

Research on the New Professional-Oriented Mathematics Teaching Mode in Higher Vocational Colleges

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Abstract: Mathematics teaching mode is the product of the combination of theory and practice, which is very important for mathematics teaching, provided that the teaching objectives can be achieved. On the basis of exploring the teaching mode of specialized mathematics, according to the guiding ideology of employment-oriented and occupation-oriented, the teaching content, teaching method and evaluation method are reformed, and as a breakthrough point, the innovative teaching mode is explored and reflected, and a new teaching mode is formulated.

1. Introduction

With the rapid development of our economy, the society needs a large number of practical talents, and the development of higher vocational education has become a major event in China's higher education. As the Basic subject of higher vocational education, mathematics plays a very important role in the study of vocational courses. Therefore, how to further improve the role of higher vocational mathematics as a professional service is a subject that our mathematicians must study.

2. The Meaning and Implementation Basis of Professional-Oriented Teaching Mode in Higher Vocational Mathematics

2.1 The Meaning of Professional-Oriented Teaching Mode

Professional-oriented teaching mode allows students to study in a relatively short time, learning the required mathematical theoretical knowledge and the basic mathematical knowledge needed for future employment. Vocational guidance conforms to the nature of higher vocational education and fully reflects the characteristics of education. Applying a teaching mode based on the specialization of higher mathematics education in higher professional education in Basic subject is helpful to improve students' enthusiasm and efficiency in mathematics learning.

2.2 Professional-Oriented Teaching Model Implementation Basis

On the one hand, it is necessary to realize the training goal of higher vocational education. The main focus of higher vocational education is to train practical talents for production and social practice, not the compressed biscuits of undergraduate education, nor the main goal of higher education. Higher education is not a level, nor is it equivalent to specialized education. With the development of higher education, higher vocational education also includes junior college, undergraduate and graduate students. The main difference between higher vocational education and full-time undergraduate education is not grade, but in the target training and management mode, the goal of undergraduate education is to train research and theoretical talents, while the goal of higher vocational education is to train first-class application and technical talents. Undergraduate education often focuses on theoretical education, while higher vocational education focuses on developing and improving life skills. Therefore, higher vocational mathematics can't copy the undergraduate teaching mode, and it must be reformed boldly. For higher vocational students, attention should be paid to applying knowledge and cultivating the ability to solve practical problems. When many graduate students talk about mathematics courses, they feel less interested and think that the courses are ineffective. One of the major reasons is that some teachers have completely copied the teaching

mode of full-time undergraduate colleges and attached importance to formula derivation, certification and professional application knowledge.

On the other hand, students need to learn. Traditional higher vocational mathematics teaching sets unified goals, contents, progress and evaluation standards for different disciplines, which inevitably means that some contents can't meet their learning needs, while others can't be absorbed and can't meet the needs. Although some higher vocational students think that their previous mathematics knowledge is not enough, or they don't have enough knowledge when studying specialized courses, it shows that there are problems in our mathematics teaching.

3. The Development Status of Higher Vocational Mathematics Teaching Mode

Table 1 Integration of Majors in Mathematics Classroom

Integration situation	Number
There is integration in curriculum import	3
There is fusion in case selection	2
There is fusion in problem assignment	3
Selection and adjustment of teaching according to specialty	0

According to the results of classroom observation, there are 3 sections with professional integration in the course introduction, accounting for 10% of the sample. There are 2 classes with professional integration in example selection, accounting for 6% of the sample. There are 3 classes with professional integration in the environment of exercise arrangement, accounting for 10% of the sample. All the exercises with professional integration are extended training exercises, that is, topics arranged for students to discuss after class. Generally speaking, the proportion of classrooms with professional integration is relatively small, but there are professional integration classrooms, and students' activity is far greater than that of non-integration classrooms.

3.1 The Teaching Curriculum System is Relatively Old

The main goal of higher vocational colleges is to train qualified and practical staff to meet the cutting-edge needs of architecture, production and service. However, unlike this, higher education students whose teaching materials are basically medium or concentrated are learning mathematical formulas, definitions and properties in class. They do not learn practical examples, which hinders their learning and makes their learning inefficient. In addition, in the teaching process, different disciplines have different requirements and priorities for mathematics. However, the reality is that students in different disciplines receive the same teaching content, but only mathematics study, which is separated from majors, does not have enough service functions. On the other hand, although teaching is provided as much as possible through case studies, teaching time and tasks are not allowed, which has caused difficulties for higher mathematics education.

3.2 Students' Mathematics Foundation is Uneven

In recent years, with the continuous development of higher vocational colleges, the number of students has been increasing. The increase in the number of students will inevitably lead to diversification of students, because students' education level is uneven and their mathematics level is relatively low. In recent years, through the observation of students' learning level, another new feature has been revealed: they have not shown their due willingness to learn, the teaching task is heavy, the class hours are few, students have difficulty in understanding difficult abstract concepts, and learning difficulties, and this situation is getting more and more serious, which inevitably hinders the smooth progress of mathematics teaching. At present, mathematics teaching mainly relies on traditional teaching methods, which are based on teaching materials and oriented by teaching. Whether it is the proof of theoretical nature or application, duck teaching method should be adopted to fully combine curriculum with practice to cultivate students' Innovation capacity. Although some teachers use projectors and other tools, teachers rely too much on the original text and abide by the textbooks. Once they leave the textbooks, their teaching ideas will be confused and ambiguous^[2]. In addition, the review of educational effect is outdated, that is to say, it is only based

on results. Some students only pursue scores, but do not seek solutions to knowledge. They generally don't work hard, cram before exams, and even hope to cheat in exams. In such a learning atmosphere, it is difficult to achieve the initial goal of education, let alone improve the overall quality and Consciousness of innovation of students.

4. Professional-Oriented New Mode of Mathematics Teaching in Higher Vocational Colleges

4.1 To Stimulate Students' Interest in Learning Mathematics

At present, the decline in the quality of higher vocational education is reflected not only in students' knowledge, but also in their interest in study, study habits, behaviors and psychology. Many students are bored or even disgusted with abstract mathematical symbols, so it is very important to stimulate students' interest in mathematics. There are many methods, such as the reconstruction of students' mathematical knowledge, mathematics examination, their own knowledge and ability-based teaching. The emphasis here is to stimulate students' interest in learning through professional applied mathematics teaching and computer software-assisted teaching.

Since most students are still inclined to their major, teachers should try their best to ask questions related to their major that have an impact on students, so as to give them the opportunity to innovate and enrich the teaching content. Combining theory with reality, solving practical problems is undoubtedly beneficial to mathematics teaching.

Computer and its software system are important teaching tools to optimize mathematics teaching process, and are also important means to optimize mathematics teaching. Multimedia audio-visual technology can be used to reproduce the reality of life, link what you have learned with the experience of daily life, narrow the distance between classroom teaching and students' real life, and make the teaching content closer to students' cognitive level. You can use multimedia animation technology to integrate your knowledge, and you can use human-computer dialogue technology to organize your exercises carefully. Generally speaking, computer-aided instruction greatly enhances students' interest in learning mathematics through intuitive, diverse, vivid and exploratory teaching methods, enabling students to change from simple to difficult, from simple to abstract, from passive to active.

4.2 To Strengthen the Effective Combination of Mathematics and Professional Courses

Improving the professional qualifications and skills of higher vocational students is the common goal of all courses, including professional courses and basic courses. Improving students' ability to use mathematics knowledge and methods to solve practical problems is not only the teaching task of mathematics, but also the teaching task of specialized courses. Therefore, it is very important to connect mathematical knowledge. School mathematics teachers are all over the majors, which is conducive to promoting the cooperation between mathematics and professional courses. When making teaching content and mathematical practice plan, it is closely related to the needs of specialized courses. For example, in the field of pharmacy, the focus is to increase statistical content to help students improve quantitative analysis and data detection; In the field of image technology, we should strengthen fixed-point teaching, use conductivity to solve the problems of speed, acceleration, current and electromotive force in speed movement, and guide students to solve professional practice problems with mathematical methods for teaching.

4.3 To Optimize the Teaching Content with Professional Training as the Goal

The three tasks of higher mathematics education are knowledge education, ability construction and quality improvement. Mathematics teaching is the basic course and important tool of science, engineering, economics and related disciplines in higher vocational education institutions, and it is the mathematical basis for improving students' cultural knowledge and enabling them to perform their duties after graduation. Therefore, we should closely combine the vocational training objectives, take application as the goal, and attach importance to the application of mathematics.

Mathematics teaching content in higher education generally includes four aspects: the basis of continuous calculation; The basis of discrete mass in linear algebra; The basis of random quantity composed of general theory and statistics; Mathematical experiments and simple mathematical modeling are used to lay the foundation for mathematical application. According to the principle of necessity and sufficiency, we can choose teaching contents according to professional needs, and at the same time, add mathematics experiment courses (such as mathematical modeling) in various disciplines to improve the ability of applying mathematical tools. Calculation teaching, as the basis of professional mathematics, should be emphasized. For other categories, such as management major (economics major), the related medical categories should focus on the content of online functions, probability statistics and linear planning, and delete the representation of function diagrams and differential equations. The major of mechanical and electrical engineering should delete the curvature and radius of curvature which are not closely related to the major of mechanical and electrical engineering, and pay more attention to the content of sinusoidal curve, rich sorrow number, silver transformation and so on. This makes it possible for students not to have an impact on the study of vocational courses because of their poor mathematical foundation in the future study.

4.4 Create an “Interactive” Mathematics Teaching Mode

In the past, the traditional mode of higher vocational education was taught by teachers on the platform, and teachers did not fully consider the effect of listening whether students were listening or not. Teachers will try to explain and solve the difficulties in class. This kind of teaching is more popular, with lower cost, but higher efficiency. Therefore, establishing a guiding classroom mode means changing the traditional classroom teaching methods and solving problems as much as possible. Of course, this is a bolder teaching mode, which requires teachers to pay attention to clear thinking, methods rather than content, so that students can understand each other even after class, and encourage them to stand on the podium. In the process of teaching preparation, students have experienced various self-learning processes, such as seeking information, discussing, communicating with classmates and self-testing, which not only makes them understand what they want to learn, but also cultivates their psychological quality and ability. In this process, teachers must pay attention to guidance, not just as examiners, and experience success or failure together with students, so that students can improve their Innovation capacity and solve problems in their personal experiences.

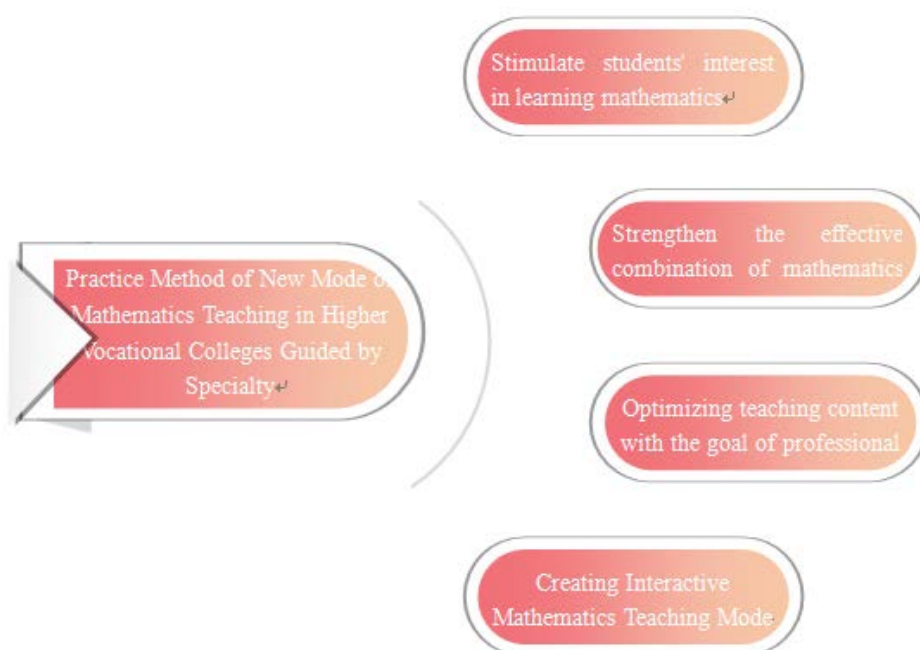


Fig.2 Detailed Diagram of the Practice Method of the New Model of Mathematics Teaching in Higher Vocational Colleges Oriented by Majors

5. Conclusion

To sum up, professional-oriented mathematics teaching in higher vocational colleges is a new teaching mode in recent years. By analyzing the development status of the current mathematics teaching mode in higher vocational colleges, it is found that there are still some problems to be solved in the combination of professional-oriented teaching mode and higher vocational mathematics, such as the outdated teaching curriculum system and the uneven mathematical foundation of students. In order to strengthen the application of specialty-oriented teaching mode in higher vocational mathematics, some measures can be taken, such as stimulating students' interest in learning mathematics, strengthening the effective combination of mathematics courses and specialty courses, optimizing teaching content with the goal of specialty training, and creating an “interactive” mathematics teaching mode.

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