Construction of Practical Teaching System of Applied Mathematics Based on Application-Oriented Talent Training

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***Abstract*—At present, the rapid development of science and technology and the economy has made more and more people realize that the future development of social science and technology and economy is inseparable from applied mathematics and specialized talents with applied mathematics professional qualities. Taking talent cultivation as the foundation, aiming at strengthening this project, highlighting the status of teaching center, actively carrying out education and teaching reform, strengthening students' postgraduate education, actively carrying out the training of students' skills training and innovation ability, and achieving remarkable achievements in education and teaching. The discipline construction has achieved phased results. However, the applied mathematics major is theoretically strong, lacking professional characteristics and weak applicability, which makes graduates face great competitive pressure in employment. Therefore, it is important to explore the talent training model with the characteristics of running a school. It is important for the society to cultivate applicable, comprehensive, skilled and innovative talents that meet the needs and comprehensive development, and to promote the faster and better development of applied mathematics in schools.**

Keywords—Training mode, innovative talents, applied mathematics, practice

I. INTRODUCTION

University education is an important stage to cultivate students' innovative thinking and innovation ability. The construction of innovative talent training mode is very important for the cultivation of talents. As a newly-built local and applied undergraduate college, its professional orientation and training objectives should be different from research-oriented universities. Students who are trained are not high-end talents who study mathematics, but can use mathematics knowledge and methods to solve work and real life. Practical talent for the problems encountered. Therefore, the new undergraduate colleges must broaden their school-running ideas, change traditional teaching models, and tap professional characteristics according to the characteristics and advantages of the disciplines. The training model of applied mathematics professionals must reflect the requirements of the new talent concept. The basic characteristics of modern talents such as ideological, basic, comprehensive, innovative and teacher-oriented should be fully reflected in the training objectives of professional talents. This paper analyzes the problems existing in the training mode of innovative talents in applied mathematics, expounds the construction elements of the innovative talent training mode of applied mathematics, and discusses the practice and effect of the innovative talent training mode of applied mathematics.

II. PROBLEMS FACED BY THE APPLIED TALENT TRAINING MODEL IN APPLIED MATHEMATICS

A. Student Employment Faces New Challenges

The initial professional orientation of applied mathematics is to train qualified mathematics teachers for basic mathematics education and secondary vocational education in primary and secondary schools in northern Henan and even the province. However, with the current reform of China's education system and the change in the form of teacher recruitment, the number of teachers in primary and secondary schools is becoming more and more saturated. At the same time, as more and more families in China enter the era of only children, the number of students in primary education is reduced. The demand for graduates in the whole society is also decreasing. Moreover, the teacher position is no longer the privilege of the normal student. Other non-teachers can enter the teacher position as long as they pass the teacher qualification examination. These factors increase the employment pressure of the normal students. Faced with such a severe employment situation, some graduates of the normal school lack a deep understanding and sufficient attention to the mathematics knowledge and education and teaching skills they have learned. They lack the courage and confidence of competition and cannot seize the employment opportunities in time.

B. The Curriculum Can not Keep Up with the Needs of Market Development

The idea of running a mathematics major is the same as that of other universities in China, that is, "thick foundation, wide caliber, strong ability, high quality", and cultivate comprehensive, applied, compound, skilled and innovative talents. However, with the popularization of popular education, the enrollment scale of the School of Mathematical Sciences has also expanded. Although the college tried to divert the students of applied mathematics, it formed several professional directions such as mathematics education, finance and statistics, information technology and computer. However, in general, there are still many problems in the application of curriculum, the unclear target, and the inability to meet the market demand for the knowledge structure of applied talents.

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C. Students' Innovative Thinking and Skills Training is not Enough

At present, the education and teaching methods of most teachers are still the basic mathematics teaching methods in the elite era. Education still stays at the level of imparting knowledge. The educational thinking is single, and still only focuses on requiring students to master the basic knowledge, lacking the ability to practice students. The cultivation and development; secondly, the classroom teaching only pays attention to the study of theory, ignoring the practice teaching link, so that most students only care about the book knowledge without hands-on, not thinking, not practicing, the mathematics professional thinking is not strong, the learning objectives are not clear, learning Interest is not high. Such education methods lead to poor students' ability to practice and solve problems. They cannot adapt to the market demand for applied talents, which is not conducive to cultivating students' hobbies and interests, and is not conducive to giving full play to students' individuality.

III. THE APPLICATION OF MATHEMATICS PROFESSIONAL APPLICATION OF INNOVATIVE TALENTS TRAINING NEW IDEAS

A. Continue to explore the Application-Oriented Talent Training Mode of Integration of Education, Internship and Employment

To play the role of teaching as an internship and employment service, to realize internship is a bridge between teaching and employment, better use of employment to guide teaching and internship, and to cultivate students' practical ability and comprehensive quality according to the ability requirements of industry and position. In this way, students are more advantageous in the process of employment.

B. Reform the Traditional Theoretical Teaching-Based Education Model and Explore the Educational Model Combining Theory with Experimental Practice.

Although traditional theoretical teaching can lay a good foundation for students, most students lose their interest in mathematics, and the introduction of theoretical classrooms into experimental practice activities can attract students' attention and guide students to discover mathematical laws and utilize them. Math solves practical problems and better develops students' application ability and innovative spirit.

C. Serve Local Social and Economic Development and Broaden the Idea of Running a School

While applying mathematics majors, the applied mathematics major must broaden the thinking of running schools according to the development of social economy. Therefore, it is possible to explore how to open other directions of applied mathematics according to the needs of local social and economic development, strengthen cooperation with relevant local departments, and establish the application mathematics direction combining production, education and research. For example, this department has set up a new financial mathematics direction this year to train applied talents with basic knowledge of mathematics, finance, and economics, and who can use the mathematical and financial analysis methods they have learned to conduct economic and financial information analysis and data processing. After graduating, he can engage in financial analysis, planning and management in finance, investment, insurance and other departments, and can transfer talents to Yongzhou's financial and banking institutions to meet the actual needs of the market economy.

IV. THE CONSTRUCTION ELEMENTS OF THE INNOVATIVE TALENT TRAINING MODE OF APPLIED MATHEMATICS

A. Innovation of Teaching Objectives

Traditional teaching regards teaching as the process of knowledge accumulation. The teaching process becomes the process of teachers instilling knowledge into students. Students become the receiver of knowledge and lose the ability to think independently. This is not conducive to the formation of students' innovative ability. In order to develop students' sense of innovation, our educational objectives must do the following three points: first, the importance of knowledge into the conclusions of great importance to the formation of knowledge; second, will focus on imparting knowledge into the training given to capacity; third Transforming the training of skills-oriented skills into training that emphasizes thinking.

B. The Innovation of Teaching Content

Innovative teaching content, constructing a curriculum system based on the cultivation of students' mathematical literacy and mathematics ability, first of all, it is necessary to break the curriculum system centered on the subject curriculum and strengthen the basic, applied and practical three-level curriculum construction. Secondly, in terms of course content, we should pay attention to the combination of humanity and professionalism, the combination of traditional classicity and modernity, enhance the comprehensiveness and practicability of the curriculum, in order to cultivate students' comprehensive innovation ability, and enforce the third application. The application is an important part of testing the theoretical level and the ability to innovate. It is the home of the theory of learning and understanding. In the past, the emphasis on theory and light application in teaching must be corrected and changed.

C. Innovation in Teaching Methods

To realize the innovation of teaching methods, three transformations must be completed: First, the teacher-centered student-centered teaching model; Second, the transition from teacher's “infusion” teaching to mutual assistance and collaborative teaching. Third, the transition from a teacher who is a purely knowledgeable lecturer to a trainer who develops students' innovative abilities. Classroom teaching should overcome the "one-word hall", advocate "group language hall", change the boring situation of classroom teaching, encourage students to speak boldly and actively participate, so as to cultivate students' curiosity and innovative spirit.

V. THE PRACTICE OF TRAINING INNOVATIVE TALENTS IN APPLIED MATHEMATICS

A. Build an Innovative Talent Training Model and Train Qualified Professionals

The curriculum system of applied mathematics is formed according to professional positioning, social needs and continuous modification and improvement in specific implementation. The curriculum system is completed in accordance with the "four platforms, three modules", and the four platforms are public teaching platforms.

The subject teaching platform, professional teaching platform and practical teaching platform, the three modules are professional elective modules, quality extension modules and capacity expansion modules.

In the curriculum, the basic course focuses on the development of students, so that they have solid foundation knowledge and strong development. The number of hours of applied mathematics courses has been increased, and efforts have been made to give students the ability to use mathematics initially. Intensive education and teaching courses and teaching skills training courses have been strengthened, and practical and feasible assessment methods have been formulated to ensure quality and enhance students' employment competitiveness. This curriculum system guarantees basic professional training specifications.

B. Identify the Location, to Determine Both Into the Professional Training Objectives and Time.

The training goal has changed from elite education to popular education. In the past, talent training programs for elite education have been unable to adapt to popular education. According to the orientation of applied talent training in our college, our department also emphasizes the application of the professional talents, cultivates the basic theories, basic knowledge and basic methods of mathematics, and can use mathematics knowledge and use computers to solve practical mathematics problems. with a modern concept of education, to adapt to teachers, researchers and teaching other educators teaching mathematics in secondary schools of basic education reform and development needs. The focus of this training goal is to develop students' hands-on ability and application ability, which requires that practice links such as educational internships, experiments and graduation thesis must be implemented in the training program.

C. Application of Mathematics practice teaching System Innovation

Applied Mathematics practice teaching model includes target practice teaching, practical teaching, practice teaching support, teaching practice evaluation of four ways. Focusing on the application-oriented talent training objectives, basic skills training, professional skills training, professional ability quality training, and innovation and entrepreneurship training have been established as practical teaching goals. According to the specific practical teaching objectives, the practical teaching content is compiled, including course experiment, course design, skill training, professional internship, graduation internship, graduation thesis, and innovative training. From the aspects of teacher team construction, reform of assessment methods, teaching platform, and practice base, we will build a practical teaching guarantee system with multiple levels of support. Developed an operation + Experimental report", "group reply score", "paper + Defense" and other forms of practical teaching evaluation methods.

D. The Implementation of "Diversion Training, Classification Guidance" Innovative Talent Training Mode

For freshmen and sophomores, it is necessary to strengthen the basic knowledge of mathematics and comprehensive quality education so that students have solid basic theories, basic knowledge and basic skills. From the second semester of the sophomore year, the college organization implements the diversion-based teaching according to the students' volunteering and combining the students' own academic achievements and actual learning conditions, which are divided into teacher education direction, financial mathematics direction, statistics and actuarial direction, etc. Teaching, teaching difficulty and teaching methods have a focus on teaching students in accordance with their aptitude.

In terms of specific practices, teachers can guide students to establish various interest groups for learning. Each group arranges special guidance teachers to give regular guidance. This can stimulate students' interest in learning, solve students' professional problems in time, and help students to establish professional direction. Combined with the actual situation of students, it can be divided into small directions such as mathematical modeling, education and teaching skills, mathematical theory learning, tutoring, financial mathematics, statistics and actuarial science, service society (civil servants, selection of students) and comprehensive quality training.

VI. CONCLUSION

At present, the applied talent training program of the applied mathematics major of the college has been revised. The purpose is to make the professional development more and more adapt to the needs of social and economic development, in order to cultivate the application, compound, skill and innovation needed by the market. Talent. In accordance with the School of Mathematical Sciences to cultivate the orientation of applied talents, actively carry out professional construction and reform, strengthen communication and communication with the outside world, adhere to the goal of improving the quality of personnel training, improve the overall quality of students, and strive to develop a distinctive and advantageous Outstanding strong hospital road.

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