Research on Practical Teaching Reform for Construction Cost Majors Under the Background of Application-oriented University

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ABSTRACT

Based on the demand of high-level technical talents under the background of application-oriented education transformation, this paper conducts a preliminary study on the reform of practical teaching in engineering cost specialty. By strengthening practical teaching in teaching processes, constructing interest groups for students, students participating in projects and research subjects, teams across grades participating in innovation activities, carrying out school-enterprise cooperation reforms and practices, the paper suggests that practical teaching reform of engineering cost specialty can enhance students’ theoretical application ability, improve students’ practical abilities, stimulate students’ innovation ability and ultimately achieve the goal of cultivating high-tech and applied talents.

INTRODUCTION

In 2014, the State Council proposed to guide a number of undergraduate colleges and universities to transform into applied technology types. The application-oriented universities mainly aim to cultivate advanced technical talents who can make theory and practice integrated closely, are oriented to service, production, construction and management and coordinate with all aspects of operation of the enterprises[1]. Applied undergraduate education not only focuses on the study and reserve of basic theoretical knowledge of students’ system, but also is an education of ability cultivation and training of engineers. It is an organic combination of academic education and vocational skills[2]. The engineering cost major is to cultivate applied engineering and technical personnel with the knowledge of engineering cost management and proficiency in compiling the construction cost documents for construction enterprises and construction budgeting companies.

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Based on the policy of applied undergraduate education and the characteristics of engineering cost specialty in applied undergraduate colleges and universities, this paper puts forward the framework of undergraduate training mode which highlights "professional, practical, good cooperation and entrepreneurship". That is to cultivate application-oriented talents who “can read drawings, calculate and understand management”. Under the background of application-oriented education, the paper conducts a preliminary exploration on how to cultivate students’ practical abilities in engineering cost specialty, and how to make innovations in the process of teaching practice.[3-4]

1. STRENGTHEN THE PRACTICAL TEACHING IN THE PROCESS OF TEACHING AND ENHANCE STUDENTS’ ABILITY TO APPLY THEORY

Practical ability is the core vocational skills for students majoring in engineering cost, which determines the degree of adaptation and speed where students embark on their jobs. To cultivate practical ability, the integration of internship and practical training and the establishment of practical system should also be strengthened. On the basis of four-year’s professional basic courses and the teaching arrangements for professional required courses, students carry out internships relevant to the major, basic courses designing, practical training on construction, decoration, installation and other professional courses, bidding simulation design and social practices on holidays or the eighth semester, which constructs the practical teaching system step by step from the four levels of basic practice courses, professional practice courses, comprehensive practice courses and innovative practice courses.

2. CONSTRUCTING INTEREST GROUPS FOR STUDENTS AND STUDENTS PARTICIPATING IN PROJECTS AND RESEARCH SUBJECTS TO IMPROVE THEIR PRACTICAL ABILITY

To cultivate innovative talents under the background of applied undergraduate education, students should be taught in accordance with their aptitude, and students must be interested in the subject and have better inspiration to create interest. In the light of relevant theoretical practice classes, building professional learning interest groups in real time will stimulate students’ enthusiasm in learning. For example, students majoring in engineering cost can form CAD Drafting Groups, Quanta Design and Computing Groups, Architectural Information Modeling (BIM) Drafting Software Groups, Engineering valuation software groups, building materials testing groups, hand-building model groups and the like. Meanwhile, on the basis of various interest groups, teachers give great instructions on the contents and methods of scientific research, encourage students to apply for innovation and entrepreneurship training programs and special research projects for college students and actively participate in competitions of skills for construction cost and bidding and so on, so that students take the initiative to check information, read relevant literature, master the operation of manual construction engineering measurement and calculating cost and calculation software. In the completion of a variety of training programs, researching subjects and competitions related to engineering cost specialty, students develop their knowledge innovation ability and the capacity for scientific research, thus achieving the purpose of cultivating applied talents.
3. ENCOURAGE STUDENTS TO PARTICIPATE IN INNOVATION ACTIVITIES IN TEAMS ACROSS GRADES AND STIMULATE STUDENTS’ INNOVATION CAPABILITY

Teachers can adopt a comprehensive and innovative practice training system which is tailored to students’ needs. Under such a system, students are inspired to work together cooperatively to carry out innovative activities through learning from each other. Relying on various national and provincial college student competitions, university students’ scientific research projects, school-level innovation projects and other training activities, students can make independent projects application. After being chosen, under the guidance of the instructors, the groups with 3-5 students can independently complete the selection of research project, make investigations, check and collect useful information and data and conduct innovative designs. At the same time, they engage in summarizing reports about the practice activities, applying for related patents, publishing papers and participating in various competitions.

For the lower grades students, the focus will be mainly on innovation and quality education. The purpose is to “cognitive”, that is, to enable students to understand innovative training activities, to have a strong interest in participating in innovative practice training activities, to develop students' ability to actively explore and find problems, to collect information, to consult literature, and to work in teams. At the beginning of the entrance of colleges and universities, students should be given first-grade introductory lectures on scientific and technological innovation. Award-winning students and mentors should be invited to introduce their participation in practices and innovation, share their experiences and provide guidance to the beginners.

The third-grade students who are closely integrated with professional learning can actually participate in innovation activities, deepen their understanding to their major and enhance their practical abilities, innovative abilities and team spirit. Under the teachers’ guidance, students’ completion of selecting topics, designs, studies, collaboration, summary and other aspects of work, on the one hand, cultivates their desire for innovation and sense of achievements; on the other hand, it develop their ability to apply professional knowledge into practice; what’s more, through practical training, the students have improved their creative thinking ability.

For juniors, seniors and other senior students, the main emphasis is on improving their innovation ability. Mainly, they carry out some integrated innovation practice training, and transform from the initial role of collaboration to the advanced role of designing and organizing. Students should be directly involved in the actual scientific research projects to develop their ability of comprehensively applying their professional knowledge and ability to use and solve problems independently.

4. CARRY OUT SCHOOL-ENTERPRISE COOPERATION, COOPERATION AMONG SCHOOLS AND COMBINATION OF PRODUCTION AND RESEARCH TO CULTIVATE STUDENTS’ COMPREHENSIVE ABILITIES

Through four years of undergraduate study and in-class practice, students majoring in engineering cost have already built a solid professional foundation. However, once they embark on the actual projects, their practical ability and ability to think
independently are slightly lacking. Worse still, they are confronted with problems on engineering economics, laws, regulations and management. Therefore, engineering cost specialty should be closely integrated with the regional economy and rely on related industries and enterprises to build a platform for the implementation of applied talents education[5].

First of all, colleges and universities can hire a group of leaders from some large and medium-sized construction enterprises and technical experts whose jobs are associated with the major. They can serve as senior teachers of the major, core curriculum teachers or graduation design instructors and regularly train in-service teachers in universities. At the same time, some key teachers should be sent to practice visiting to improve their software application skills, enhance the dynamic understanding of professional practice and improve the quality of classroom teaching.

Secondly, to cultivate students’ comprehensive manipulative ability, improve the quality of graduates’ employment, colleges and universities establish cooperative relations with relevant consulting firms, construction companies, testing companies and bidding centers and the like, and set up off-campus internship bases, so that students can be exposed to the actual project cases, master the latest application technology, possess basic engineering experience inside the college and be competent to the job requirements quickly after graduation.

CONCLUSIONS

Accordingly, internship practices in schools, diverse software teams based on relevant design calculations, researching projects and competitions can stimulate students’ interest in learning, consolidate their professional basic knowledge and improve the ability to innovate and apply. Furthermore, students’ practical abilities can be enhanced through participating in actual project cases from internship in enterprises. Thus, after graduation, they can quickly fit into their jobs and ultimately meet the needs of our country to develop applied talents.

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