

The Project Teaching to Build CDIO Engineering Ability Evaluation System

—Shenyang Technology College Computer Teaching Reform

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Abstracts: This paper has proposed built a viable engineering ability evaluation system based project teaching by establishing the most learning and social skills of CDIO engineering personnel training. Through introducing implicit hierarchical teaching ideas and taking o starting assessment way, each student can get the maximum level of improvement. Through the introducing of multi-assessment, multi-project multi-assessment-methods, it can promote multivariate assessment methods. It can be proved that the effect is excellent.

With the gradual deepening of outstanding engineers, the engineering ability cultivation of high-quality technology applied students is attracting more and more attention, and the reform of CDIO engineering training model has gradually become the focus of training model. Based on students' CDIO engineering ability objectives, focused on professional quality, expertise and innovation of professional engineers, directed on engineering designer, cored on ability cultivation ,carried on the project teaching, aimed at students' personality development, it has designed the core of ability cultivation and "project-driven" curriculum. On this basis, it has determined the capability of evaluation system.

1 Target of CDIO engineering Ability

It focuses on more vocational ability about students' CDIO engineering ability. In many professional abilities, it has mainly trained students' vocational key and vocational migration ability. It hopes student can quickly get new knowledge and ability to adapt to new jobs demand when labor contract changes or career changes[1,2].

1.1 Learning Ability

In the learning process, it has taken project-driven task-oriented manner. In every process of project learning and implementation, it assigns tasks on time. Students can get useful information on the internet and media resources, discuss in the same group student and different group students in order to cultivate the students' learning ability by getting the conclusion themselves. Moreover, in the process of project teaching implementation, there is some room for expansion in teaching. It can demand student complete more projects and expand their thinking and give reflected in the assessment and evaluation.

1.2 Social Ability

Here social capability covers professional ethics, interpersonal coordination and communication, conceive, design, implementation and operating in business and society, that is a person's basic quality to adapt to society. By project teaching, students do their designation, developing, operating and implement in groups. It will play the important roles of professional habits, follow the rules and work, some safety and environmental awareness.

2 the Condition of Construction CDIO Engineering Capabilities Evaluation System

2.1 the Demand of High-quality Technical Applications Cultivation

High-quality technical application graduates will enter directly society, to provide professional talents. Therefore, how to evaluate the students, not only in professional knowledge, but also in others. So, the evaluation of such student is objected in testing student' s professional ability(Mastering science technology and knowledge ability), studying ability(Learned studying and working), and society ability(Learned to be a person and get along with others),and not objected in " a paper decides all " .

2.2 the Demand of Project Teaching needs

Cultivating CDIO engineering ability must be oriented by employment, according to the project work process, background on the actual project, standard as cultivating ability, this executes in real or simulating training area. It can set curriculum on the basis of the work process in Shenyang Institute of Technology. It can choose different engineering backgrounds project on the basis of different work task in different stages of work process. In teaching it can carry by project implement, run through all kinds of knowledge in project, implementing integrated teaching in the way of theory and practice parallel. The teaching model is more prominent cultivation of students' abilities, more emphasis on combining with knowledge and ability. Clearly, testing methods and content in this teaching mode cannot be equated to usually theory course testing.

3 the Exploration of Students Engineering Ability in Engineering Project Evaluation

3.1 Assessment of Student Ability Beginners

The quality and level of students are not exactly same in any school, especially for the new university. There is the phenomenon of uneven quality of students. Therefore, testing cannot take same standard, different student take different standard, and the standard is the degree of progress, namely, the relative amount of advancing as the testing criteria. Student personal level before implementing project is a starting point for each student, namely beginners.

In the process of implementing project teaching, according student situation, student can choose different difficulty and demand projects. That is project teaching can in implicit hierarchical way. The different student of learning effect in pre-course or pre-project takes different standard in same course or project. For failing students, as long as the realization of the provisions basic functions, testing will pass. When adding a function, score will be adding 5-10 points. For good performance student, they need complete 80% requirements at least if they want to pass. They need finish additional projects if they want to get excellent.

3.2 Multiple Ways of Student Ability Testing

According to the target of CDIO engineering ability ,the testing of engineering project teaching is not only in professional ability but also in all domains, multi angles, different levels.

3.2.1 Examination by Multivariate

In the traditional examination, a paper is decisive. if a paper isn't decisive, mostly score can including practice exams, usually scores, quizzes ect.. But these items are determined by teacher, seldom introduces companion assessment, fewer introduces self-assessment. In the process of implementation items, it takes teacher assessment, companion assessment and self-assessment to combine. Let them play the role. In the project scores, teacher assessment is only 40% to 50%, including student usually score, reply score and report score. In addition, teacher need determine

every group condition according to the finished projects to give every group score. After completion of the project, student gets score on the basis of student self-evaluation, project contribution and teacher scores proportion.

3.2.2 Examination Multi Items

To complete a project need many related knowledge and abilities, in order to let students fully exercise ability in the engineering project implementation process, you must set some necessary projects and tasks, guide students to train and make assessment. For example, before the project implementation, it can give students assignment, students need find the necessary information by various ways to assess students' getting information ability; in the process of project implementation, students will take turns as team leader or sub-team leader, team manager can make project or sub project plans, determine members division of work, ensure project progress, coordinate and solve all kinds of problems during the implementation. Manager is responsible for entire project team. This way can assess students' organizational skills, ability to get along with others and coordination ability. Student trains in the standard of formal staff in training room. It can assess basic professional accomplishment.

3.2.3 Examination Multi Methods

Examination multi items bring about examination multi methods, and different engineering training projects and subprojects have different engineering training objectives. It leads to different assessment methods. Practical assessment approach is the best method for the assessment of professional ability. But purely professional skills assessment will be lack of knowledge. The best knowledge examination way is test or reply. Thus, in the organization of project teaching, you can use multi assessment methods according to requirements for comprehensive knowledge and ability.

3.3the Ability to Testing Student Must be a Full Process Assessment

The process of project teaching is a project training process actually, only to combine effectively the testing of training process and final result, that is the overall engineering practice level testing for students. For example evaluation system of "Database Principles and Applications" ,this is a three-level engineering project .

The Database Principles and Applications project mainly trained students'such ability as according to system requirements, analysis system data, create database, table and the other data objects. This project includes multi sub projects. Students must finish every project. Testing includes 2 stages: the first stage is daily training process, the second stage is actual operation and reply process after project ending. Synthesized testing score mainly includes above two items: accounting for 70% and 30%.

4 the Effect of Project Teaching Assessment System

Facts have proved that the project teaching is the most effective way of CDIO project ability, and assessment beginners, multiple assessment methods and the whole process comprehensive evaluation system can guarantee the implementation of the project teaching.

Assessment beginners, different students take different assessment standards. Poor students examine the most basic content. It can let poor students keep up the pace. Honors examine more extensive content. It can let honors exercise their self-learning ability.

Multiple assessment methods have changed the most students' learning way, put an end to the phenomenon of concentrated assault, students who has more flexible learning method and good operating ability can play to their strength.

Such assessment methods, students usually pay more attention to the gradual accumulation, from the training room sanitation to the maintenance of laboratory equipment and instruments, from class

time to employees' standards, from students' collaborative team to employees' professionalism, both in influence and pride of these contemporary, this part of student engineers dream is a little bit implementations.

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