Reflections on Mathematics Education and Teaching in Higher Vocational Colleges

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Abstract: With the continuous development of China's education industry, the teaching of higher vocational colleges should be reformed actively, so as to provide more applied talents for the society. However, we can see from current practical teaching that there are some problems in mathematics teaching, which seriously affect the teaching quality of higher vocational colleges and hinder the stable development of students. Therefore, this paper studies the current situation of mathematics education and teaching in higher vocational colleges, explains the problems of mathematics education and teaching, and finally raises the teaching strategies of mathematics education in higher vocational colleges, hoping to provide reference for relevant researchers.

At present, there are more and more students in higher vocational colleges, but with different qualities. Therefore, reform is required to better ensure the teaching quality. Fundamental knowledge of higher vocational students is relatively poor, which should be paid due attention and solved with corresponding measures. Teachers should ensure their teaching quality and constantly improve the mathematics ability of students in higher vocational colleges.

1. Status Quo of Mathematics Education and Teaching in Higher Vocational Colleges

1.1 Differences in Mathematics Basis

At present, people pay more and more attention to the training goal of higher vocational colleges. In order to better meet the needs of social development, major design is becoming more and more flexible. Some novel majors appear, putting forward stricter requirements on the form and content of mathematics education in higher vocational colleges. [1] With the increasing number of higher vocational students, the poor foundation and differences in fundamental knowledge among students cause a lot of problems in the mathematics teaching in higher vocational colleges.

1.2 Contradiction in Mathematics Teaching

In mathematics teaching in higher vocational colleges, teachers are the main body, with few interaction with students. Teachers still use the traditional teaching methods. Students with poor fundamental knowledge are not able to understand the teaching content in a timely manner. As time passes, they will lose interest in mathematics. [2] Students with good fundamental knowledge, however, cannot improve their mathematics level because the content is easy for them. It can be seen from the current mathematics curriculum in higher vocational colleges that teachers teach by the method from the simple to the deep. The theoretical system is complete, but lack corresponding practical teaching to better improve the teaching effect. What's more, the curriculum design is inconsistent with the actual demand of the market, which seriously affects the final quality of mathematics teaching.

1.3 Unitary Mathematics Evaluation

The traditional mathematics examination is based on written test. Test questions are sample questions, which are based on theoretical knowledge. Students are likely to rely on fixed formulas

to answer this kind of questions. Under such circumstances, students are unable to improve their practical ability and apply mathematical knowledge to solve practical problems in life.[3] Students cannot solve flexible questions requiring in-depth thought in a timely manner. That is to say, students' mathematical ability cannot be improved effectively. As a result, some students become passive and begin to fear mathematics. Such a single evaluation model cannot effectively master and check whether students really understand mathematical knowledge.

2. Problems in Mathematics Education and Teaching in Higher Vocational Colleges

2.1 High Starting Point of Mathematics

Higher vocational students are mainly of poor fundamental knowledge. However, mathematics knowledge in higher vocational colleges is difficult, which makes it difficult for students to learn. [4] For example, mathematics in higher vocational college is based on unary function calculus, and then divided according to different majors. These mathematics knowledge requires students to have certain foundation. For example, students should master knowledge of function and graph when learning unary calculus. However, higher vocational students lack related knowledge and differs greatly from each other, which brings obstacles to the development of mathematics teaching and hinders normal teaching activity.

2.2 Students Lack Interest in Mathematics

Most of higher vocational students are those who fail in the college entrance examination. They are not interested in mathematics, leading to poor performance on class and ability to sum up mathematics knowledge after class. Students may not be impressed even teachers have taught related knowledge. Many students do not have good learning habits. They don't pay attention in class, nor doing homework after class. With the influence of students' own quality, ideal mathematics teaching effect cannot be obtained. [5]

2.3 Massive Contents of Mathematics

Most higher vocational colleges focus on professional courses, leaving less time for mathematics and poor curriculum design. In this case, students are not exposed to more mathematical knowledge and do not have in-depth study of mathematics. To finish teaching tasks in regulated time, teachers will speed up the process, which will affect the teaching quality and increase the burden of students.

3. Strategy of Mathematics Education and Teaching in Higher Vocational Colleges

3.1 Cultivating Students' Interest in Mathematics

To better improve teaching quality, teachers should guide students to like mathematics, learn more about mathematics, and understand the development of mathematics. Teachers can search for mathematical problems related to actual situation for students to solve with their mathematical knowledge. [6] In this way, students are able to experience the pleasure brought by the application of mathematical knowledge. Teachers need to make students realize that mathematical knowledge is useful in future work, so as to enhance their sense of responsibility and motivate their learning enthusiasm. To better achieve this goal, teachers should create a good class atmosphere for students. For example, teachers can communicate more with students so that students can pay more attention in class. What's more, students are willing to communicate with teachers for solution when they have problems in learning mathematics.

3.2 Changing Teaching Ideas

Teachers should realize that they need to guide, not lead in the teaching activity. They should explicit the dominant role of students. By changing traditional teaching, teachers should ensure that students participate in the teaching activity effectively. With the continuous development of higher vocational education, the scale and number of students in higher vocational colleges are increasing.

Therefore, in order to better play the role of higher vocational colleges and train skilled and applied talents, the teaching ideas should be changed. [7] In the teaching process, teachers do not need to lay too much emphasis on the systematic rationality of knowledge, but take mathematics teaching as the basic course of professional courses, so as to better improve students' professional level and enable them to meet the actual needs of subsequent employment. Teachers should not only let students know the teaching methods and concepts, but also teach students to learn with tools including computer software and tables. Students should spare some time to master these tools for convenient use in future employment and effective achievement of corresponding tasks.

3.3 Optimizing Teaching Methods

First, language skills should be emphasized in teaching. Explanation and conversation are the most common methods in the teaching process, which need to be used properly. Teachers convey information to students by means of explanation and narration, so that students can analyze mathematical problems and accept corresponding mathematical knowledge in a short time. Teachers must be able to ensure that the content they explain can attract students, so that students can concentrate on listening to the lecture and complete math learning better in a relaxed environment.[8] Second, teachers should use a variety of methods to motivate students to learn. For example, teachers can use demonstration method in teaching, and enable students see the corresponding mathematics knowledge intuitively through multimedia. As a common teaching tool, multimedia can attract students' attention very well. For example, in the teaching process of explaining odd and even functions, teachers can use flash animation to make courseware, so as to make the graph move. Such teaching method can attract students' attention to obtain the ideal teaching effect. Thirdly, task-driven approach can be adopted to stimulate students' learning enthusiasm. Before class, teachers assign corresponding learning tasks to the students, and ask students to look up relevant information and actively collates the knowledge system, and ask the students to explain it in class before summary by teachers. In this process, teachers can divide students into different groups to solve different problems according to specific tasks assigned by teachers. Students are required to research actively to achieve the goal of learning together. Task-driven approach can not only enable students to complete corresponding tasks, but also better improve their ability to analyze and solve problems, cultivate students to learn to explore independently, and thus better stimulate students' learning enthusiasm. Fourth, teachers need to be able to make more use of network resources. At present, there are so many materials on the Internet that teachers can provide students with an online learning platform to complete their homework on the Internet and actively seek materials on the Internet to effectively solve their problems. In addition, teachers can also provide links for students, so that students can find the knowledge they want directly to better improve their learning level. Fifth, mathematics elective course should be established. In order to better alleviate the contradiction of less class hours in higher vocational schools, elective mathematics courses should be established to better meet the actual learning needs of students at different levels. Higher vocational colleges can carry out mathematics elective courses, according to the actual learning needs of students to effectively improve the students' mathematical foundation. In this way, it can provide learning conditions for students and effectively solve the problem of students' uneven level of mathematics.

3.4 Strengthening Teacher Resources

As the guide in the teaching process, teachers directly affect the mathematics teaching quality. Higher vocational colleges should be able to actively improve the professional level of teachers, so that teachers can more smoothly carry out mathematics teaching. Higher vocational colleges should provide training opportunities for teachers to help improve their professional level and promote the smooth implementation of mathematics teaching, with ideal teaching effect.

4. Conclusion

In a word, in the process of mathematics teaching in higher vocational colleges, we should be

able to change the traditional teaching methods, effectively improve the teaching level, promote the stable development of students, and provide help for the follow-up employment of students.

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