

## Correspondence to the Thesis of PDCA on the Training Model of Application-Oriented Talents in Engineering Cost Specialty

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**Keywords:** PDCA; Talent Training Model; Applied Talent Training; Engineering Talents

**Abstract:** The major of engineering cost under higher vocational education is mainly to train senior technical and technical personnel who meet the needs of the socialist market economy and face engineering cost positions of construction units and design units. However, the quality evaluation system for the cultivation of engineering cost talents is a systematic project, and the quality evaluation system for the cultivation of talents based on the "PDCA" cycle principle is a practical evaluation method. This paper mainly studies the research on the training model of application-oriented talents in engineering cost specialty from the perspective of the corresponding paper PDCA. According to the social urgent need for engineering cost application-oriented talents, this paper focuses on the training goals and training styles of engineering cost-oriented application-oriented talents, and builds a talent training model of "PDCA cycle of integrated professional and enterprise + combination of learning and doing + top-level training". According to the survey statistics in this article, the final result is 3.8637. It can be seen that the overall professional competence level of the surveyed engineering cost majors is generally "good". Improving the quality of higher vocational education personnel training, cultivating a group of front-line workers with a solid theoretical foundation and strong practical ability, and improving the professional ethics of workers are of far-reaching significance for the progress of national economic and social development.

### 1. Introduction

With the rapid development of the national economy, from the perspective of the whole country, the construction industry is an important material production sector of the national economy. It has a close relationship with the development of the entire national economy and the improvement of people's lives. For the engineering cost major, it is necessary to master design, structure, technology, and materials and market information and dynamics; have a general understanding of the overall environment and background of the project, and then apply budget expertise to have overall control over the engineering cost. The construction cost determination is no longer a traditional set of quotas and fee collection methods, but based on the nationally specified resource consumption standards, the construction company will prepare the quotas and make independent quotations, which will increase the difficulty in preparing the construction cost documents. We need a group of talents who not only have a solid theoretical foundation, but also have comprehensive ability to analyze and solve problems. This is exactly the training goal of vocational education in China, and it also reflects the strong practicality of vocational education in the engineering cost specialty. In order to meet the skills requirements of vocational positions, vocational education is required to make corresponding adjustments in curriculum settings and teaching methods in order to achieve the above training goals, meet the needs of economic and social development, and the needs of the talent market.

Engineering cost is a comprehensive discipline with a large span that combines management, economics, civil engineering theory, and computer science[1-2]. The engineering cost major under higher vocational education is mainly to train the engineering cost positions of construction units, design units, bidding agents, engineering consulting or engineering cost management, and to engage in design budget estimates, construction drawing budgets, and engineering quantities. Senior technical and technical talents who prepare inventory, bidding and quotation, and project

settlement. How to evaluate the quality of engineering cost professionals in higher vocational education has always been worthy of discussion in this vocational education[3-4]. This article analyzes and evaluates the quality evaluation of engineering cost professionals through the PDCA cycle principle.

PDCA is the first letter of the English words Plan, Do, Check, and Action. The PDCA cycle is a working method for implementing total quality management. It was first proposed by Dr. Deming, an American quality management expert. It is a scientific procedure to be followed by total quality management. In the five years since the engineering cost major of Chongqing University of Arts and Sciences was established, it has been exploring a new model for training applied talents. This article is to analyze and study the application talent training model for engineering cost majors through the PDCA cycle.

## **2. Method**

### **2.1 PDCA**

The PDCA cycle, also known as the Deming cycle, is a general model in management, which was later improved and applied to the process of continuously improving product quality. It is a scientific procedure to be followed by total quality management[5]. The four letters in the PDCA cycle, P, D, C, and A are the first letters of the four English words: P is Plan, which means plan, including the determination of policies and goals, and the formulation of activity plans; D is Do, which means For execution, execution is the specific operation to achieve the contents of the plan; C is Check, which means to check, it is to summarize the results of the execution plan, to distinguish between what was done incorrectly and what was done wrong or wrong. Clarify the effect and find out the problem; A, that is Action, means action or processing, and processing the results of the summary inspection[6-7]. The PDCA quality management method is to continuously cycle according to the process of planning, execution, inspection, and processing. Each cycle can solve the problems existing at this stage, and find new problems through inspection, and then enter the next cycle. This method is a process of continuously solving problems and finding problems, and through this method, the quality level is continuously improved[8].

### **2.2 Pdca Cycle Theory Guarantees Continuous Improvement of Talent Training Programs**

#### **(1) Week after week**

The four processes of the PDCA cycle are not completed once after running, but are carried out repeatedly. One cycle is over, and some of the problems have been solved. There may still be problems that are not solved, or new problems occur before the next PD-CA cycle. In the process of cultivating talents, it is continuously carried out in this order, solving existing problems in the process of talent cultivation, discovering new problems, and entering new cycles with new problems[9-10].

#### **(2) Large ring and small ring**

In the process of PDCA implementation, there is a phenomenon of large rings and small rings. The school is a large ring in the cycle, and the departments, teaching and research departments, and various departments are small rings. They form a large ring set of small rings, a loop-by-loop loop system. The large PD-CA cycle is the basis of the small PDCA cycle, and the small PDCA cycle is the implementation and guarantee of the large PDCA cycle. The various subsystems of the school are organically linked through circulation, and they cooperate with each other and promote each other[11-12].

## **3. Experiment**

The quality standard of talent training in higher vocational colleges is a multi-dimensional and dynamic category. Its talent training is restricted by various factors such as social needs, teaching facilities, learning environment, teacher quality, and student foundation. The quality standards for talent training are based on what the academic community has not clearly defined, and relevant

departments have not effectively verified the quality standards for talent training in higher vocational education. Therefore, to this day, experts and scholars have objections to the connotation of the quality standards for vocational education.

As a means of scientific understanding and a mode of thinking, mode is an intermediary between theory and practice, and has the dual value of theory and guidance in training practice. Because the connotation of the quality standards of talent cultivation in higher vocational colleges is controversial, the model of quality standards for talent cultivation in higher vocational colleges has not yet formed a unified paradigm and cannot be applied to all higher vocational colleges and professions.

This article uses a university as an example to conduct a sample survey of engineering cost graduates. Some engineering cost majors have recruited 4,230 undergraduate engineering cost undergraduates since 2009. The earliest graduates to work in 2013 have been working for almost 6 years, and the latest graduates to work in 2018 have just joined the work for less than a year.

These graduates have worked in various parts of the country and have accumulated considerable work experience. Some have passed the qualification examinations of registered cost engineers, some have become the young technical backbone of the unit, and of course, some are still at the stage of graduation. Use the following different forms of statistics to understand the Graduate Employment Division.

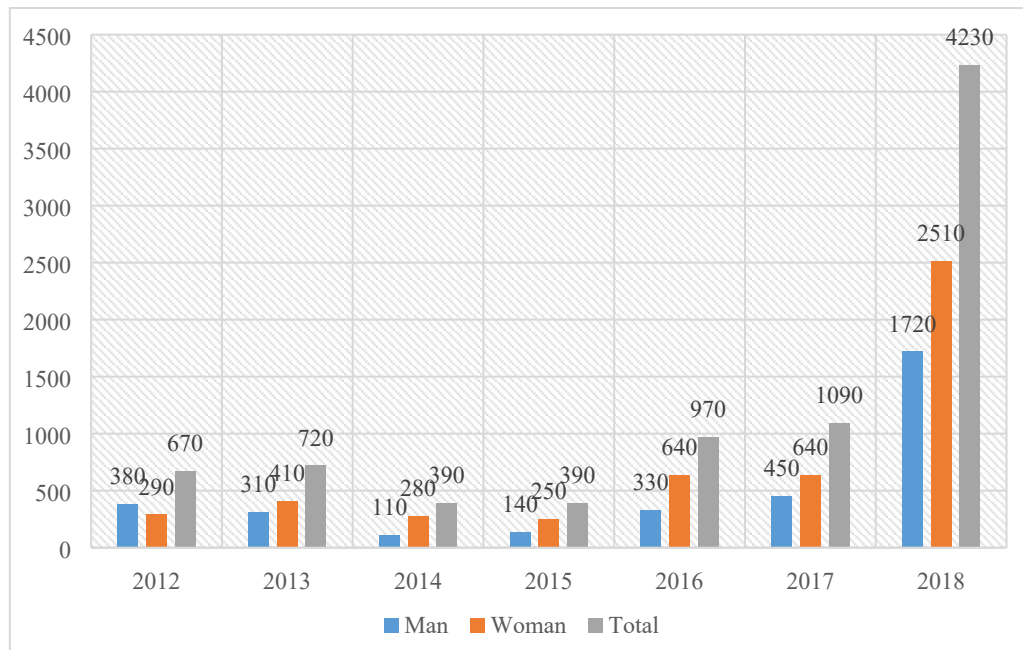
## 4. Discuss

### 4.1 Analysis of Research Objectives

As shown in Table 1 and Figure 1, a university's engineering cost major from the first graduate in 2009 to six in 2018, a total of 4,230 graduates, including 1,720 boys and 2,510 girls. About 75% of the graduates are engaged in professional and technical work in the construction unit. Among them, traditional employment units include China's building system, China Communications System, and China Railway System. Party A's real estate company accounts for about 7%, and further studies at home and abroad account for nearly 20%. According to the different industries and different development directions, according to the statistics above, the proportion of graduates' employment, we have issued a total of 350 questionnaires, all questionnaires are sent by email, the proportion of the sending process in the order of graduation, graduation The longer the coverage of the questionnaire, the greater the reference value of obtaining the questionnaire. A total of 213 valid questionnaires were collected over a period of one month. The survey results range from basic abilities (mathematics, English, computer), core abilities (engineering measurement, several, construction technology, management knowledge, legal related knowledge), development abilities (continuing learning ability, team spirit, engineering and technical ability, development Capacity) for three dimensions.

**Table 1.** Statistics of student numbers

	2012	2013	2014	2015	2016	2017	2018	Percentage(%)
Man	380	310	110	140	330	450	1720	40.7
Woman	290	410	280	250	640	640	2510	59.3
Total	670	720	390	390	970	1090	4230	100



**Figure 1.** Statistics of student numbers

The results show that most of the graduates have given positive opinions on the training received and the formation of their own abilities during school. They believe that the school training plan is set reasonably during the school, the learning process yields a lot, and the ability system is well formed. In particular, the longer the graduates, the better the evaluation of the school, indicating that the school's training in the direction of student development ability is effective. In the evaluation of employers, the graduates of Chang'an University are well evaluated in the field of engineering cost specialty. They believe that relatively speaking, university students have a better ability to get started, and after a short time of training, they can independently undertake a certain part of the work. And I affirmed the comprehensive ability of the students, and believed that the students performed well in the comprehensive affairs ability, had a hardworking spirit, worked hard and complained, and focused on work. Having a hardworking spirit and proficient business ability, and having the ability to develop at the same time is an overall evaluation of the students of Chang'an University. Suggestions for students 'professional foreign language needs to be strengthened. The increase of foreign projects in state-owned enterprises requires talents who understand foreign languages to cope. Students' computer professional software should be improved, and I hope the school can make more efforts in the practice teaching link.

## **4.2 Multi-Dimensional Analysis of Quality Assurance System for Applied Talent Training**

### **(1) Subject of responsibility**

Responsible subjects are the stakeholders related to the application-oriented talent training system, including school leaders, school functional departments, department management, students, teachers, external groups, parents, and employers. The above are the responsible subjects and should be involved in the process of training applied talents. This group of stakeholders should be a cooperative and cooperative relationship, and strive to achieve mutual trust and shared responsibilities.

### **(2) Evaluation and monitoring methods**

Quality monitoring of talent cultivation in application-oriented universities includes: routine management of teaching, monitoring of teachers' teaching processes, monitoring of students' learning processes, process control of the implementation of teaching plans, teaching style and learning style construction mechanisms. The assessment and monitoring methods should be normalized, involving all employees and managing the entire process, which can include self-supervision, regular supervision and external supervision. Self-monitoring refers to self-examination at the professional level. Regular monitoring refers to school-wide assessments at

the school level. External supervision refers to the supervision and evaluation of teaching quality by the responsible subjects outside the school (graduates, parents, employers, industry experts, etc.).

### (3 Evaluation and incentive methods)

The learning outcomes of college students and their ability to practice innovation require fair evaluation and timely motivation. The evaluation method of colleges and universities should be dynamic evaluation, and evaluate the comprehensive quality of students from various aspects. In terms of incentives, it is important to give college students both material and spiritual incentives. Under the current circumstances, it is particularly important to give students opportunities to participate in school quality management. Incentives to teachers can be rewarded from teaching, scientific research, and teacher-student teams; to improve and improve from the teacher's perspective in terms of teacher assessment, professional title evaluation, and respect for teachers is the most effective way of motivating teachers.

In summary, the responsible body, quality standards, evaluation and monitoring methods, information collection channels, evaluation and incentive methods are the constituent elements of the quality assurance system. These constituent elements follow the four elements of plan-implementation-inspection-action (PDCA). The cyclical relationship emphasizes the participation of all stakeholders and the management of the entire link, and collaboratively guarantees high-performance and high-performance performance of teaching and educational achievements and talent training quality in applied universities.

## 5. Conclusion

The PDCA cycle is a scientific management method. Applying it to the training process of engineering cost professionals can make the training of talents keep pace with the times and always keep pace with regional economic and industry development. The school is a large system. In the process of implementation, both the large ring and the small ring must be operated. Each teacher applies the PDCA cycle theory in the teaching process to continuously improve the teaching effect; each teaching and research department must timely respond to the social demand for talent. Adjust talent training programs; as the biggest link, schools need to set clear school goals in conjunction with national policies. Through the continuous circulation of the large ring and small ring, the continuous improvement of talent training is guaranteed.

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