Construction of High-Quality Education System for Machinery Majors in the New Development Stage

Xiaofeng Yue and Juan Zhu(✉)

School of Mechanical and Electrical Engineering, Changchun University of Technology, Changchun 130031, China
zhujuan@ccut.edu.cn

Abstract. In order to improve the training quality of mechanical professionals, the paper explores the construction scheme of the professional education system in the new development stage, and comprehensively constructs the education system from four aspects: teacher training scheme, curriculum construction, school enterprise cooperation and quality monitoring, and gives the construction ideas in all aspects. The education system aims to improve the education level from multiple perspectives and ultimately improve the quality of talent training.

Keywords: New development stage · Machinery majors · Education system

1 Introduction

The proposal of the Central Committee of the Communist Party of China on formulating the 14th five year plan for national economic and social development and the long-term goals for the year 2013, which was deliberated and adopted at the Fifth Plenary Session of the 19th CPC Central Committee, takes "higher education entering the popularization stage" as one of the landmark achievements of the decisive victory in building a moderately prosperous society in all respects, and puts forward higher requirements for higher education during the 14th Five Year Plan period from multiple perspectives. It fully shows the new level of education popularization since the founding of new China, especially since the reform and opening up, and further defines the focus of improving the quality of higher education in the new development stage.

The major of machinery is a typical engineering major [1–3]. Under the background of the new engineering, the traditional education system of machinery major needs to be reformed urgently [4, 5]. In the new development stage of the overall strategic situation of the great rejuvenation of the Chinese nation and the great changes that have not been seen in a century, the new engineering must aim to cultivate new people of the times with "two overall situations"; Taking the new development concept as the action yardstick of the construction of new engineering, building new engineering based on the new development stage, integrating the new development concept and serving the new

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development pattern, can we improve the height, theoretical depth and practical breadth of the new engineering, and truly make the new engineering "new" and "strong" [6–9].

It is imperative to reform the education system of machinery major, and it is of great significance to build a high-quality education system of machinery major in the new development stage.

2 General Idea

The research is carried out from four aspects: the construction of innovative mechanical teachers based on stem concept, the construction of high-quality mechanical courses based on students, the training path of mechanical students in school enterprise cooperation, and the monitoring and evaluation of educational quality. The specific idea is shown in Fig. 1.

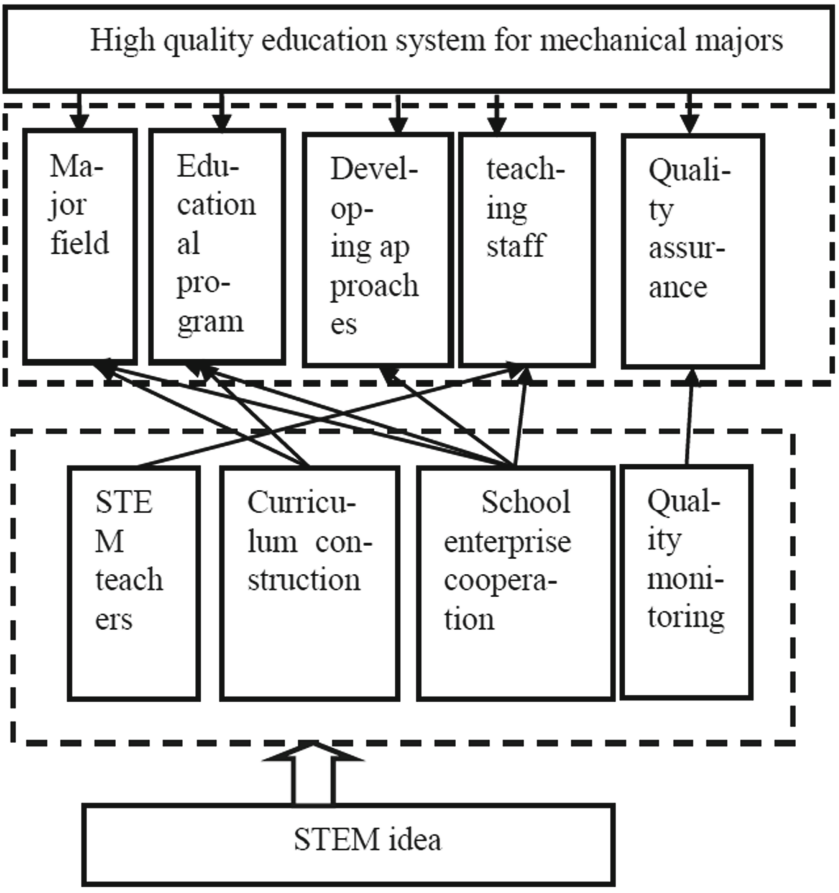

Fig. 1. Construction of mechanical majors

3 Construction Content of Education System

Under the guidance of high quality, we should build a team of high-quality, specialized and innovative teachers of machinery majors, promote the reform of educational concepts and model innovation of machinery majors, and take high quality as the inspection standard of machinery education.

3.1 Construction of Mechanical Teachers Based on STEM

In order to promote the high-quality development of mechanical professional education, we must first improve the overall level of teachers and cultivate teachers of this major with new ideas. Science, technology, engineering and mathematics are the abbreviations of the English initials of the four disciplines, namely stem, in which science lies in understanding the world and explaining the objective laws of nature; Technology and engineering, on the basis of respecting the laws of nature, transform the world, realize the control and utilization of nature, and solve the problems encountered in the process of social development; Mathematics is the basic tool of technology and engineering discipline. Stem emphasizes solving problems in the real world with engineering thinking. Mechanical majors need to solve engineering problems. Applying stem concept to the education of this major is very suitable. Stem education cannot be separated from high-quality teachers. Professional teachers are trained by offline training, online discussion, video courses and other methods to enhance the professionalism of stem teachers, Accurately grasp the concept and connotation of stem education, have the ability to control stem curriculum development and curriculum activities, and cultivate stem teachers to carry out stem education with the help of a variety of technologies (Fig. 2).

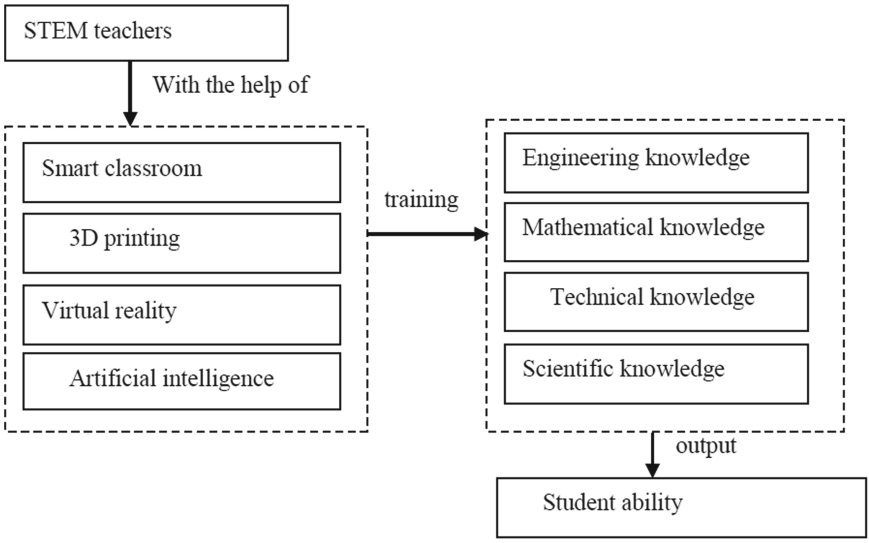

Fig. 2. STEM teacher training

3.2 Construction of High-Quality Mechanical Courses Based on Students

Curriculum (including textbooks) is the main carrier of educational thought, educational objectives and educational content. Curriculum mainly solves the problems of "what to teach" and "what to learn", and is the basic basis of school education and teaching. Without high-quality curriculum materials, there will be no high-quality education. We should give full play to the role of curriculum materials in cultivating the soul, organize teachers of various curriculum groups to fully discuss and develop characteristic textbooks. According to the application needs and students' characteristics, vigorously develop expansion courses, research courses and characteristic courses to provide suitable education for each student.

3.3 Training Path of Mechanical Students in School Enterprise Cooperation

In order to give students more opportunities to truly solve practical problems, we can explore the way of school enterprise cooperation to complete the training of talents, so that students can participate in the process of enterprises solving practical problems, have real project training of enterprises, feel the real pressure of enterprises, and really turn their knowledge into products and other practical problem-solving achievements (Fig. 3).

3.4 Education Quality Monitoring and Evaluation

Teaching quality monitoring is mainly to solve the problem of how to manage the quality. According to the teaching quality standards, we should use scientific methods to obtain teaching information and data, analyze and judge the teaching quality, and

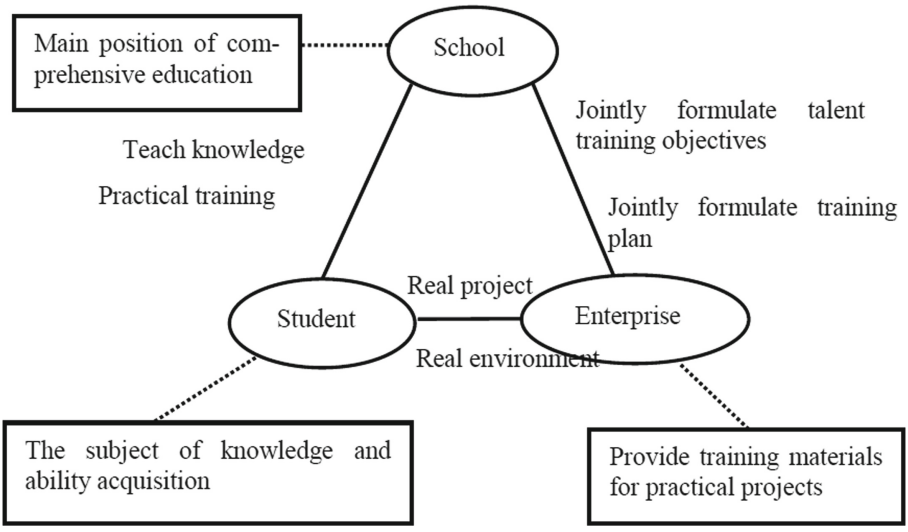

Fig. 3. New method of STEM talent training

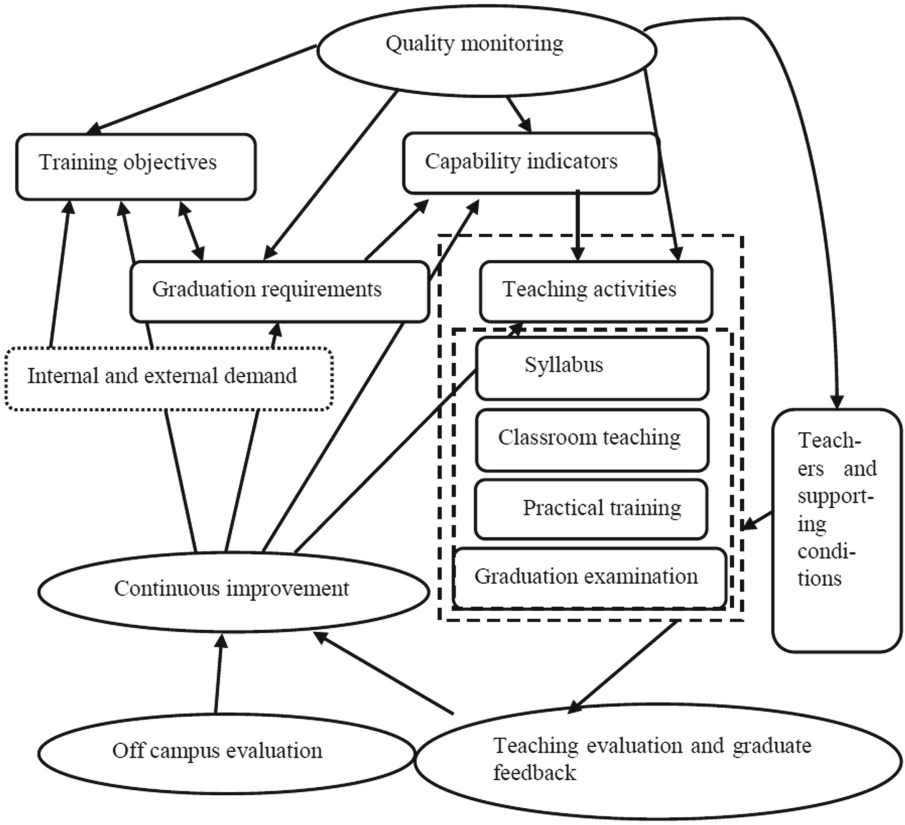

Fig. 4. Quality monitoring system block diagram

put forward suggestions for improvement. In order to ensure the quality of professional training, on the basis of the school management structure, the college has formed a management system composed of Dean, teaching supervisor, professional principal, laboratory director, course principal, teachers, etc., to ensure the smooth progress of the teaching process (Fig. 4).

4 Conclusions

Through the construction of the education system of machinery major to adapt to the new development stage, we can improve the education level from the aspects of teachers, training platform and quality monitoring, and finally improve the quality of talent training.

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