

# Construction of the Training Mode Serving Local Economy of Applied Innovative Mathematics Talents in Normal Universities

Zhang Lijuan

Department of Mathematics and Statistics, Baicheng Normal University, Baicheng, Jilin, China,  
137000

415580658@qq.com

**Keywords:** mathematics in normal universities, applied innovative talents, training mode.

**Abstract.** In order to make the talents training of Mathematics and Applied Mathematics Major be closer to the society and market and meet the needs of society and employers, to improve students' employability and entrepreneurial ability, and to increase the school's competitiveness and influence, taking Baicheng Normal University as an example, this paper studies the training mode of the applied talents of Mathematics and Applied Mathematics, and proposes reform measures for the applied talents training program of Mathematics and Applied Mathematics. The implementation of these measures will help to cultivate applied mathematics talents, increase students' employment advantages and better serve the local economic development.

## Introduction

Innovative talents are the driving force of Chinese social development, and cultivating innovative talents meeting the actual development needs of various regions is of great importance. How to cultivate innovative talents based on regional economic development and improve the talents training quality of Mathematics is a crucial problem to be solved urgently in higher education. In serving local economy transition, from the aspects of deepening teaching contents and curriculum system and enhancing the training quality of innovative talents by integrating local economy in depth, relying on the platform of mathematical modeling, our school builds a training mode of innovative talents based on regional economic development, which is of great significance for cultivating all-round developed, applied, composite, technical and innovative talents meeting the needs of society, and promoting faster and better development of Mathematics and Applied Mathematics.

## Dominant Idea of Cultivating Innovative Talents in College Mathematics Applied

The dominant ideology and the overall objectives of the program of "Construction of the Training System Serving Local Economy of Mathematics Talents in Normal Universities" are to meet various needs of social development for high-quality talents in mathematics, to reflect the teaching philosophy of centering on students' development according to the reform thinking of "thick foundation, wide caliber, multiple directions", to adhere to the principle of combining theory with practice, to focus on quality education and ability training, to realize the deep integration of quality education and mathematics teaching through the reform of training mode, curriculum system, teaching content, teaching methods and teaching means on the premise of no increase in class hours, to establish a new talents training mode of Mathematics in normal universities under the open teacher education system, and to provide innovative mathematical talents with strong practical and self-development ability and high overall quality for basic education and economic and social development. Using the characteristics of normal universities as a breakthrough, it proposes the training mode of "one reflection, two directions and three abilities", reflects the teaching philosophy of focusing on teacher education, adheres to the principle of combining theory with practice, emphasizes quality education and ability training, realizes the deep integration of quality education and mathematics teaching through the reform of training mode, curriculum system, teaching content, teaching methods and teaching means, establishes a new talents training mode of Mathematics in

normal universities under the open teacher education system, and provides innovative mathematical talents with solid foundation, rich knowledge, strong practical and self-development ability and high overall quality for basic education and economic and social development.

### **Construction of College Mathematics Applied Innovative Talents Training Mode**

The entrance examination scores of students of Mathematics Major in Baicheng Normal University are relatively low, and this is a common phenomenon of Mathematics Major in colleges under local authorities. Talents training modes and reform experience of national affiliated research-oriented universities are not suitable for the specific circumstances of local colleges. However, due to the society's heavy demand for composite talents, local colleges should also set the goal of Mathematics Major as to cultivate senior talents who are qualified with outstanding mathematical ability and can skillfully use mathematical tools to solve problems in scientific research and production practice. Therefore, the construction of following aspects should be noted in building the training mode of applied innovative mathematics talents in local normal universities.

#### **Enhance the Curriculum of Application Mathematics.**

With the advent of the information era, the teacher should consciously cultivate students and guide students to dig the hidden knowledge behind the mathematics by the carrier of teaching. Mathematics course should fully embody the frontier disciplines and cross innovation. Mathematics courses should fully reflect academic frontier and cross innovation, which refer to both original innovation and integrated innovation; it includes knowledge innovation, as well as technology innovation, management innovation and cultural system innovation. The discussion on innovation without academic frontier is unthinkable. Innovation requires more than just inheritance, accumulation and application of existing knowledge, it also requires the constant updating of knowledge, and both originality formation and creative design need the application of new knowledge and principle. Setting of professional courses needs to reflect the development frontier of discipline and to emphasize "new"; needs to reflect new developments in interdiscipline, interdisciplinary subject and newly emerging disciplines, and to guide students to academic frontier purposefully. To train ideas and methods of mathematical modeling, MATLAB is applied in mathematics curriculum integration of mathematical modeling. It improves students' mathematics application ability, at the same time it can encourage and guide students to program for simulating some practical problems. It also helps the students to learn computer knowledge and master the computer skills. It not only makes students understand the basic concepts, but also cultivates their solving skills of applying mathematics. Mathematical modeling can help students to explore the application of mathematics in real life.

#### **Increase the Proportion of Elective Courses of Mathematics**

Flexible and multiple elective courses can perfect the knowledge structure of graduate students, broaden their knowledge, further deepen their basic theory, and improve the overall quality and comprehensive ability; take into account the student's personal characteristics, interests and career orientation, which is conducive to the combination between professional training and general education. Enlarge the proportion of elective courses by closely integrating professional courses, inter disciplines and interdisciplinary subjects, and reflect the new achievements, new discoveries of subjects and the research directions and insights of teachers into the courses. Each student can propose requests based on their major courses, and select elective courses at will in accordance with their specific conditions and learning interest and under the guidance of instructors, allowing students more freedom in terms of electives. Interest is used to actuate the learning autonomy and initiative of students.

### **Strengthen the Training Courses of Mathematics Innovative Thinking Ability.**

Setting these courses has a great impact on improving students' ability in various aspects. According to the practice of universities in the United States, Japan and other countries, training to cultivate the innovative thinking ability can increase the creative ability of students by 10% -40%. Brainstorming method is currently the most popular training method of innovative thinking ability. Its basic principle is to collectively solve problems, make evaluations, encourage students to speak up and draw forth a variety of solutions in the classroom. In teaching activities, teachers should comply with the following rules: first, forbid making critical comments, also called suspended evaluation; actively encourage students to propose improvements or additional comments. This can enhance students' awareness of the problem, thus promoting students to think actively and seek solutions to the problem actively, which helps improve their innovative ability.

### **Mathematics Major Faces Many Challenges.**

Mathematics Major in normal universities faces with many challenges including the transformation of society and industry's requirements for teachers from quantity to quality, the transformation of teachers' training institutions from closed type to open type, the transformation of teachers' training process from the pursuit of knowledge to the pursuit of ability, and the many-sided and multi-level transformation of social needs for mathematics talents. Therefore, for the talents training mode of Mathematics Major in normal universities, the status of single objective must be changed, and to cultivate high-quality professional teachers with innovative and practical spirit for basic education should be emphasized. Only through this can the development demand of the society and industry be satisfied and can students' employability and competitiveness be enhanced.

### **Intensify Research Teaching to Cultivate Innovative Consciousness.**

A feature of the university teaching process is introducing scientific research into the teaching process. This makes university teaching become into the combination process of study and research under the guidance of teachers. It enables students to independently discovery, analyze and solve some problems. The students could find the incomplete and inaccurate knowledge based on reading, researching and discussing. The students will query its validity and be encouraged to find the truth. It cultivates students' qualities of active exploring, bold innovation and daring to question.

### **Summary**

With the advent of the era of knowledge economy, knowledge economy puts forward various improvement step in economic age. It implements the innovation through the implementation of the innovative talents training mode. In short, innovative talents training is a huge systematic project, and the creative education of normal universities should start from curriculum reform, focus on teacher education and development, strengthen the combination of mathematics teaching in normal universities and high schools, reform the professional training mode of mathematics education in normal universities, update course content, and establish a bran-new curriculum system, so as to improve the overall quality of students in normal universities and students' potential of sustainable development adapting to future educational practical activities, and to make them talents of the full implementation of quality education in China.

### **References**

- [1] Niu Yuqi, Meng Xiaoran. Curriculum and Teaching Content System Reform and Exploration of Mathematics and Applied Mathematics Major[J]. Henan Education, 2011(8):38.
- [2] Du Xiufeng, Zhai Manyue, Li Xiaohong. Training of Applied Talents of Mathematics Major in Normal Universities[J]. Journal of Science of Teachers' College and University, 2011,31(6):81-83.

- [3] Wang Yan, Du Xiufeng, Li Xiaohong. Improve the Overall Quality of Mathematics Students to Achieve a High Employment Rate[J]. Journal of Science of Teachers' College and University, 2010,30(1):91-92.
- [4] Zhang Dan, Zhou Xuegang. Study on the Training Mode of Applied Talents of Mathematics and Applied Mathematics Major[J]. Hunan University of Science and Engineering, 2007,28(12):21-23.
- [5] Zeng Zheng, Jian Guoming, Li Shanxia. Reform and Exploration of Mathematics Talents Training Mode in Local Universities[J]. Journal of Mathematics Education, 2012,21(5):61-63.
- [6] He Binta. Reform Practice of the Training System of Mathematics and Applied Mathematics Major[J]. Journal of Yangtze University: Natural Science, 2010,7(3):709-710.
- [7] Liu Zhiqiang. Problems and Countermeasures Study of Talents Training Mode in Chinese Universities under the Condition of Market Economy[J]. Journal of Higher Education, 2011, 28:79-84.