

Study on the Training Mode of Major in mathematics and applied mathematics

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Abstract. With the changing demands on normal talents in the society, on the premise of the training objective of applied talents, this thesis analyzes the existing problems in the normal major, Math and Applied Math and proposes the thought of diversified talents training mode. It mainly explores the diverse talents training mode from training objectives, training form, courses system, practical platform and training mechanism and constructs a basic theoretical framework for the exploration of large-scale diverse talents training reform of undergraduate education.

1. Introduction

With the deepening reform of high-end education, high-end normal education faces new challenges and problems, which are mainly reflected on the strengthening of modern teaching ideal to normal students and the innovation of modern teaching techniques on training objectives, especially on the training objectives of applied talents, normal major should abandon the talents training mode that only focused on theories and ignored educational practice in the past and be adapted to a diverse talents training mode.

Diverse talents training practice mainly comes from the social demands on diverse talents which requires to change the defects that focus on unification and regulations which leads to the singular training mode and talents type. The normal major in Math and Applied Math is a fundamental physical major which is also the “parent major” or “supported major” of other relevant majors. To explore the professional diverse talents mechanism and work hard to realize the diversification and personification of the training mode become the necessary choice for the Math and Applied Math major to adapt to the requirements of the modern education mode, develop major features and form the strengths of talents training.

2. Problems in Normal Math and Applied Math Major

2.1 New Challenges Facing Employment

With the reform of China's existing educational system and the transformation of teachers' recruitment form, teachers in primary schools and middle schools tend to be saturated. Meanwhile, with increasingly more families enter the one kid times which leads to the reduction of students source receiving primary education and leads to the decreasing demand of the whole society to the graduates in normal majors. Additionally, teachers' posts no longer only belong to the special right of normal students. Other non normal students can also gain teachers' posts through teachers qualification examination certificate. These factors increase the employment pressure of normal students. Facing such severe employment situation, some normal graduates fail to seize employment opportunity due to lack of the courage and confidence of competition as they lack deep recognition and enough attention to the math knowledge and educational teaching techniques they have learned.

2.2 Courses Setting Fails to Meet the Demands of Market Development

The professional courses contents of major Math and Applied Math in local universities are derailed from social demands which are not closely related to actual posts. Additionally, the abstractive discipline and the disconnection between knowledge points and those contents in senior

high school lead to students feel that math learning is difficult and as a result lose their interests in math learning. More over, courses are set too much, in which theoretical courses account for too much proportion while practical courses are fewer which lead to poorer theoretical learning and teaching techniques.

2.3 Singular Talents Training Mode and the Ignorance of the Personalized Development of Students

With economy and society are armed with knowledge and the popularization of higher education, the society poses a special attention to the innovative ability and learning ability of talents. Therefore, a singular talents training mode and batched talents training mode can hardly adapt to this change. As a result, we should pay more attention to the personalized development of students and pay attention to the training of diverse talents. This demand guides the teaching mode towards personalized, detailed and diversified development.

3.Necessity of the Implementation of the Training Mode of Diversified Talents

3.1 Diversity of Economic Regionalization

The regional economic development in the east, middle and west of China are very uneven, which is our national situation. The difference in productivity development leads to the difference on specifications and quality of talents training in different regions; difference between industrial structures and geographical environment directly influences the disciplines structure in higher universities in different regions; the difference between economic development strategies and patterns will also pose influence to professional talents in universities, which necessarily requires the focus on educational ideology, training objectives, talents specifications, majors setting and training process by universities in different regions and curtain multiple types of talents to meet the demands of social and economic development in this region.

3.2 Diversity of Schooling Levels

Popularized education generally lowers down the quality of students in ordinary universities. Students being enrolled have poor credits, learning ability and learning initiative. If the teaching methods and contents the same with that of key universities are adopted, the teaching effects will definitely very bad. Whereas, this difference on training plan is rarely reflected between ordinary universities and key universities. Many universities pursue the alleged high starting lines and the consistency with brand universities to show their high schooling level and never feel like admitting the difference between them and the key universities. Ordinary universities usually take the training plan of a key university as the blueprint when making training plan which are mainly reflected by almost same courses system and similar teaching contents

3.3 Diverse Development of Students' Personality

Higher education must always stick to students-oriented and take the respectation, enhancement and the promotion of students' initiative awareness as the rudimentary principles of all the education, teaching and management activity and great efforts should be made to tap the potential of students. Whereas, the diversity of students' personalities necessarily requires universities to construct a diversified talents training pattern combining with each student's personalities based on the comprehensive talents training objectives and specifications which urges students to study hard to gain the optimum development on the building of knowledge ability structure and the development of personalized quality.

4. Reform Thought of the Diverse Talents Training Mode

4.1 Establish a Diversified Talents Training Objective with the Orientation of Social and Economic Development Demands.

Talents training objectives are the basic regulations of a major to the basic specifications and types of the talents being trained and the major basis of talents training mode reform. Therefore, to realize the objective of “serving localization”, a diversified talents training objective should be formulated to positively adapt to the changing demands on talents by the development of local society and economy. The determination of professional training objectives should meet the following three aspects: the coordination between it with the development target of the university; the coordination with talents training mode; with professional features.

4.2 Establish a Diversified Training Pattern with the Optimum Development of Students as the Starting line.

Considering people’s diversified interests, favorites and strong points, higher education should start from the features of students, educate them according to their features and a diverse talents training mode should be established so that the personality, specialty and potential of each students can gain the optimum development. Professional education must tightly meet the demands of local development, respect the initiative choice of students, encourage students’ self discovery ability for the purpose of applied and technical talents who meet the social demands [1].

4.3 Build a Professional Courses System with the Extension of Professional Connotation and Professional Caliber as the Objectives.

The adjustment of talents training mode, professional connotation and caliber should rely on courses system, teaching contents and methods to the final analysis, which is the core of the building of talents training plan. The key problem of the implementation of strong ability is to extend professional connotation; the core problem of the implementation of the broad caliber training is to extend professional caliber so as to strengthen the adaptability between majors and students’ employment. Therefore, courses system building should surround the extension of professional connotation, professional orientation and the strengthening of foundation and set multiple yet flexible application-oriented courses and trans disciplinary courses [2]. Ensure the principle of “foundation breakthrough, detailed professional imparting and flexible orientation” and design the courses system of different majors based on “platform+mode”. Module courses can be set according to social demands and students’ requirements and students can select one or more orientation modules to learn based on their interests and employment demands.

4.4 Strengthen the Practical Teaching Link with the Focus on Training Students’ Innovative Spirit and Strengthening Innovative Ability.

The training of students’ innovative ability and spirit can not leave the training of quality practical teaching link. Improving practical teaching system, strengthening practical base construction in university, carrying out joint schooling with enterprises and institutions, establishing the base combining with teaching, scientific research and production, holding innovative experimental class and encouraging students to participate in teachers’ scientific research topics and other measures and means are all beneficial to the training of students’ innovative spirit and practical ability and strengthening graduates’ adaptability.

4.5 Form a New Type of Teaching Mode Based on Students’ Development

Guided by the modern education ideology, replace teaching ideology and improve teaching methods, better outstand students’ dominant role in teaching activity and play teachers’ leading role, emphasize mutual exchanges between teachers and students, fully mobilize students’ enthusiasm, initiative and creativity[3]. Actively carry out teaching activities according to students’ personal features and demands; adopt live and active teaching methods such as opening, enlightening, seminar and explorations guided by problems driving and typical cases so as to create better conditions for

students' initiative learning. Reform courses examination and assessment mechanism to form a plural assessment.

4.6 Build a New Type of Talents Training Platform with the Benign Interaction of Learning, Research and Industry.

To stick to the combination of learning, research and industry enriches teaching contents, optimizes practical links, transforms employment opinion and enhances students' comprehensive quality; set the secondary courses and innovative credits as the credits for awarding students which should be included into the talents training plan; students will gain the corresponding learning credits with the guidance of teachers and the professional authentication through the participation into various competitions, scientific activities and social investigations, etc.; Besides, "undergraduate students scientific research projects" are also set to implement undergraduates' research training plan, encourage students to receive actual scientific research training and gain credits through scientific research projects. These measures ensure that students receive strengthening training on practical and innovative ability [4].

4.7 Set a Training Mechanism with Flexible Management

The teaching running mechanism of the practice of training multiple modes of applied undergraduate talents in universities should also reflect students predominance while the teaching management system should be beneficial to the personalized development of undergraduates which should be flexible and opening. Teaching management mode should gradually realize the transformation from the predominance of teachers and managers to the predominance of students and transform from controlling management mode to the support of students' self construction and initiative learning practice and the teaching running mechanism centered by students should be established. For instance, to establish a initiative learning system and flexible learning system, and push the opening of courses, classes and majors; build a learning effect examination and assessment system predominated by applicable ability examination, etc[5-7].

5. Summary

To train diversified and applicable talents with bachelor degree is a long process of exploration and practice, the training focus of which should meet the demands to train diverse talents by society, region, industry and student while the previous teaching mode should be constantly improved, new teaching modes should be created in teaching practice and the diversified teaching mode should be adopted in practice according to the features of individuals and situations so as provide large amount of useful talents to the society.

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