

Analysis of Mathematical Education on Economics Specialty

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Abstract—In this paper, we has analyzed some questions on the economic mathematics education. And then proposed to simplify the teaching content, improve teaching methods, strengthen the mathematic modeling teaching, and change the assessment methods of the teaching measures. The quality of teaching economic mathematics will be improved. And the interests of student in learning mathematics will be improved in this way.

Keywords—Economic mathematics; Teaching; Course reform; application

I. INTRODUCTION

Economics in many areas use more or less mathematics knowledge; a lot of specialized courses in mathematics have become the necessary knowledge of economic analysis. Over time, economics, finance and management disciplines are bound to be more closely linked with the mathematical disciplines. There will be more new cross courses, so as to promote the mutual support and cooperation between them. Thus the importance of mathematics education in the economic is obvious. And how to teach the mathematics course well for the students majoring in economics has become an urgent need to solve the new problems in the education of mathematics.

Most of economic financial class is liberal arts students, they do not like science or mathematics in high school, and even some of them are so disgusted with mathematics that they choose the liberal arts. While in college, mathematics still is a root neural that they most didn't want to touch.

For the economy, in the training program of financial courses, these courses are essential such as calculus, linear algebra, probability theory and mathematical statistics[1-3]. Because they are the professional core prerequisite courses, the professional courses will not arrange without mathematical basis. So how to teach students mathematics courses in economics and finance had become a new topic of modern education.

II. DOMESTIC ECONOMIC MATHEMATICS CURRICULUM EDUCATION PROBLEMS

In economics mathematics teaching, our goal is to improve the students' enthusiasm, ensure the completion of the syllabus, and let the students learn to apply it. And most of the

economics majors are in the liberal arts colleges and universities, compared with science and engineering, comprehensive colleges, liberal arts colleges pay less attention to the mathematics courses. [4] With the passage of time, improving the mathematics curriculum system will be relatively lag, and curriculum construction will also develop slowly. Although a large number of domestic and foreign educators have been proposed constantly improve the economic mathematics teaching curriculum reform, but there are still some problems.[5-6]

A. The Problem of Teaching Content and Teaching Hours

There is a little difference between economic class students and other science and engineering class, for contents of mathematics course. In accordance with the provisions of the undergraduate teaching syllabus, it includes calculus, linear algebra, probability theory and mathematical statistics of the three courses. Generally calculus teaching has two semesters, the contents mainly include: function, limit, derivative, differential, mean value theorem, indefinite integral, definite integral calculus, infinite series, multiple function and differential equation; linear algebra teaching for a semester, usually taught in the first semester of the second school year, teaching contents include: determinant, matrix, vector spaces, the characteristic equations, linear value, diagonalization of the matrix, quadratic form; probability theory and mathematical statistics teaching, is usually taught in the first semester or second semester in the second year, the contents include: classical probability, one-dimensional random variables, multiple dimensional random variable, digital characteristics, central limit theorem, and statistical estimation hypothesis test.

For students of liberal arts, based on existing hours, it is not too easy to complete the above teaching contents, according to the teaching mode of the traditional mathematics curriculum. How to adjust teaching content, improve teaching methods, accomplish the teaching plan, and become the direction of our reform to achieve the purpose of teaching.

Traditional mathematics teaching content pursues much the rigorous mathematical knowledge system, such as the perfect theory, the rigorous logic. But it rarely combines the teaching with the economy, and there are fewer cases of the economic application aspects. In the teaching process, the teacher spends a lot of hours in the details of proof, calculation,

problem-solving skills, but ignores the application of economy. This leads to the serious gap between the professional economic mathematics teaching content and economic and management science needs.

In the teaching hours, in accordance with the traditional teaching content, the traditional teaching methods, it is not sufficient to complete the corresponding teaching content within the limited time. In order to catch the progress, teachers often ignore the students' interest and cultivating the ability of application mathematics. The final result is that the students still only do the mathematical problem, but cannot handle the application problem.

B. The Problem of Teaching Methods

A blackboard with a piece of chalk and a book, is still a continuation teaching means for some colleges and universities in modern education and far. Especially in the face of putting more emphasis on the application of economic and financial class of students, the traditional teaching methods in the teaching process become more weak. It is a useful way to increase the multimedia teaching, but also to subvert the traditional mathematics teaching. Combining multimedia and blackboard mode is necessary to solve the new practical problems, and so the learning interest of students is greatly encouraged. Of course, there is a problem, some teachers are not good in using multimedia teaching, or, with multimedia they can't speak math language, and just turn the pages of the PPT. This teaching method is certainly not welcomed by students. How to use multimedia, the mathematics teachers need to study teaching methods. Too much emphasis on the derivation and proof of concept, theorem and calculation on mathematical problems, ignore focus on problem-solving skills; too much emphasis on logical and mathematical rigor, but pay less attention to the cultivation of students' logical thinking, and ignore the application of knowledge, but for the economic class of liberal arts students, it make the mathematics become a stumbling block to their college life.

C. The Problem of Economic Application, Modeling, Training and Assessment

The application of knowledge in mathematics teaching and mathematics curriculum are still in the physical and geometrical aspects such as geometric significance, tangent derivative of velocity for acceleration and so on. Such examples and such traditional teaching method ignore the application of mathematics in the economy that leads to the students to think it is no use and makes students have less mathematics learning enthusiasm. It is not conducive to the cultivation of students' ability to use mathematical knowledge to solve economic management problems and cannot meet the need. The follow-up specialized courses in modeling training: liberal arts students of economic class, some their own reasons cause them lose the opportunity to train the ability of mathematical modeling. How to take the mathematical modeling organically into the main courses of mathematics is a problem to be solved.

The students' examination evaluations are mostly based on traditional methods. Achievement in peacetime and final

examination scores are summed to overall result, this assessment is too simple, can't improve students' interest in learning, and cannot reach the detection on the application of economic and comprehensive ability of the students. It also cannot improve the students' learning interest, achieve the students' economic application and comprehensive ability of the test.

III. THE SOLUTION TO THE PROBLEM OF ECONOMIC MATHEMATICS CURRICULUM EDUCATION

In view of the above problems, through the author's many years of teaching experience and reference to foreign schools of teaching philosophy, some solutions are summed up as follows:

A. Simplify the Teaching Content

Simplify the teaching content, reduce the pure mathematics exercises examples, and increase application examples. Pay attention to the application of learning, teaching and training of mathematical modeling in the economic and financial aspects. And the teaching hours adjustment is very important: The original teaching hours can be divided, in which 1/2 of the hours are classroom teaching, the other 1/2 are used to conduct economic modeling training, including the Internet search data, selected topic, writing modeling report, carry on the modeling report and so on. Such segmentation can achieve the purpose of learning, and can stimulate students' learning enthusiasm.

For example, in the definite integral and its application in the teaching of this part, it can use 6 hours to complete the theoretical study, including the definition of definite integral 1 hours, derivation of integral formula as simple as possible, while adjusting for the direct use of the formula for the necessary calculation, this part of 3 hours, in the application of definite integral are given 2 class hours. Theory after class, we are preparing for 6 hours to practice. One hour online data collection definition and geometry meaning of definite integral, and then use a literature review 2 hours to write the definite integral and its application. In 2 hours, study the integral operation method of MATLAB software. In the last 1 hour do a practical problem of definite integral. In this way, not only can let the students master the knowledge of the mathematics, but allow students to further enhance deep understanding of the theoretical knowledge of the system, master the specific use of the points in life.

B. Optimizing Teaching Means

In the classroom teaching, achieving the combination of multimedia and blackboard can improves the students' interest in learning, and strengthens his memory. Some schools, especially colleges of Arts, banned from using multimedia to teach mathematics courses.

Such a decision has its own reasons, but the whole is relatively arbitrary. At the beginning, all subjects of every college encourages used multimedia teaching, but for mathematics, only use the multimedia teaching is obviously not feasible, most mathematics teachers will not make full use of multimedia, but simply turn the pages of PPT, it is not a effect mathematics teaching method. As a number of colleges

and universities establish a special system, the mathematics courses are prohibited to use multimedia. With the passage of time, the use of multimedia methods also continues to progress, mathematics courses if appropriately using multimedia, plays a significant role to improve the teaching effect. In particular, some of the economic problems, with the projection cast out, are clearly explained to the students, it will have a more significant effect. In the instruction of extracurricular learning, make full use of the network function, establish the network study group, QQ group, this can break the time and space and location, as long as it can be performed online learning, you can always communicate with teachers with a problem.

C. Improve Teaching Methods, Strengthen the Modeling Teaching, Change the Way of Assessment

Reduce the deduction theorem and formula proof, for example, mean value theorem proving and the existence of implicit function theorem proving. We have to dilute the problem-solving skills teaching, such as the Vandermonde determinant calculation of this kind of pure skill exercises, can be removed, strengthen basic knowledge teaching, and emphasize the specific application.

Select some economic mathematical modeling teaching modules, and take developing appropriate examples of economic problems, and building a mathematical model as a part of the contents of teaching. In the usual teaching, improve students' interest in learning, and strengthen the application of his mathematical knowledge in the field of economics.

The application of economic: reduce the original basic application of mathematics course, with increase in the economic field, such as the increase in the content of courses: take such demand function, total revenue function, supply function, margin and elasticity, marginal revenue, marginal cost, marginal analysis, elasticity analysis, the total amount of functions as teaching examples. By quoting some economic concepts, economic phenomena, to further enhance students' understanding and mastery of mathematics

Taking a centralized test, the usual study report and the usual combination of homework, increasing the appropriate learning report, modeling reports, can check the students to

master the knowledge and application ability, independent innovation ability, so as to better achieve the purpose of application.

IV. CONCLUSION

In this paper, through the analysis of the important role of mathematics in economic field, the characteristics of students of economics class profession, the author finds some problems in economic mathematics course teaching, aiming at these eight problems, then gives a solution to improve the teaching quality of economy mathematics and improve the students' interest in learning mathematics. And the students will lay a solid mathematics foundation and apply it into the economic and financial fields.

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