and space, many parents have less communication with their children and relax the management of their children.

External Reasons

In today’s era of economic globalization, political and cultural diversity, the introduction of active social thoughts and decadent values has a great impact on students. Some students lack lofty ideals, social responsibility, and civic awareness.

At present, China’s society is in the transition period, and the social environment is complex and changeable. Under the socialist market economy system, people pay more attention to efficiency and interests, and their self-awareness is constantly enhanced, which, to a certain extent, induces negative effects, such as individualism, money worship, and hedonism. College students are very vulnerable to be affected, and they strongly pursue personal interests and weaken collective consciousness. At present, the education effect of university mathematics courses is mainly evaluated by students’ examination scores, so it is difficult to make an appropriate evaluation of students’ ideological and political education effect.

In the new era, the wide application of new media such as Internet, Wechat, and Microblog makes people have more means and ways to obtain information. The richness of information has a profound impact on college students’ ideological and political concepts. The emergence of diversified values has a great impact on some college students whose values are forming, and it is easy for them to accept the wrong values.

The Contents, Methods, and Approaches of Integrating Ideological and Political Education Into Linear Algebra Teaching

Based on the analysis of the first part, this paper puts forward the contents, methods, and approaches of integrating ideological and political education into linear algebra teaching.
Enriching the Contents of Ideological and Political Theories Teaching in All Courses

We should set up the idea of ideological and political theories teaching in all courses of students as the foundation and ideological and political education as the first, so that the contents of ideological and political education integrated into linear algebra teaching are close to the students’ life reality, meet the students’ practical needs, and step into the heart of students.

Linear algebra has height of abstraction, strict logic and wide applicability. It can give students strict logical thinking training and help to cultivate scientific methodology, the scientific attitude of adhering to truth, concentrating on the career and tracing to the source, and the scientific style of seeking truth from facts, being serious and meticulous. We should excavate the ideological and political education resources contained in the current real life and social hot spots, pay attention to the inheritance and enlightenment of Chinese excellent traditional culture, especially mathematical culture and mathematical history in ideological and political education, let students feel the charm of traditional culture, inherit the essence of traditional culture, and transform it into inner belief and external action. Specific examples of integrating ideological and political education into the teaching contents are as follows.

In the introduction, we first guide students to rectify their learning attitude, help them adapt to university learning, and let them learn to learn and know what learning is for. When we talk about the development history of linear algebra, we mainly introduce the famous ancient Chinese mathematical work Nine Chapters of Arithmetic to stimulate students’ national pride and cultural self-confidence; when we talk about how to learn linear algebra well, we can quote famous sayings and use sentences containing mathematical vocabulary to inspire students to set up lofty ideals and study hard for them. In the determinant, when we teach the concept of determinant, we should start from the historical background of determinant, and then introduce it by systems of binary and ternary linear equations step by step; when we talk about the standardization of determinant writing, we may introduce strictness and keeping the rules; when we teach the calculation of determinants, we should emphasize the mathematical norms, so that students can develop a rigorous and standardized attitude towards learning. In the matrix, when we teach the concept of matrix, after we finish teaching the theory, we can construct a matrix with the founding time of Beijing International Studies University, Premier Zhou Enlai’s birthday, the founding time of the Communist Party of China and the 100th anniversary of its founding as the elements, which cleverly leads to the knowledge of school history and party history, and stimulates students’ sense of identity, pride and mission; when we talk about the difference between determinant and matrix, we can introduce the dialectical relationship between “phenomenon and essence”; when learning the unit matrix, we can guide students to set up lofty aspirations and “go wherever they are needed”; when we teach the elementary transformation of matrix, we can introduce the related contents of Nine Chapters of Arithmetic to enhance students’ national pride and cultural self-confidence; when we talk about the similar change of matrix, we can lead to the dialectical relationship of “variance and invariance”; when we teach the reversibility and irreversibility of matrix, we introduce the dialectical relationship of “opposition and unity”. In linear equations, when we teach the solution of linear equations, we need to use the rank of the matrix, so we emphasize the integrity and progressiveness of the mathematical knowledge system, and guide students to study step by step; when we talk about the application of linear equations, we should increase the students’ learning motivation; when learning the geometric meaning of vector, we can introduce the establishment of life goals; when we teach the important property of vector group “If the whole is irrelevant, then the part is irrelevant”, we may
introduce the relationship between the state and the family: If the state is not harmonious and fair, then our small family must be also not harmonious and fair.

**Improving the Methods of Ideological and Political Theories Teaching in All Courses**

With the change of the times, the development of society, and the change of the main bodies of education, the methods of ideological and political theories teaching in all courses should also be improved constantly. It is necessary to adopt the methods that are close to life and adapt to the students’ personality, hobbies, and growth characteristics. It is necessary to design methods according to the new problems in the student group, the new focus of the students’ attention, and the new hot spots in the society. It is also necessary to use the diversified methods. In the teaching of linear algebra, combining with the actual needs, according to the different characteristics of ideological and political education practice, emotional edification, model demonstration, reasoning and persuasion, mathematical culture and history analysis, group discussion, and other methods, teachers should choose and use these methods pertinently to improve the attraction and appeal to students and mobilize the enthusiasm and initiative of students.

**Broadening the Approaches of Ideological and Political Theories Teaching in All Courses**

It is necessary to establish a systematic ideological and political education system, clarify objectives, refine responsibilities, and create a good education atmosphere in every college or university. We should guide all staff to implement the people-oriented principle of ideological and political education, formulate corresponding policies, and let more people pay attention to and care about ideological and political education.

Ideological and political education team is the organizational guarantee of ideological and political education in colleges and universities. Practical measures should be taken to cultivate a group of ideological and political education staff with firm political direction, solid theoretical foundation and the courage to explore and innovate in the colleges and universities, so that these staff can truly become the guides for the healthy growth of college students and their all-round development. The attractiveness of ideological and political education jobs should be improved, a high-level ideological and political education team should be established, the team should be constantly enriched and expanded, the idea of “San Quan” Education should be put into all aspects of teaching, management, and service of the colleges and universities, and it should be striven to form a good atmosphere of ideological and political education with full participation and joint management in the colleges and universities. It should be strengthened the ideological and moral construction and the professional ethics construction of university teachers, it should be improved their ideological and political theory level, moral cultivation and comprehensive quality, their exemplary role in personality should be given full play to, and it should be made them reliable friends of students in the colleges and universities, so as to achieve the goal of successfully transferring scientific ideological and political education concepts and value standards.

**The Points for Attention of Integrating Ideological and Political Education Into Linear Algebra Teaching**

On the basis of the first two parts of the study, we find the matters needing attention of integrating ideological and political education into linear algebra teaching.

**Teachers Should Grasp the Opportunity and Scale of Ideological and Political Education**

Teachers should grasp the opportunity and scale of ideological and political education, and should not insert some sermons out of time. Because linear algebra is abstract, it is difficult for most college students. If
teachers spend too much time on ideological and political education in teaching and ignore the teaching of the course itself, it will not only fail to achieve the purpose of ideological and political education for students, but also may make students think that they do not need to step on the ground to master knowledge. The content of ideological and political education in linear algebra teaching should not only be targeted, but also adapt to the psychology of college students. Do not superficially associate the knowledge in linear algebra with ideological and political education, and engage in formalism.

**Teachers Should Use the Methods of Ideological and Political Education Which Are Close to the Reality of Students and Meet the Needs of Students**

First of all, the ideological and political education in linear algebra teaching cannot be applied mechanically. If teachers rigidly associate the contents of linear algebra with the theories and viewpoints in ideological and political education, it will not only fail to produce the expected effect, but also cause students’ disgust. Secondly, according to the characteristics of linear algebra and the actual situation of college students, we should determine the methods of ideological and political theories teaching in all courses, which should be flexible rather than subjective.

**Teachers Should Constantly Improve Their Ideological and Political Education Cultivation, Teach More by Personal Examples, and Give Full Play to Emotional Effect**

Teachers should be strict with themselves and constantly improve their professional quality and ideological and political education cultivation. Teachers should make full preparations for their class, design blackboard writing carefully, express smoothly and attractively, and influence students with their own personality charm. Teachers should influence students with full enthusiasm and rigorous academic attitude, and cultivate students’ positive learning attitude and rigorous and realistic work style. Teachers should also establish a democratic, equal and harmonious relationship between them and students, become good teachers and helpful friends of students, respect, understand, and care for students, and let students accept knowledge in a relaxed and pleasant atmosphere and understand the truth in the emotional blending.

**References**


