

Reform Research on the Stratified and Classified Teaching Model of“Higher Mathematics”Curriculum under the Background of“Double High”

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Abstract: At present,China’s higher education is undergoing a transition from elite education to mass education,which will bring many new questions and challenges.Major changes are also needed in the way higher mathematics is taught.Given that each student has different preferences,if all teachers follow the same goals and methods of mathematics education to teach,students with solid basic knowledge may feel that their knowledge is not comprehensive enough to meet their expectations,however,those who do not have solid basic knowledge may think that the knowledge is difficult to understand.It makes the teacher unable to accurately control the main points during the course of teaching,which will have a negative effect on the student’s academic performance and the teacher’s enthusiasm for teaching.

Keywords: “Double high”background;“Higher Mathematics”course;Stratified and Classified Teaching;Reform research

Introduction

In recent years,many universities are actively promoting the reform of education and teaching,and have adopted a comprehensive credit system.Students have the right to choose their own courses or to choose courses across disciplines.Because each student has their own unique vision of the future,they have different needs for the type and difficulty of courses.The“double high plan”is the key decision in the process of our country’s education modernization,which is another important system construction in the field of vocational education after the“double first-class”plan of our general higher education.In China,the demand for higher education talents is being adjusted,and with the deepening reform of the middle and high school entrance examination systems,the progress of higher vocational education will face enormous opportunities and challenges.Therefore,the implementation of the“double High Plan”has a far-reaching impact.Based on the construction content and goal of“Double high Plan”,this paper studies the path and goal of higher mathematics curriculum reform in universities.

1. The Significance of Stratified and Classified Teaching of Higher Mathematics in Universities

The meaning of educational stratification and classification are that teachers set educational goals and plan course contents according to students’individual learning ability,construct various educational environments and educational means,take students’recent progress area as reference,and adopt the strategy of teaching students according to their aptitude,so as to meet the real needs of students with various learning levels and abilities.Higher Mathematics is regarded as one of the required courses for college science students,which plays a crucial role in their future study of technical majors.Therefore,it is extremely important to put more energy into the education reform of Higher Mathematics.Nowadays,many universities in our country have carried out the stratified and classified teaching reform of Higher Mathematics.In the actual reform process,the stratified and classified teaching broke the basic model of the traditional teaching of Higher Mathematics.The model requires teachers to consider the individual development needs of different students according to their technical level differences,and divide students into strengthening layer,basic layer and improving layer.In the process of implementing stratified and classified teaching,the academic performance of students at all levels of development is constantly improved.It is difficult for the traditional education model to cope with the integration of higher Mathematics and majors.

Therefore, it is necessary for universities to actively implement stratified and classified teaching methods in order to improve the teaching effect of Higher Mathematics.

2. The Theoretical Basis of “Classification Training and Stratified and Classified Teaching”

The theory of “mastery learning” is the theoretical foundation of “stratified and classified” teaching, which was put forward by the American educator and psychologist Bloom. He argued that almost all students can complete their learning tasks or reach predetermined learning goals as long as appropriate teaching resources are provided and each student is given appropriate support and sufficient time in the teaching process. The concept of “understanding learning” emphasizes that teacher education should be conducted according to students’ real development, learning methods and personality traits. College students come from every corner, the basic level is uneven, so the use of stratified and classified teaching method can more effectively deal with the conflict between unified teaching and basic and personality differences. The new direction of educational reform, stratified and classified teaching, has been widely implemented in universities across the country and has been warmly welcomed by teachers and students.

3. Reform Research on Stratified and Classified Teaching Mode of “Higher Mathematics” Curriculum under the Background of “Double High”

3.1 Teachers make stratified classification during after-school tutoring

At the end of the course, teachers can have more in-depth communication and discussion with students through the network platform, so that students at all levels have the opportunity to make up for their knowledge. Teachers can provide the necessary educational help for those students who are full of enthusiasm, eager to master mathematics knowledge, but at the same time are very diligent and dedicated, so that they can become excellent mathematicians as soon as possible. For those students who progress slowly or have no interest in math at all, policies can be adjusted modestly to enable them to perform better in other areas to fill the math gap. The application of “stratified and classified teaching” in higher mathematics courses not only considers the individual differences of students, but also satisfies the physiological needs of college students. The approach not only enhances students’ self-confidence, but also stimulates their enthusiasm for learning mathematics, enhances their initiative, and makes the learning process easier. In this way, it not only enhances the interest of college students in mathematics, but also improves the quality and efficiency of classroom teaching.

3.2 Build a good development environment and guide students to consciously use the Internet for self-study

When educators adopt the stratified and classified teaching method, they need to create a high-quality Internet atmosphere, enhance the use of numerical code and IT, and encourage students to actively use some Internet courses to learn. For example, in the stratified and classified education of MOOC, teachers need to plan and arrange the teaching content in advance, so that students can have a preliminary understanding of the knowledge they have mastered, and then conduct in-depth research and interpretation on some key issues in class. In the initial stage, teachers need to have a clear understanding of the primary and secondary aspects of the educational process, and in the process of creating a MOOC, they need to make appropriate adjustments to the course structure to ensure that the educational content is complete. Then, according to the corresponding regulations of higher mathematics, writing tablets and multimedia tools are used to record. In the second stage, students have a special preview according to their own specific situation, and the difficulties encountered in the learning process are recorded into a short video, and then uploaded to the MOOC platform for sharing discussion. In the third stage, the teacher will make key explanations based on the content of the MOOC course and the doubts raised by the vast majority of students to meet the basic requirements of the current students. In the fourth stage, students and teachers can communicate through the Internet, which is actually an extremely useful way to optimize their body of knowledge, so as to increase and explain their understanding outside the classroom. In the process of this knowledge reserve, they can also enhance their independent learning skills in mathematics. In short, through MOOCs, it is possible to create a conducive environment for teachers to interact with students, stimulate their enthusiasm for learning, and try to make them realize that higher mathematics is not an extremely complex subject.

3.3 The teaching knowledge modules are taught according to different levels

The demand for higher mathematics is also different for students at different levels. For those students with a better foundation, their goal is to further their studies, such as taking the postgraduate entrance exam, they not only need to master the knowledge of the textbook, but also need to add a lot of mathematical knowledge. And those students with poor foundation, they hope to learn more

practical skills during the university,so that they can successfully find a job after graduation.Each student's goals are different and the goals show diversity.We can divide higher mathematics into three main parts:(1)the basic knowledge part,it aims to provide support for students in the following courses;(2)The professional skills part,it mainly expands and strengthen the first part in accordance with the professional needs;(3)The knowledge part of the exam is mainly designed for those students who are interested in taking the exam. The model of education meets the learning needs of students at all levels and prepares them to achieve their goals.

3.4 The assessment and evaluation of students are processed in different stratification and Classification

In the process of implementing stratified and classified education,it is necessary to build a corresponding evaluation and testing mechanism to carry out differentiated testing and evaluation according to students'ability level.For example,we conduct a comprehensive assessment based on various factors such as individual learning and performance of students in each class to measure the overall ability of students.In addition,we cannot simply evaluate the achievement of students,but need to distinguish them according to their level of learning.For example,in order to keep senior students humble and cautious in their learning process,teachers should conduct more longitudinal comparisons and give evaluations. Therefore,teachers need to use a variety of assessment methods,so that they have the spirit of learning from senior students.We should evaluate the basic class mainly through the method of longitudinal comparison,in order to stimulate students'enthusiasm for learning and help them regain their self-expectation.

Conclusion:

Based on quality education,the concept of stratified and classified teaching of higher mathematics,as an innovative teaching concept,has taken root and grown in it and opened up a broader new field.We need to continuously innovate and update to maximize the benefits of stratified and classified education,but also keep up with the pace of society and integrate the benefits of diverse educational methods to maximize and best show our uniqueness.In view of the fact that the kind of stratified and classified education view is only implemented for the first time,there will undoubtedly be many challenges,so we need to take the initiative to optimize it,so as to enhance the effect of education.

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