



Research on the Way to Improve the Training Quality of Engineering Cost Professionals from the Perspective of Evaluation and Certification

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Abstract. The professional evaluation and certification index is the guide and benchmark of professional construction, which puts forward specific requirements for the training of professional talents. Based on the purpose of promoting construction by evaluation and reform by evaluation, this paper makes an in-depth analysis of the four types of evaluation and certification index systems of the engineering cost specialty, compares them from the aspects of certification units, scope of application, general standards, core concepts, cycles, etc., summarizes the similarities and differences of each index system, and finally gives relevant suggestions for improving the quality of talent training of the engineering cost specialty of Xi'an Translation University.

Keywords: Project cost · Engineering education · Professional certification

1 Preface

Professional evaluation and certification refers to the evaluation of the teaching quality of each specialty by the competent department of education or industry [1]. Each specialty compares the evaluation indicators, summarizes the experience, summarizes the deficiencies, and constantly carries out education reform to ensure that the students trained in the specialty can meet the needs of the industry development, promote the close relationship between education and the industry, enable graduates to quickly adapt to the industry development and job changes, and have a strong competitiveness, and finally achieve the purpose of promoting construction and reform through evaluation. This paper selects four evaluation and certification index systems related to project cost, carries out comparative analysis, and finds the similarities and differences of each index system. Then, taking the project cost specialty of Xi'an Translation University as an example, puts forward countermeasures to improve the quality of talent training.

2 Comparative Analysis of Evaluation and Certification Index Systems Related to Engineering Cost Majors

Based on the characteristics of the engineering cost specialty of Xi'an Fanyi University, this paper selects four evaluation and certification indicators, namely, the Engineering Education Certification Standards issued by the China Engineering Education Professional Certification Association (hereinafter referred to as CEEAA certification), the Engineering Management Professional Evaluation and Certification Standards issued by the Higher Education Engineering Management Professional Evaluation Committee of the Ministry of Housing and Urban-Rural Development (hereinafter referred to as the Ministry of Housing and Urban-Rural Development) The Standard for First-class Professional Construction of Shaanxi Ordinary Colleges and Universities (Undergraduate) issued by the Shaanxi Provincial Department of Education (hereinafter referred to as the Shaanxi Provincial Professional Certification) and the Royal Chartered Surveyor Certification issued by the Royal Institute of Chartered Surveyors in the UK (hereinafter referred to as RICS recognition).

The four types of evaluation and certification indicators will be compared in terms of certification unit, evaluation and certification cycle, scope of application, general standards, etc. The main differences are shown in Table 1.

2.1 Same Point

1. Focus on results. In the four types of evaluation and certification documents mentioned in the article, the training target is put at the top of the certification. The inter-national certification index system directly lists the capabilities that the quantity surveyor should have.
2. Student-centered. In addition to international certification, the other three categories of indicators refer to the teaching staff, but the requirements for teachers' achievements are not significant. More emphasis is on whether teachers have the ability to guide students. In the international certification, there is no mention of teacher achievement.
3. Emphasis on continuous improvement. The engineering certification at home and abroad has a certification period of 4–6 years [2]. Although the indicators of Shaanxi Province do not mention the validity period of the approved first-class specialty, they also emphasize the need to regularly check the professional construction.

2.2 Differences

1. Graduation requirements are different. There are 12 observation points in the graduation requirements of CEEAA and the Ministry of Housing and Urban-Rural Development, which are consistent in content. In Shaanxi Province's first-class professional standards, there are no indicators specifically for graduation requirements. RICS clearly proposes employment and development requirements for graduates, but its specific content differs from engineering education certification [3].

Table 1. List of basic information of four types of evaluation and certification indicators [owner-draw]

Name	CEEA	Ministry of Housing and Urban-Rural Development Certification	RICS	Shaanxi Provincial Professional Certification
Certification unit	China Engineering Education Professional Certification Association	Higher Education Engineering Management Professional Evaluation Committee of the Ministry of Housing and Urban-Rural Development	Royal Institute of Chartered Surveyors	Shaanxi Provincial Department of Education
Period	6 years	4 years	5 years	-
Scope of application	Full-time general four-year undergraduate major in ordinary colleges and universities with the goal of training engineers	Major in engineering management in colleges and universities	Major with engineering survey course	Undergraduate majors of colleges and universities in Shaanxi Province
Number of indicators	Level 1: 7, Level 2: 36	Level 1: 7, Level 2: 38	Level 1: 6, Level 2: 21	Level 1: 7, Level 2: 38

(continued)

Table 1. (continued)

Name	CEEA	Ministry of Housing and Urban-Rural Development Certification	RICS	Shaanxi Provincial Professional Certification
General standards	Students, training objectives, graduation requirements, continuous improvement, curriculum system, teaching staff, support conditions	Students, training objectives, graduation requirements, continuous improvement, curriculum system, teaching staff, support conditions	Admission conditions, teaching arrangements for the curriculum system, teaching environment, funding and other resources, quality management system, student assessment methods and methods, employment and development of graduates.	Source of students and employment, training objectives and programs, learning achievements, courses and textbooks, teaching staff, funds and conditions, industry-university-research cooperation, quality assurance and characteristics
Number of certified	1977	67	30	500
Number of certi-fied (Engineering cost)	0	5	1	2

Note: The certification data is as of December 31, 2022

2. The scope of application is different. The supplementary standard of engineering education certification does not include the engineering cost specialty. In Shaanxi Province's first-class professional certification indicators, there are no supplementary standards for the construction cost discipline.

3 Inspiration from the Evaluation and Certification of the Engineering Cost Specialty of XI'an Fanyi University

According to the current situation of the construction of the engineering cost specialty of Xi'an Fanyi University, it should be considered to determine the quality improvement path of the engineering cost specialty talent training of Xi'an Fanyi University based on the certification standards of the engineering management specialty issued by the Ministry of Construction, combined with the other three types of evaluation and certification indicators, according to the current industry development trend, as shown in Fig. 1.

3.1 Optimization of Training Objectives and Graduation Requirements

At present, BIM technology, Internet, big data, etc. have a great impact on engineering consultation, design, construction and operation and maintenance. The proportion of EPC and PPP projects in the market has increased. The implementation of the "new infrastructure" strategic plan puts forward higher requirements for the training of engineering cost professionals. The training objectives of the engineering cost major should reflect the pertinence and innovation of the major. In addition, according to the development trend of the industry, we can consider adding courses in electromechanical, subway, municipal and other directions to fill the cost talent gap under the new situation of the project.

3.2 Course System Optimization

Both theoretical courses and practical links are the main contents of professional evaluation and certification, which will directly affect the quality of talent training [4]. In addition to the basic humanities and social sciences, students majoring in engineering cost should also have the knowledge of engineering technology, cost management, economic and financial, legal contracts and information technology. These five aspects should be integrated in the course design and comprehensive training. In addition, in

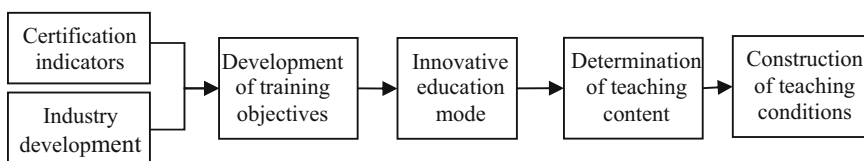


Fig. 1. The way to improve the training quality of engineering cost professionals in Xi'an Fanyi University [owner-draw]

combination with the development trend of whole-process cost management, prefabricated construction, EPC and PPP projects, we should offer cutting-edge courses. During the construction of the curriculum system, the knowledge and ability requirements of the cost engineer and consulting engineer profession should be considered, and the post requirements should be integrated into the teaching.

3.3 Perfect Teaching Conditions

The cultivation of application-oriented and innovative talents cannot be separated from a “double-qualified” teacher team with both moral integrity and ability, profound knowledge, reasonable structure and rich practical experience [5]. Both internal training and external guidance work together to regularly send teachers to the production line to participate in engineering practice, so that teachers can grasp new technologies, new methods and new knowledge in the industry in a timely manner, and actively explore professional and technical talents with rich practical experience. Secondly, the selection of teaching materials is also very important. We can jointly compile professional teaching materials through school-enterprise cooperation, integrate the vocational qualification examination outline and job requirements, strengthen the professionalism and practicality of the teaching materials, and introduce excellent engineering cases and enterprise management experience into the classroom. In addition, the construction of the practice base should also be paid attention to.

4 Conclusion

Professional evaluation and certification indicators are guidelines and benchmarks for professional construction, providing new ideas for the construction of a talent training system for engineering cost professionals. Of course, no matter what evaluation and certification indicator system is used as the basis, assisting in professional construction and teaching reform, and improving the quality of talent cultivation is the ultimate goal.

Fund Project. 2022 school-level education and teaching reform research project of Xi'an Fanyi University (Key projects): construction of talent training system for engineering cost specialty from the perspective of evaluation and certification (J22A04).

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