Research and Development of Higher Mathematics Teaching in Colleges Based on Student Ability Training

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Abstract: In the information age, the rise and application of new technologies have been infiltrated into all aspects of people's lives and changed people's working and living habits. The study of higher mathematics is mainly to solve the practical problems in professional study. The actual problems are described in mathematical language or model images to simplify the actual problems and solve the problems. Therefore, in the teaching of higher mathematics, how to deal with the relationship between knowledge and ability is very important, not only to teach students the basic theoretical knowledge, but also to guide students through the integration of knowledge and systematic analysis to solve professional problems. This paper firstly expounds the current teaching situation of higher mathematics in colleges, and then puts forward methods and strategies to improve colleges' ability to practice mathematics in order to improve college students' ability to apply mathematics.

Introduction

With the rapid development of computer technology, the mathematical technology developed in harmony with it has also been profoundly affected; At the same time, the development of mathematics has provided a powerful impetus for the development of high technology. In the process of solving practical problems, mathematics plays an irreplaceable role in other disciplines. It is based on this feature that each college student puts forward higher requirements, that is, the basis for mastering the basic principles and professional knowledge of higher mathematics. In the past, the application of mathematics to solving practical problems is aimed at improving the students' ability in practical application of mathematics. higher mathematics is a highly applicable discipline, which plays an advantage that other disciplines cannot match when solving practical problems in real life. However, when college set up higher mathematics teaching, it often only paid attention to the theoretical, rigorous, and test-oriented nature of mathematics, and ignored the cultivation of students' practical application of mathematics. Such teaching concepts and teaching methods are in line with the application-oriented talents required by the current society Divergence. Higher mathematics can train students 'logical thinking ability and ability to analyze problems. Therefore, College teachers should focus on cultivating students' ability to apply mathematics, and treat advanced mathematics as a basic compulsory course for new students, laying a foundation for the later professional courses. This paper will combine the current situation of developing students' mathematical application ability with higher mathematics teaching, analyze the reasons for students' poor mathematical application ability, and focus on how to strengthen higher mathematics teaching, improve the teaching structure, and effectively cultivate students' application ability.

1. The Status Quo of College Students' Application of Higher Mathematics

In recent years, many colleges have begun to expand enrollment, and the gap between students has become wider and wider. By investigating the current teaching status of several college higher mathematics, now, some students have a slack mentality in the study of high numbers; don’t pay attention to the study of mathematics content, and only deal with daily learning and examinations for graduation. In addition, sophomores and juniors in universities attach great importance to practice and arrange most of the basic theoretical courses in the freshman year. Therefore, the

curriculum is very compact. Teachers only pay attention to the knowledge that should be given to students within the prescribed time. In a short time, it neglected the cultivation of students' thinking ability and independent thinking ability, which affected the future development of students. In many colleges, students are susceptible to the deep-rooted influence of teachers. They follow the teacher's problem-solving ideas and thinking methods, and do various exercises to meet the needs of the exam. They do not really learn the essence of mathematical knowledge and hinder the cultivation of student logic thinking ability and independent thinking ability also restrict students 'ability to apply higher mathematics to real life. Therefore, teachers in higher schools must first improve their own qualities in order to cultivate students' ability to apply mathematics [1-5].

2. The Relationship between College Students' Mathematical Application Ability and Higher Mathematics Teaching

Mathematical application ability is a very complex cognitive skill. It is analyzed from its psychological representation. Basic mathematical cognitive operations include mathematical abstraction, logical reasoning, and modeling. Therefore, the basic components of mathematical application ability are mathematical abstraction ability, logical reasoning ability, and mathematical modeling ability. Complex mathematical application abilities consist of them. For example, mathematical proof ability and mathematical calculation ability are composed of a series of logical reasoning. In the process of solving practical problems, it is often necessary to comprehensively use a variety of different basic knowledge operations to complete. In college, the growth of mathematical knowledge and the enhancement of mathematical application ability of students outside the major of mathematics are realized through the teaching of higher mathematics. From this we can draw the following important conclusions: In the teaching of higher mathematics, in order to strengthen the cultivation of students' mathematical application ability, there are two "must do"[6-8]. First, we must attach importance to knowledge transfer and construct an optimized and practical knowledge structure of higher mathematics, which is the basis for the cultivation of applied ability. Second, we must strengthen the practice, which is a necessary way to strengthen students' ability to apply mathematics. They are the keys to strengthening students' ability to apply mathematics. The relationship between college students' mathematical application ability and higher mathematics teaching is shown in Figure 1.

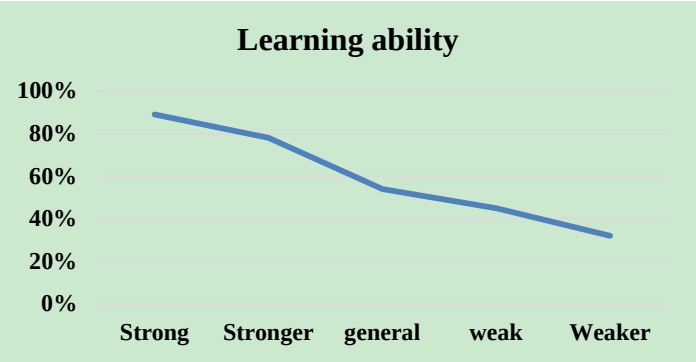

Figure 1. Cognition of the relationship between college students' mathematical application ability and higher mathematics teaching

Nowadays, when higher education enters the stage of popularization, as mentioned in the introduction, in the local common college, especially in ordinary colleges, due to the sharp increase in the number of students, a considerable number of students have poor mathematical foundation. In the teaching of higher mathematics, the phenomenon of neglecting capacity-building has intensified, and the reduction of heuristics has seriously affected the functioning of capacity-building. This practice of weakening ability training to increase knowledge transmission is contrary to the law of cognition. It will only make students rote, memorize, and worsen their ability, which is not in line with the educational goals of education. Therefore, how to properly handle the relationship between imparting knowledge and cultivating ability, and strengthening the cultivation of students' ability to

apply mathematics, is a problem that needs to be solved urgently in the teaching reform of local common college higher mathematics. Speaking of reform is not to repeat the past. Reforms that stay at the original level must be of an era. That is, it must adapt to the development of modern science and technology and the development of mathematics itself. To do this, we must also properly handle the relationship between the inheritance of mathematical knowledge and modernization [9-13].

3. Effective Practice Strategies of Higher Mathematics Teaching in Colleges to Train Students' Mathematical Application Ability

3.1 Strengthen Professional Knowledge Practice and Improve Students' Ability to Apply Mathematics

College students to study in college, because of the different learning professional, personal development needs are different. In order to produce suitable for different areas of the development of high-quality, professional talent, college of higher mathematics teaching must according to different students, to develop a consistent should be teaching objectives and teaching plan, strengthening the professional contacts, mathematics teaching and student realize the mutual confluence, make mathematics teaching can help students to professional development, so as to stimulate the student's emphasis on mathematics learning psychology, students realize the importance of learning mathematics, is a natural active into mathematics study, Constantly try to use mathematical knowledge to solve the problems encountered in professional development, so as to improve mathematical application ability.

3.2Innovate Teaching Methods to Stimulate Students' Interest in Learning and Applying High Mathematics

The learning methods and learning needs of contemporary college students are very different from those in the past. The traditional single teaching method can’t mobilize students' enthusiasm for mathematics learning, which affects the cultivation and improvement of students' ability to apply mathematics, and is not conducive to students' mathematics learning and development. The teaching of higher mathematics is mainly aimed at theoretical knowledge. If a single teaching mode is adopted, it will easily cause students to become bored, which is not conducive to the smooth implementation of teaching. Therefore, in the course of teaching, teachers can choose various modes for teaching according to different teaching contents. Before class, the teacher must make a comprehensive preparation for the content of this lesson, grasp the teaching points and difficulties, and design a variety of teaching modes for different teaching contents, such as problem exploration, cooperative exploration, analogy analysis, multimedia presentation, etc., From shallow to deep, from easy to difficult, explain the course in an easy-to-understand manner. Through various teaching modes, guide students to continuously broaden their knowledge and improve their ability to grasp and apply knowledge as a whole.

3.3 Innovating Mathematics Teaching Content, Highlighting the Unique Charm of High Numbers

Although higher mathematics textbooks provide basic contents for teaching, it is difficult for students to feel the unique charm of higher mathematics by only explaining the contents of the textbooks, and it can’t effectively stimulate the subjective initiative of students to apply mathematical knowledge. College mathematics teacher, therefore, to reform the teaching contents, actively from the network education platform, collecting screen is suitable for students to learn the teaching resources, enriching the content of classroom teaching, and ensure that the teaching content can mobilize the students' learning interest, lets the student no longer feel boring high number of knowledge useless, but active thinking to explore the high number of knowledge, promote students modeling ability to ascend, lets the student can improve the mathematics knowledge structure and system, to find a way to apply knowledge of mathematics, the flexible use of mathematical knowledge to solve high number and life practical problems, improve the level of

students' problem solving[14-16].

4. Conclusion

At present, the teaching effect of higher mathematics in colleges in China is not satisfactory, which is mainly affected by many factors such as teaching materials, teaching concepts and methods of teaching teams, and examination system. This paper also aimed at these problems puts forward some valuable countermeasures, in addition to helping them solid grasp the basic knowledge of higher mathematics, also improve their logical thinking ability and the ability of independent thinking, and get to work the ability and the language organization, etc., enriching the content of teacher's classroom, and improve the efficiency of classroom teaching, the most important is to cultivate their ability to the application of higher mathematics, in order to realize the higher education teaching purpose in the end.

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