



# Research and Practice of Output-Oriented Construction Engineering Cost Course Evaluation

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**Abstract.** Curriculum evaluation is the key proof document for the achievement of curriculum objectives, reasonable design of curriculum objectives, and whether they can be effectively improved. Guided by the cultivation of high-quality engineering cost applied talents, this paper is based on the requirements of output-oriented student training, from three aspects: the relevant contents of curriculum evaluation, curriculum evaluation methods and standards, curriculum evaluation improvement and suggestions. Systematic study of output-oriented cost curriculum evaluation methods to improve curriculum quality.

**Keywords:** Engineering cost · course evaluation · evaluation index · engineering certification

## 1 The Limitation of Traditional Engineering Cost Course Evaluation

The original evaluation method is basically the same, mainly based on the final summary evaluation, in which the course questions, roll call and homework account for 30%, the final examination paper results account for 50%, and the experimental results account for 20%. The problems in the original evaluation system are as follows:

The main results are as follows: (1) the final summing-up evaluation of the project cost makes the students usually do not work hard, do not pay attention to the classroom, and recite mainly one week or a few days before the examination. The characteristic of the course is not obvious, and the pertinence of the final exam is not strong [1].

(2) the traditional curriculum mainly focuses on knowledge, the function of engineering cost curriculum is not fully excavated, the examination of ability and quality is too little, the compilation or understanding of bidding documents of this unit is not enough, and the function of theory in practice is not recognized. (3) the characteristics of engineering cost courses and the courses integrating multi-disciplinary knowledge include not only the necessary knowledge of engineering cost principle, calculation of engineering quantity and valuation, data index and design, but also strong comprehensiveness and practicality. Traditional teaching methods are not suitable for the current practice and the rapid development of society [2].

## 2 Output-Oriented Evaluation Method of Engineering Cost Course

### 2.1 The Content of Curriculum Evaluation

Combined with the requirements of the core concept of output-oriented certification of civil engineering education major in Xijing University, it should be based on professional training programs and training objectives, and according to students' graduation requirements, combined with the teaching objectives of Building Engineering Metrology and valuation 2 (prefabricated Engineering cost) course, the research can reflect the evaluation content of students' learning achievements, among which the main objectives of the course are as follows [3]:

Goal 1: master the rules and methods of prefabricated engineering quantity calculation, be able to skillfully use professional knowledge and list division basis to accurately decompose construction projects into corresponding list items, and use appropriate calculation methods to accurately calculate itemized quantities and comprehensive unit prices, and have the skills of engineering measurement and valuation.

Goal 2: have the ability to make a reasonable and feasible list according to different types of assembly projects (concrete structure, steel structure, wood structure, etc.), flexibly apply the knowledge learned and combine with engineering practice, and improve the practical value of the list in order to achieve the purpose of combining theory with practice.

Goal 3: by consulting literature and practical investigation, we initially have the ability to study complex engineering problems such as rationality of project division of impact list, rigorous description of project characteristics and risk avoidance of management and control in the later stage. And put forward a reasonable and feasible solution, and have the ability to optimize the preparation of the plan.

Goal 4: understand the advanced modern building management models and cutting-edge technical means in related fields at home and abroad, adapt to the impact of technological changes on cost determination, and initially have the ability of independent learning and continuous learning.

### 2.2 Means and Standards of Curriculum Evaluation

Change the formation of the traditional simple evaluation model, the usual scores account for 30%: including course participation, classroom performance, 3 assignments and 3 quizzes; experimental scores account for 20%: including computer design and operation, quotation documents, etc.; final grades account for 50%: closed examination paper scores. It is shown in Table 1. At the same time, the evaluation Table 2 of the test table of the observation point is completed through the evaluation criteria [4].

**Table 1.** Engineering cost assessment and evaluation methods and performance evaluation

Serial	number course objective.	Usual score + experimental score + final grade	Full score
1	course objective 1	17 + 10 + 25	52
2	course objective 2	9 + 5 + 15	29
3	course objective 3	4 + 5 + 5	14
4	course objective 4	5	5

**Table 2.** Take homework 1 as an example (Homework 1)

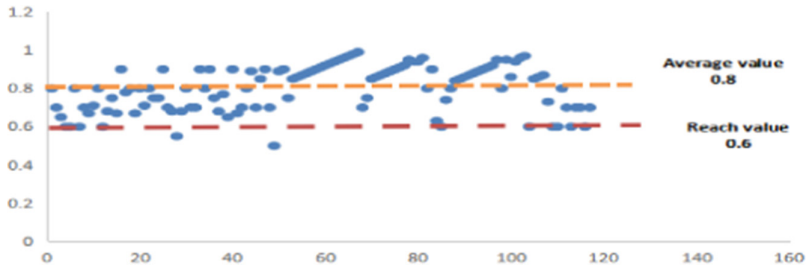
Evaluation criteria.			
Excellent	Good	Qualified	Unqualified
Master the rules and methods of engineering quantity calculation, be able to skillfully use professional knowledge and list division basis to accurately decompose construction projects into corresponding list items	Have a good grasp of the rules and methods of engineering quantity calculation, be able to skillfully use professional knowledge and list division basis to accurately decompose construction projects into corresponding list items	Basically master the rules and methods of engineering quantity calculation, be able to skillfully use professional knowledge and list division basis to accurately decompose construction projects into corresponding list items	Master the rules and methods of engineering quantity calculation, be able to use professional knowledge and list division basis to accurately decompose construction projects into corresponding list items is not good

### 3 Conclusion

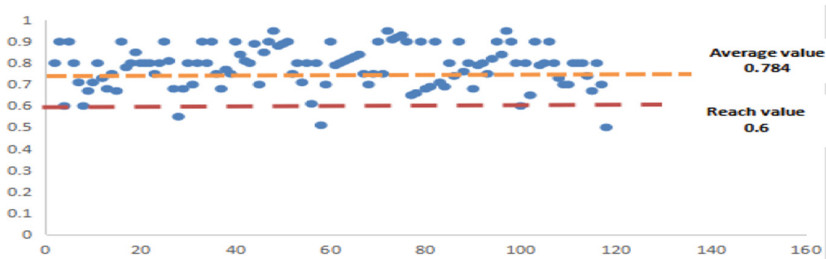
Course goal 1: examine the students’ rules and methods for the calculation of engineering quantity, use professional knowledge and list division basis to accurately decompose the construction project into the corresponding list items, and calculate the itemized project quantity and comprehensive unit price accurately [5]. The mastery of the skills of engineering measurement and valuation is 0.8, indicating that students have mastered most of the main related knowledge. As shown in Fig. 1.

Curriculum goal 2: to reflect the ability of students to compile lists for different types of projects, to use what they have learned combined with engineering practice, to put forward a reasonable and feasible inventory plan in line with engineering practice, and its degree of achievement is 0.784. It shows that the students have good practical ability. As shown in Fig. 2.

Curriculum goal 3: examine the rationality of the individual division in the project, the rigor of the description of the project characteristics, the ability to avoid risks and optimize the scheme in the later stage, and its achievement degree is 0.693, which is lower than the first two goals. It shows that students’ ability to further explore and



**Fig. 1.** Achievement of course goal 1

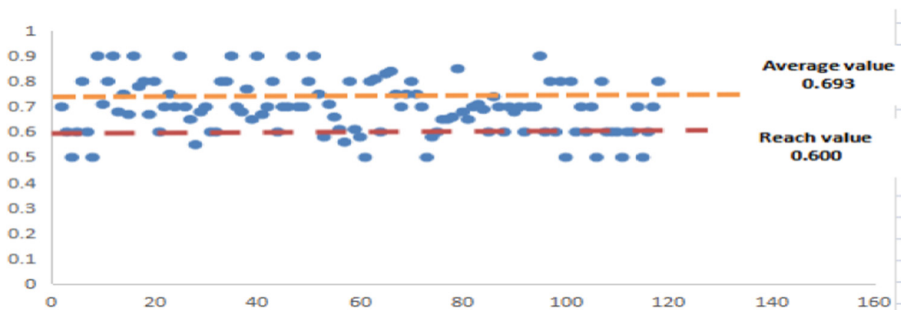


**Fig. 2.** Achievement of course goal 2

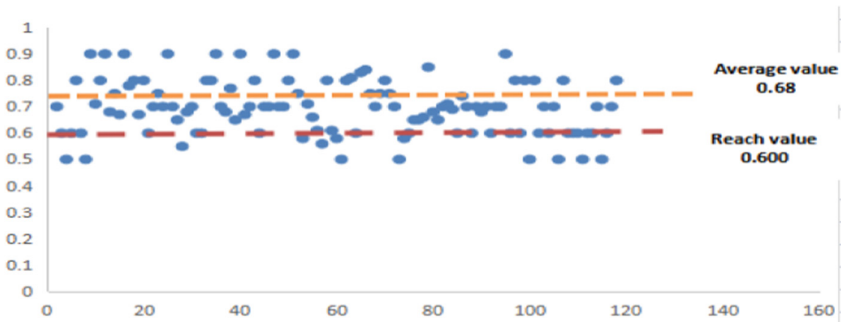
innovate and complete targeted cost compilation according to specific needs needs to be improved. As shown in Fig. 3.

Curriculum goal 4: to assess students’ advanced modern building management models and cutting-edge technical means in related fields at home and abroad, to adapt to the impact of technological changes on cost determination, and its evaluation value is the lowest, only 0.68, reflecting that students’ ability in this area needs to be improved. As shown in Fig. 4.

Improvement measures: The main contents are as follows:



**Fig. 3.** Achievement of course goal 3



**Fig. 4.** Achievement of course goal 4

- 1) increase the classroom exercises and after-school assignments of typical project building types and valuation models, and increase the students' extended study of modern valuation management mode.
- 2) strengthen the case analysis of assembly measurement and valuation of project building type and valuation mode.

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