

Exploration on the reform of talent training mode of engineering management specialty from the perspective of new engineering

Changlin Wang, Changyun Wang, Qi Deng

(Yaha School of Built Environment, Haikou University of Economics, Haikou University of Economics, Haikou, Hainan 570000)

Abstract: in order to cope with the new round of technological transformation and upgrading in the construction industry, the talent training mode of engineering management specialty needs to be reformed and explored under the “new” connotation construction of new engineering. This paper analyzes the current situation of talent training mode of engineering management specialty and the problems of traditional talent training mode, and then puts forward the exploration and methods of talent training mode of engineering management specialty.

Key words: new engineering; Engineering management major; personnel training

The construction of “new engineering” is a major action plan proposed by the state to continuously deepen the reform of engineering education to meet the challenges of new economy and new business types, serve the national strategy, meet industrial needs and face future development. The “new” of new engineering includes three meanings: emerging, new and new. Among them, “new” refers to the transformation, transformation and upgrading of traditional and existing (old) science, including the expansion of connotation, the transformation and improvement of training objectives and standards, the reform and innovation of training mode, and the formation of new disciplines. At present, the construction industry is undergoing a new round of technological transformation and upgrading. The discipline of engineering management is coping with the “new” new changes in the new engineering. From the perspective of the new engineering, colleges and universities are actively exploring the reform of talent training mode, so as to cultivate qualified talents to adapt to the market, society and engineering technology changes.

1. Significance of the change of talent training mode for Engineering Management Specialty

1.1 The necessity of talent training mode reform of Engineering Management Specialty

The innovation of manufacturing industry with intelligent manufacturing as the core has given birth to a new generation of intelligent construction development strategy integrating information technology and engineering construction in China, that is, a new generation of technology characterized by “three modernizations” (digitalization, networking and intelligence) and three calculations “data, computing power and algorithm”. Engineering construction is not only the reform and innovation of engineering construction technology, but also reshape the construction industry from the aspects of product form, construction mode, construction concept, market form and industry management. In particular, the vigorous promotion of prefabricated buildings in China has completely subverted the traditional construction and management mode of the construction industry, changed from traditional artificial machinery construction to digital intelligent construction, and gradually changed from project management to factory management. The engineering technology and economic management talents trained by the traditional engineering management specialty in China can no longer meet the needs of the construction engineering technology revolution and industrial reform. Therefore, it is urgent to make timely changes and adjustments in the source of the engineering management talent training mode.

1.2 The urgency of talent training mode reform of Engineering Management Specialty

On August 28, 2020, the Ministry of housing and urban rural development, together with the Ministry of science and technology, the Ministry of industry and information technology and other nine departments, issued several opinions on accelerating the development of new building industrialization (hereinafter referred to as the opinions), vigorously promoting building information model (BIM) technology and accelerating the integrated application of BIM Technology in the whole life cycle of new building industrialization. At present, the construction units, design institutes and construction units have widely applied BIM Technology in bidding project management. For example, Hunan Province has implemented BIM review in stages since June 2020. There is a big gap in management talents with BIM Technology as the core, such as BIM coordinators, BIM project managers, enterprise information technology management and other industries. As a major strategy of the national 13th five year plan, construction industrialization has ushered in a new growth period and development opportunities for China’s prefabricated buildings. Under the government’s prefabricated building development plan and policy incentives, the country has set off a boom in prefabricated development. In 2020, the newly started prefabricated building area in China will reach 630million square meters, an increase of 50% over 2019. The opinions requires that: first, we should vigorously cultivate talents of new construction industrialization; The second is to cultivate skilled industrial workers. With the rapid popularization and application of BIM Technology and prefabricated buildings in China, and the reform of construction methods represented by prefabricated buildings, the training mode of engineering management talents must be accelerated to meet the needs of new management talents in the construction industry.

2. Current situation of talent training mode for Engineering Management Specialty in China

The talent cultivation of Engineering Management Specialty in China started late. The undergraduate engineering management

specialty in domestic colleges and universities was established by revising the undergraduate specialty for the fourth time in 1998. As of September 2019, 447 engineering management schools have been opened. The engineering management colleges and universities include 985, 211, and two and three undergraduate colleges, mainly engineering colleges and universities, But it also includes some financial and normal universities. The engineering management specialty has five professional directions: construction project management, international engineering management, investment cost management, real estate operation and management and property management. The training goal of engineering management professionals is to cultivate a systematic and open knowledge structure that meets the needs of socialist modernization, and is composed of civil engineering technical knowledge and domestic and international engineering management related management, economic and legal basic knowledge and professional knowledge. They receive basic training of engineers and have strong professional comprehensive quality and ability. High quality and versatile talents with practical ability and innovation ability, who can make engineering decisions in civil engineering and other engineering fields at home and abroad and engage in whole process management and related professional management. As China's colleges and universities have not yet completed the classified management of research-oriented and application-oriented undergraduate courses, all colleges and universities have the same talent training objectives, the courses are similar, the advantages of each university's professional characteristics are not obvious, the training means are single, and the update speed of knowledge content can not catch up with the change speed of engineering technology.

3. Analysis on the problems of traditional talent training mode of Engineering Management Specialty

3.1 Backward concept

The traditional engineering management usually takes the engineering project as the research goal. Colleges and universities also set up the corresponding management courses according to the characteristics of the project in the talent training of engineering management major, and the definition of the project is: under certain constraints (mainly limited resources, time and quality), a one-time task with specific goals. The biggest feature of project definition is one-time and short-term constraint. With the construction industry putting forward higher requirements for low-carbon, energy conservation and environmental protection, as well as the comprehensive application of BIM Technology, fabricated production technology, virtual construction, intelligent construction and cost life cycle management, the traditional project centered, one-time and short-term project management concept is no longer suitable for the needs of modern construction engineering. In the face of the "new" reform needs of the engineering industry, the training of new engineering management talents should focus on the new characteristics of projects such as interdisciplinary integration, new technology application, and life cycle management to formulate talent training objectives and set up corresponding curriculum systems.

3.2 Backward level of Teachers

The reform of China's engineering management originated from the Lubuge project management experience in the 1980s. The theoretical system of engineering management specialty does not come from the system formed by universities' own research and practice, but from the theoretical system formed by social practice, such as copying, digesting and absorbing, and then summarizing and improving. The updating of existing teachers' knowledge structure can not catch up with the speed of architectural technology innovation, The existing management theory knowledge level of colleges and universities is not in the leading stage, but in the parallel running or following running state. Therefore, the reform of the talent training mode of the traditional engineering management specialty should start from improving the existing teachers' ability and level, actively promote the integration of production and education, and timely update the teachers' knowledge structure.

3.3 Backward practice and production

Engineering management major is a practical and application-oriented major. Due to the consideration of safety and cost, enterprises and schools do not pay enough attention to practical courses. Without the implementation of substantive preferential policies, enterprises' enthusiasm for accepting students to participate in practice is not high. Although some colleges and universities have also signed internship agreements with relevant enterprises and established internship bases, most of them are formal and lack the mechanism of in-depth cooperation; There is no industry university research cooperation base with large construction enterprises in the region, and there is no coordinated education platform, so it is difficult to realize the complementarity and sharing of resources. There is still a big gap between the importance of engineering management practice courses in China and developed industrial countries. Taking Germany as an example, German application-oriented universities mainly focus on a large number of practical courses and case courses. The theory, practice and experiment of each course reach the level of 1:1:1. The universities with the highest practice hours in China are about 40%, Students' practical ability and practical application ability still need to be improved.

4. Exploration on the reform of talent training mode of Engineering Management Specialty

4.1 Reform of talent training objectives

1. Training factory director talents for industrial production

According to the design and construction characteristics of prefabricated buildings, the construction industry has ushered in an unprecedented disruptive revolution, and the construction technology has realized five major changes, namely, from manual to machinery, from construction site to factory, from pouring to general assembly, from migrant workers to industrial workers, from project as the core to the whole industrial chain coordination. Therefore, it is necessary to change the goal of talent training from the traditional senior engineering

project management talents with the main goal of training project managers to the factory director type talents for the industrial production of new buildings, who can plan and design, production and transportation of components and parts, construction and installation, and operation and maintenance management.

2. Cultivating interdisciplinary talents

The new type of construction industrialization is driven by a new generation of technology. It integrates the whole industry chain, value chain and innovation chain of the project by taking the whole life-cycle systematic integrated design and lean production and construction as the main means to realize the construction industrialization of high efficiency, high quality, low consumption and low emission of engineering construction. With the application of big data, Internet, artificial intelligence and BIM Technology in the construction industry, the talent training mode should be from a single engineering professional technical management talent to the integration of building digitization, informatization and virtualization, and cultivate interdisciplinary compound talents from interactive design, numerical control construction, virtual construction and intelligent construction.

3. Cultivate skilled talents with one specialty and multiple abilities

In the eyes of most students, the major of engineering management is regarded as the “essential oil” in the engineering industry, with many but not specialized courses and broad but not deep knowledge; Employers do not like engineering management students in ordinary undergraduate colleges. Students in this major are not as easy to cultivate and use as students in civil engineering and engineering cost, and students’ employment is in an awkward position. Therefore, in order to speed up the training mode of engineering management professionals and cultivate skilled management talents with one specialty and many abilities, it still needs to be hard to forge iron. In order to become senior management talents in the future, we should first start with skills and convince people with skills. In addition to mastering the corresponding theoretical knowledge and methods of management in school, students must master a number of management skills, such as building information model technology, BIM application technology, assembly deepening design technology, etc.

4.2 Reform of talent training mode

1. Exploration and practice of “sandwich” teaching mode

The reform of the “sandwich” teaching mode is boldly explored and practiced among senior students of engineering management major. After completing the general education courses and professional basic courses for freshmen and sophomores, the junior and senior students enter the “sandwich” talent training mode - practice base practice for 2 months and classroom teaching for 2 months. Students find problems, think about problems and try to solve problems in enterprise practice; In classroom teaching, teachers use theoretical knowledge to analyze and solve problems existing in enterprise management.

2. Actively promote the teaching mode of integration of production and education

Since the integration of production and education was proposed in the report of the 19th National Congress of the Communist Party of China, all vocational colleges have been actively exploring and promoting the integration mode of production and education, but as an application-oriented undergraduate university, it should take the lead in the integration of production and education. In addition to outputting students to practical teaching in production enterprises, the integration of production and education can also introduce enterprise tutors to classroom teaching in schools and put enterprise products into school production. For example, in the construction technology course of engineering management major, senior technicians of construction enterprises specializing in pile foundation, steel structure and decoration can be invited to lead their companies’ numerous practical cases into classroom teaching; For another example, the design unit can deliver part of the prefabricated in-depth design to the school teachers to lead the students to complete, and the enterprise will review and put forward the modification opinions, which can not only solve the problem of insufficient staff in the enterprise, but also provide practice opportunities for the school teachers and students.

3. Strengthen discipline competition and skill certificate training mode

Subject competition and skill certificate assessment are currently a talent training mode highly recommended by vocational colleges and application-oriented undergraduate colleges. Under this training mode, the school investment cost is low, the enthusiasm of teachers and students’ participation is high, and students’ sense of honor and gain is strong. However, to master the degree and boundary of discipline competitions and skill certificate training methods in Vocational Colleges and application-oriented undergraduate colleges, application-oriented undergraduate colleges should systematically and comprehensively sort out all discipline competitions and professional skills of the major according to the characteristics of the major. Taking the engineering management major as an example, the talent training mode should focus on the professional basic courses and broaden and extend the professional core course skills.

4. Actively guide the training mode of innovation and Entrepreneurship

With the change of construction technology, the traditional project management mode with the project as the core has gradually changed to the whole industry chain collaborative management mode, so there are more management contradictions and technical problems, which provides a broad space for students’ innovation and entrepreneurship. Under the premise of the integration of production and education, make full use of the current Internet and information technology, synchronize the remote meeting with the school classroom, participate in the on-site organization and management, listen to the site management meeting, jointly analyze the progress of project management and technical bottlenecks, and take the problem as the guidance, grasp a weak point of the whole industrial chain collaborative management for analysis and research, Guide students to carry out management and technological innovation.

In the era of “new engineering” construction, the development of engineering management is both an opportunity and a severe challenge. The reform of talent training mode should be guided by the talent training objectives. Colleges and universities, especially

Innovation and practice of Ideological and political education in adult education in the new era

Tongkui Zhao

Ningxia Polytechnic, Ningxia Open University, Yinchuan, Ningxia, 750004

Abstract: with the deepening of education reform, the ideological and political education work in adult education should be further optimized and innovated. Teachers should actively introduce new educational concepts and teaching methods, so as to better arouse students' interest, strengthen their understanding and application of the knowledge learned, and improve the effect of education. As an important part of adult education, ideological and political education can greatly enrich the content of adult education, broaden the path of education, and promote the more comprehensive development of students. In view of this, this paper will analyze the innovation and practice of Ideological and political education in adult education in the new era, and put forward some strategies for your reference.

Key words: new period; Adult education; Ideological and political education; Innovation and Practice Path

1. Analysis on the innovation and practical value of Ideological and political education in adult education in the new era

1.1 Help to cultivate students' correct values

In the context of the new era, when carrying out adult education, we can help students to re-examine their thinking and literacy by innovating and optimizing the form and content of Ideological and political education, so as to further develop their patriotism and national spirit. Moreover, in the ideological and political education work, students will be exposed to many cases and problems. In the process of

Application-oriented Undergraduate Colleges and universities, should explore a characteristic talent training mode in line with their own advantages according to the needs of local economic development, so that the trained students can truly meet the needs of local economic development and industrial technology reform.

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