Construction of Practical Teaching System for Cultivating Innovative Talents

Li-Feng ZHANG¹,a, Shao-Yang WU²,b,*, and Shu-Lan LIU¹,c

¹School of Accounting, Wuhan Textile University, Wuhan, Hubei, China
²New energy Company, Central Southern China Electrical Power Design Institute, Wuhan, Hubei, China

a2008069@wtu.edu.cn, bxa.zlf@tom.com, c317934619@qq.com

*Corresponding author

Keywords: Engineering Cost, Practice Teaching, Talent Training.

Abstract. According to the "student centered" talent training objectives of engineering cost specialty, we explore and construct the practice teaching system of basic professional training, comprehensive training, cognition practice, graduation practice, course design and graduation design, focus on training students' basic knowledge, practical ability, innovation ability and comprehensive quality, innovate practice teaching ideas, practice teaching mode and practice teaching mechanism, introduce new concepts and new methods of practice teaching timely, to improve the quality of talent training of engineering cost specialty.

Introduction

To improve the quality of undergraduate training of engineering cost and enhance the comprehensive competitiveness of the specialty, the reform and innovation of practical teaching will be especially important. At present, the practice teaching system of the undergraduate training of professional engineering cost lack of a set of practice teaching system under engineering accreditation standards, which causes engineering cost graduates' low practice ability, weak engineering quality, lacking of innovation and communication skills.

Talent Training Objective

Led by the concept of "students centered" of talent training of engineering cost specialty, train the students to adapt to the needs of socialist modernization and all-round development of morality, intelligence, etc., gain open and systematic knowledge structure of engineering knowledge, the domestic and international engineering cost management, economics and related laws and regulations etc., achieve basic training as an engineer. Graduates with strong comprehensive quality and ability, practical ability, innovation ability, good personality and good ability to adapt to society will become high quality and compound talents engaged in project cost management, project budget, project cost audit work in the construction units, construction units, construction firms, engineering consulting institutions and other departments.

Construction of Practical Teaching System of Engineering Cost Specialty

Take the practice of our Academy of Engineering Cost Specialty Teaching as an example, in cooperation with enterprises, carrying out practice and training, we have set up a practice teaching system including professional basic training, comprehensive training, cognition practice and graduation practice, course design and graduation design to help students to improve their practical innovation ability and comprehensive quality.
Professional Basic Training

Professional basic training including engineering quantity calculation and the engineering cost document compilation, by the guidance of professional teachers, students are required to take the group as the unit, combined with engineering cases, so as to cultivate students' engineering calculation, budget preparation and bidding price control ability.

Comprehensive Training

Assessment of Professional Competence (APC) The training course is aimed at a comprehensive investigation of the theoretical knowledge and practical ability of the students. Therefore, APC testing is not only a practical training section of students’ academic education, but also a method used as a combat simulation for the graduates to show them their ability levels before they faced the market selection, meanwhile, it can constantly optimize the curriculum system.

Cognition Practice

"Summer social practice I" and "summer social practice II" which each recorded 1 credit and will be respectively, in the summer of second, the four semester by students in the school to complete independent are set up. Students are required to choose the time and place of social practice and practice during the summer vacation, and survey subjects should be selected from the school's "social practice survey subjects". With the completion of social practice, each student should submit a report with no less than 3000 words.

Graduation Practice

The graduation practice will be arranged at the end of the seventh semester, each student must develop practice program, familiar with enterprise status and responsibilities, complete the enterprise learning experience and write practice diary and report, get practice appraisal.

Table 1. Enterprise Learning Experience.

<table>
<thead>
<tr>
<th>Category</th>
<th>Content requirements and teaching methods</th>
<th>Time and credit requirements</th>
<th>Assessment and performance determination</th>
<th>Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduation practice</td>
<td>Content requirement: internship plan, familiar with enterprise status and responsibilities, understand the project cost consulting practice process, master cost consulting technology and basic methods, writing diary and internship internship report, internship Teaching methods: Learning in practice</td>
<td>4 weeks, 2 credits</td>
<td>Assessment methods: practice identification Results: excellent, good, medium, pass, fail</td>
<td>Practice program Practice report Practice appraisal</td>
</tr>
</tbody>
</table>

Course Design

Table 2. Course Design.

<table>
<thead>
<tr>
<th>No</th>
<th>Design name</th>
<th>Content and workload requirements</th>
<th>Credit requirement (practice section)</th>
<th>Assessment and performance determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project management II</td>
<td>Preparation of project schedule network plan, resource allocation and optimization method</td>
<td>0.5</td>
<td>Assessment methods: Examination Results: excellent, good, medium, pass, fail</td>
</tr>
<tr>
<td>2</td>
<td>Building structure and drawing</td>
<td>CAD drawing and model making of building structures (parts)</td>
<td>0.5</td>
<td>Assessment methods: Examination Results: excellent, good, medium, pass, fail</td>
</tr>
</tbody>
</table>
Graduation Design

The quality of practice section of graduation design directly affects the quality of personnel training. Considering long period of the graduation design, no enough attention of graduates under the pressure of employment, unfavorable factors of teachers because of subjective or objective reasons, in one way, the academy make requests of the graduation design (thesis): the thesis must be able to reflect theory or practice questions in the professional field and adhere to the problem oriented, in another way, the academy control the thesis through the four stages of selection stage, the opening stage, the draft stage and final draft stage of the process of the graduation thesis. At the same time, business or industry experts are invited to participate in the graduation design (thesis) guidance and assessment. Strive to improve the students' engineering consciousness, cooperation spirit and the ability to solve the practical problems by the application of the knowledge and innovation ability.

Innovative Measures of Practice Teaching under Engineering Education Accreditation Standards

Innovation of Practice Teaching

Lead by the talent training idea of "student-centered", the Academy improves the practice teaching input, we have purchased Brownsville 3D calculation, installation calculation and list valuation software, Glodon electronic bidding documentation tools, sand table simulation, remote network evaluation system and project trading management services platform software, Jinmawei project management audit and other related software for the practice teaching. The structure of teachers is optimized, enterprises and institutions are invited to provide teachers opportunities to practice, at the same time, experts and professional and technical personnel are hired from the practice base outside school to participate in the practice teaching. The construction of practice base is strengthened, agreement with United School construction project Hubei province quota management station, German Huajian International Engineering Technology Co., Ltd. and other units are signed, "training base" is established.
Innovation of Practice Teaching Mode

Considering the mode of teacher-based teaching and students' passive acceptance, the traditional teaching methods is changed, the lecture teaching of courses mainly include project management project, engineering cost case analysis is adopted, meanwhile, Online and offline interactive teaching with the open and inquiry type course -Engineering valuation, situational simulation teaching with the main courses of engineering project audit project bidding and contract management, computer simulation teaching with the main courses of the engineering cost information management, engineering calculation workshop and project cost document compilation, case discussion teaching with the main courses of the engineering quota principle and project contract management, APC level diagnosis and other forms the teaching mode are all adopted.

Innovation of Practice Teaching Mechanism

Going into construction units, construction units, construction firms, engineering consulting institutions and other enterprises to carry out position investigation, incorporating into tests of Cost engineer, class two constructor and project supervisor, Brownsville Cup National BIM contest and Glodon quantity calculation competition, we have set up the third party mechanism and summed up the core competence of engineering cost professional, and the core competence is divided into several elements so as practical teaching courses are set up contrapuntally. For example: engineering metrology, engineering quantity calculation workshop and the cost of the project documentation and other courses focus on training students' engineering budget preparation and audit skills; project bidding and contract management, contract management and project cost information management courses focus on training students' management ability; construction organization and construction technology, structure and drawing and project management courses focus on training students' comprehensive skills.

Summary

Engineering cost specialty owns the character of strong practicality, practice teaching section plays an important role to cultivate students' engineering quality. Improving the practice teaching system of engineering cost, consolidate and improve the students' ability of comprehensive application of theoretical knowledge, practical ability and innovation ability, and the knowledge to solve practical problems will ensure graduates competent their job related with management, consulting, research etc.

References


[3] YAN Ling; Research on Studio Practice Teaching Based on Competence Standards--Taking the Engineering Cost Major of Tianjin University of Technology as an Example[J]; Modern Educational Technology; 2014,(6):115-120.