

# ***Practical Research on the Integration of Ideological and Political Education into Mathematics Teaching in Higher Vocational Colleges***

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**Abstract:** The purpose of this paper is to discuss the practice and method of integrating Ideological and Political Education into higher vocational mathematics teaching. And the paper elaborates the current teaching situation of integrating Ideological and Political Education into higher vocational mathematics teaching by the way of analyzing the connotation and significance of Ideological and Political Education. In addition, the paper explores the realization path of integrating Ideological and Political Education into higher vocational mathematics teaching from both macro and micro aspects, the path to realisation includes the following aspects: scientific setting of the framework for building Ideological and Political Education, the formulation of relevant policies and systems, the enhancement of teachers' ability of Ideological and Political Education, the reforms of the content of teaching, method of teaching and evaluation of teaching. So that we can achieve the organic unity of knowledge teaching and value leadership, and the cultivation of high-quality technical and skilled talents with both moral and technical skills.

## **1. Introduction**

According to the spiritual requirements of the Ministry of Education's<Guidelines for the Construction of Ideological and Political Education in Higher Education Curriculum>, it is necessary to carry out ideological and political education through the talent cultivation system, comprehensively promote the construction of Ideological and Political Education in higher education curriculum, and implement the fundamental task of cultivating morality and educating people [1]. As an important public foundation course, higher vocational mathematics plays an important role in cultivating students' mathematical thinking, scientific literacy and comprehensive vocational ability. The construction of Ideological and Political Education course is an important initiative to promote the reform of mathematics teaching. At present, the research on the Ideological and Political Education of higher vocational mathematics course is becoming more and more abundant. Searching in the China National Knowledge Infrastructure with the key words "course ideology higher vocational mathematics", receive a total of 223 results, but there is only one core

periodicals, although the research on the integration of Ideological and Political Education into higher vocational mathematics is broad, the quality of the research is not high enough, and mainly focus on the teaching philosophy, teaching content and methods or other micro-level. This study attempts to analyse the current situation of the integration of higher vocational mathematics into Ideological and Political Education from the macro and micro levels, and on this basis, it gives a few suggestions on the integration of higher vocational mathematics , so as to provide feasible ideas for the reform of higher vocational mathematics teaching.

## **2. The connotation and significance of Ideological and Political Education**

The term "Ideological and Political Education of the Curriculum" originated from the proposal at the National Conference on Ideological and Political Work in Colleges and Universities that "in order to do a good job of ideological and political work in colleges and universities, all courses should guard their fields of responsibility, so as to make all kinds of courses walk in the same direction with the ideological and political theory course and form a synergistic effect". Ideological and Political Education of the Curriculum is the enrichment and expansion of the concept of ideological and political education, in a "silent" way to influence students' ideology and behaviour. The key lies in the "integration", not just adding a class or an activity, but in the completion of the teaching task, the elements of ideological and political education should be integrated into all aspects of classroom teaching subconsciously at the same time [2]. The integration of Ideological and Political Education in teaching contributes to achieving the organic unity of "knowledge teaching and value leadership", cultivating students' correct values and scientific concept of development, and promoting the realization of the fundamental task of establishing morality and educating people.

## **3. The current state of teaching and learning of higher vocational mathematics education with the integration of Ideological and Political Education**

### **3.1 At the macro level**

First of all, the management and implementation system of the Ideological and Political Education in institutions is not sound. Ideological and Political Education is a systematic project, institutions should take the lead to make the top-level design, and then various departments should cooperate with each other to promote the work, but at present the institutions of higher vocational mathematics course of Ideological and Political Education is not sound, management system and implementation system there are also problems. Although the spirit of the Guiding Principles [1] has been clarified, it has not formed a working pattern of party and government co-ordination, nor has it formed the linkage of relevant departments, or the implementation and promotion of faculties and departments in the concrete implementation. For example, every year our college will hold a teaching design competition of course with courses' ideology and politics, but it only reflects some ideas and thoughts of teachers about courses' ideology and politics, and this kind of polished and refined teaching design is only for the purpose of competitions, has not really been implemented to each student. We want to promote the daily teaching on the results of such competitions, but there is a lack of supervision and management of departments and faculties, so it does not achieve the purpose of courses' ideology and politics. Nor do it achieve the goal of educating people.

Secondly, teachers are not sufficiently aware of and capable of integrating courses' ideology and politics into mathematics teaching. Mathematics itself has a "high degree of abstraction, rigorous logic and a wide range of applications," this characteristics of the training of human thinking has a very important role, as a typical natural sciences course, it embodies the integration of the scientific

spirit and the humanistic spirit, which is an important carrier to achieve the ideological and political education [3]. However, in the past, the course objectives of higher mathematics emphasized the cultivation of students' basic arithmetic ability and their ability to analyse and solve problems. The course teaching followed the principle of "application as the purpose, necessity and adequacy", while the ideological and political education contained in the mathematics class itself was not clear. In the classroom, they focus on the cultivation of knowledge and skills, neglecting the pursuit of the value of ideological and political education for students. On the other hand, the teachers' ability on the courses' ideology and politics is insufficient, also the mathematical spirit of higher mathematics teachers is poor, which is one of the main reasons for the insufficient ability, and they can't combine professional knowledge education with teaching, and they can't dig out the elements of ideology and politics, which combined with the actual situation of the courses, finally, it leads to the mutual fragmentation of the mathematics teaching and ideology politics teaching.

### 3.2 At the micro level

There are still many problems in the construction of higher vocational mathematics courses in ideology and politics teaching system. First of all, there is a lack of systematic design of the teaching objectives about the higher vocational mathematics courses in ideology and politics teaching. According to the relevant requirements of the Ministry of Education's <Guidelines for the Construction of Ideological and Political Education in Higher Education Curriculum>, high vocational colleges and universities have actively introduced the implementation plan for the construction of school-level courses' ideology and politics; however, the specific education objectives of this are not clear, and there are only a few points of courses' ideology and politics of some knowledge that have been integrated into some courses to express the carrying out of courses' ideology and politics, and there is a lack of highly condensed ideology and politics teaching objectives that fit the characteristics of institutions. In addition, the lack of systematic hierarchical design of the teaching objectives of higher vocational mathematics ideology and politics course leads to inconsistencies in the teachers' knowledge and understanding of the teaching objectives of civics and politics course, and there is no system of systematic hierarchical and mutually supportive teaching objectives of ideology and politics course, which leads to uneven elements of courses' ideology and politics in the excavated courses.

## 4. The realization path of integrating higher vocational mathematics teaching into courses' ideology and politics

### 4.1 At the macro level

In order to successfully carry out the integration of courses' ideology and politics into teaching, first of all, institutions should do a good job of top-level design, improve the institutional system, scientifically supervise and manage the process of the construction of courses' ideology and politics, and ensure the benign development of the integration of curriculum politics into teaching. It is implemented in the following ways. First, set the general framework of the construction of ideology and politics in mathematics course scientifically, formulate the corresponding rules and regulations, pay attention to the work of the construction of curriculum from the administrative level; The second is to ensure that all departments promote implementation, such as the school's academic affairs department, the human resources department and the mathematics teaching group should be active in organizing teachers to learn related policies and documents, which is related to the curriculum ideology and politics, then train the teachers on the connotation, essence, construction requirements and core meaning of the curriculum ideology and politics, besides, invite experts and

scholars to carry out thematic training on courses' ideology and politics regularly, so that improve teachers' awareness and ability of courses' ideology and politics. Thirdly, they should provide corresponding policy support, set up a competition for the teaching ability of courses' ideology and politics and scientific research projects themed on the theme of courses' ideology and politics, encourage teachers to actively participate in the reform of courses' ideology and politics teaching, and achieve the purpose of promoting the teaching by the competition; Fourthly, they should formulate the assessment evaluation index to measure the actual effect of courses' ideology and politics teaching, organically combine the evaluation of the curriculum and the evaluation of the effectiveness of courses' ideology and politics in the curriculum, and evaluate the teaching effect of integrating ideology and politics in the curriculum of higher vocational mathematics through various forms such as students' evaluation and teachers' self-assessment. Students' post-course activities and achievements are incorporated into the evaluation system, and the relevant requirements of ideology and politics in the curriculum are incorporated into the evaluation indexes of supervisors' classroom listening, so as to establish an incentive mechanism and build up a three-dimensional evaluation system for the implementation effect of ideology and politics in the curriculum.

Then, teachers should endeavour to improve their own teaching ability and quality of course ideology and politics, establish the consciousness of educating students firmly, pay attention to the accumulation of ideology and politics materials, and consciously integrate course ideology and politics education into all aspects of classroom teaching. Mathematics as a discipline with a long history, the teacher can put the history of mathematics, allusions, excellent mathematicians, mathematical beauty and other mathematical culture in the classroom teaching of the course of "Advanced Mathematics" to cultivate the mathematical spirit of hard work, and to inspire the patriotic feelings and national pride of the students. We can also make use of online learning platforms such as WeChat public number and Learning Channel to push some mathematical background knowledge such as mathematical ideas, mathematicians and mathematical history from time to time, so as to carry out comprehensive ideological and political education at the same time of imparting professional knowledge to students.

## 4.2 At the micro level

Higher vocational mathematics course of Ideological and Political education is not a copy of the political content, nor is it the political education's derivation and convergence in end of the course, but it should be "silently" natural integration, first of all, in the teaching content, we should fully explore the ideological and political elements contained in the mathematics course, infuse mathematical cultural confidence and craftsmanship spirit into the course teaching. For example, in the section "limit of series" of "Higher Mathematics", we can design the case "Liu Hui cut circle" in ancient China by analyzing the background and principles of the case, then introduce the definition of the limit of series, and on this base expanding the famous "Hui rate " which named as  $\pi=3.14$ , further introduce China's great contribution to the calculation of  $\pi$ , so as to stimulate students' cultural self-confidence and cultivate patriotism. Another example is in the section of the concept of definite integral, through the division, approximation, summation and taking the limit of the steps to find the area of the curved trapezium, this process contains a wealth of dialectical ideas [4], which involves the unity of contradictions such as finite and wireless, approximation and precision, special and general, and it can adequately cultivate the dialectical thinking ability of students.

Secondly, in terms of teaching methods, it is necessary to use information technology, innovative teaching mode, so that the integration of ideological and political elements into the high mathematics classroom is more efficient. The traditional advanced mathematics classroom, due to

the characteristics of the subject, theoretical, cumbersome knowledge points, and the amount of class time is small, which formed the classroom "cramming education" situation, and even more can not be integrated into the teaching of curriculum based on ideology and politics . Today's students are the trendsetters of the times, they are skilled in mastering information technology, on this basis, teachers can try a blended teaching model, using the task-driven method to guide the students to independent learning, teachers also can push some mathematical ideas, mathematicians, mathematical history and other background knowledge through online platform, by this way, we can set the stage for classroom exploration from time to time, beyond that, this way will help students appreciate the mathematician's hard work, the spirit of drilling and mathematical knowledge of the wonderful, understanding how the development of mathematics promotes the progress of society and science, will stimulate students' interest in learning successively.

Finally, in the method of evaluation , we should pay attention to the ideological and political content of the course as the starting point for the evaluation design, change the traditional evaluation mode of the final exam, based on the moral education objectives of the mathematics courses' ideology and politics, set up process evaluation, such as students' attendance, attitude in the classroom, performance in the face of difficult problems, etc., which can be included in the assessment system of the mathematics course. In the process evaluation, students can add mutual evaluation and self-evaluation, so as to test the effect of moral education from various angles and make the moral education more deeply rooted in people's hearts through students' self-evaluation.

## 5. Conclusions

With the importance of vocational education increasing gradually, the construction of course ideology and politics has also been deeply promoted in various higher vocational colleges and universities, but there is still room for further optimisation. As a higher vocational mathematics teacher, he or she should actively explore the direction of the construction of course ideology and politics in the light of the professional cultivation programme and the current status of mathematics teaching in higher vocational colleges and universities, firm up the concept of course ideology and politics, optimise the teaching mode, dig deep into the elements of course ideology and politics and infect the students with the teacher's mathematical spirit and charisma, and then silently integrate the ideological and political education into the teaching process of mathematics, so as to realise the task of cultivating morality and educating students.

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