

# Practical Teaching Reforms of Engineering Management Major for Applied Talents

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**Abstract:** This paper is an overview of the practical teaching system of engineering management, applied training direction, and the current situation of practical teaching practice in engineering management. This paper mainly discusses the new ideas of practical teaching reforms in engineering management courses, and it is hoped that the contents in this paper can provide some help in improving practical teaching of engineering management teachers.

**Keywords:** *applied talents; engineering management; practical teaching reform*

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## 0 Introduction

In the current society, all kinds of enterprises pay more attention to the practical ability of talents in the recruitment. The main direction of talents training in colleges and universities is to cultivate high-quality applied talents that meet the needs of social and economic development and construction. However, in the actual practical teaching, there are problems such as the assignment of the class and the unreasonable curriculum design in the practice teaching, which affects the training effect of the applied talents. Therefore, through the systematic research and analysis of the practical teaching of engineering management, on the basis of the reform of practical teaching, the innovation of practical teaching reform is carried out according to the content and characteristics and problems existing in the course of engineering management.

## 1 Overview of the practical teaching system of engineering management

### 1.1 Teaching system structure

The teaching system of an engineering management major is relatively clear, with close links between the different modules. The author has summarized the teaching system structure of the engineering management major in Table 1.

From the contents of Table 1, we can clearly see that the engineering management professional teaching system structure is mainly divided into three levels to cultivate students' professional knowledge and practical application skills. The contents of the training in the three parts of the teaching structure are interrelated with continuous progression. The development of basic skills is the basis of engineering management professional learning. Professional skills development paves the way for students' practical application skills, and the cultivation of comprehensive skills is the extension of basic and professional skills<sup>[1]</sup>. These are the key points for developing skilled applied talents or graduates.

### 1.2 Elements of the teaching system

Through the study of engineering management courses, we can find that the teaching elements of engineering management can be divided into three types of modules. The practical teaching objectives of these three types of training modules are shown in Table 2.

The arrangement and design of different teaching elements for the modules as shown in Table 2 ensure that students can achieve basic skills through progressive learning, which includes the integration

**Table 1: Engineering management professional teaching system**

Teaching core	Project management
Employment field	Construction and transportation industry
Teaching structure	Basic skills training, professional skills training, comprehensive skills training
Main modules of teaching	Focused practice, social practice, practical introduction, course design, graduation internship, graduation project

**Table 2: Engineering management professional teaching system**

Teaching architecture elements	Practical teaching training goal
Basic skills development module	Develop students basic operational skills, entry level professional preliminary practical ability
Professional skills training module	Develop professional technology application capabilities, operational ability, improve professional skills, and social integration
Comprehensive skills training module	Develop the necessary comprehensive experience in practical work, operational and innovative comprehensive capabilities

of professional skills and social practice application skills. This is of great significance for cultivating socially competitive application-oriented engineering management talents.

## 2 The application of talent training direction

The cultivation of applied talents is a common training target for colleges and universities. For engineering management majors, this requires a comprehensive discipline with strong comprehensive ability. The cultivation of applied talents requires these individuals to be able to apply theoretical knowledge, master practical skills, meet the needs of social development, and acquire professional innovative and inquisitive abilities<sup>[2]</sup>. These are the main points to training in application-oriented talent development. In the past, for a long period of time, China was in the era of planned economy, and during this era, the cultivation of talents is based on the needs of the country with a “unified distribution” principle. As a result, courses offered by colleges and universities are not suitably oriented for the requirements of the job market. In the past 10 years, this cultivation method has gradually changed to become more market orientated. Employment has become the goal in training methods for applied talents. The cultivation of applied talents provides an important talent base for the local engineering management field<sup>[3]</sup>. In recent years, with the development of China’s economy and the advancement of information technology, the demand for engineering management professionals in the society is gradually increasing. Hence, in addition to colleges and universities, major vocational colleges are also offering engineering

management majors. This educational trend is in line with the needs and demand for engineering management professionals in the society and job market, as well as the needs of students and parents. At present, many colleges and universities are offering the practical teaching of engineering management professionals training as they are aware of the importance of cultivating applied talents. In these courses, most of them place great importance to the combination of theory and practical teaching. The necessary theoretical knowledge, practical skills, innovativeness, and ability training of engineering management majors are the main contents of the current colleges and universities to develop talents in engineering management<sup>[4]</sup>. Based on the training provided by the course contents, the engineering management graduates can adapt to the work demands of different enterprises more quickly after graduation and be able to enter the front line of production management, providing technical and innovation support for engineering management construction in China. This is an important direction of talent training for professional application.

## 3 The status quo of practical teaching in engineering management

In the current society, corporations pay more attention to the practical ability of applicants in the recruitment of talents. Developing high-quality applied talents that meet the needs of social and economic development and construction is the main direction of current college courses in terms of personnel training. However, in the actual practical teaching, the following problems exist, which affect the training of applied talents.

### 3.1 The assignment of class hours and the design of curriculum in practical teaching are unreasonable

The core goals of engineering management students' development are to cultivate students' practical engineering management abilities, promote better and faster students' integration into the workforce after graduation, and provide services for engineering construction in China. Therefore, the engineering management profession has high requirements for a good foundation in practical experience, and it requires students to have strong hands-on abilities and creativity<sup>[5]</sup>. However, practical teaching has higher requirements for funds. In the actual college or university courses, due to the lack of teaching funds, practical training sites, and limited enterprises, the proportion of theoretical teaching and practical teaching time allocation is not reasonable. Hence, it is difficult for students to get more hands-on practical opportunities, which leads to inadequate theory and practical abilities in students. At the same time, teachers lack innovation in curriculum design. Many teachers use traditional teaching methods and pay more attention to the teaching of theoretical knowledge, ignoring the importance of practical training in students. The teachers' ability to cultivate of students' innovative spirit and abilities is lacking in the curriculum design of practical teaching.

### 3.2 Lack of necessary supervision mechanism in practical teaching

The effectiveness in practical teaching and the assessment of students' learning level are important to guarantee the quality of practical teaching<sup>[6]</sup>. Colleges and universities with engineering management professional practical teaching need to encourage students to enter corporations or practice bases for practical learning and hands-on experience. However, in this part of the practical teaching process, there is no systematic assessment and supervision method for the achievement of students' practical learning objectives

and the assessment of students' learning. Moreover, as many teachers do not design sufficient practical preparation courses in practical teaching, students have insufficient theoretical knowledge and practical training direction before entering the corporations for their practicals or internships. Students may not be able to link the engineering management theory knowledge from the classrooms with the real work experience in the corporations or practice bases. They will not be able to truly grasp the skills that need to be mastered in practical teaching.

### 3.3 The difficulty of internship caused by the lack of venues in practical teaching

With the expansion or growth of colleges and universities, the number of engineering management students has gradually increased. As a highly practical profession, the requirement of practical courses or experience is also relatively high in the training of applied talents<sup>[7]</sup>. However, due to the lack of teaching funds, practice bases, and available internships in corporations or enterprises, it is difficult for students to apply their practical skills, and thus the practical teaching content cannot be completed very well. Many companies have workplace safety concerns; therefore, there is reluctance to hire student interns. Even if the universities or colleges can find a company which is willing to allow student internships, these companies tend to arrange for students to carry out some marginalized and unimportant tasks, such as looking at drawings and organizing materials. This makes it difficult for students to be really integrated into the project management work, as the students are always in isolation and relatively unfamiliar with the actual project management work site. This kind of practical teaching is tantamount to talking on paper and cannot achieve the fundamental purpose of practical teaching. The author has summarized the causes of various problems in the current practical teaching of engineering management in Table 3.

**Table 3: Teaching practice problems and causes of engineering management**

Problems in practical teaching	Cause of problems
Unreasonable curriculum and class design	The teaching ability of the teaching team needs to be improved, and the teaching methods need to be improved.
Lack of teaching supervision mechanism	Unclear teaching objectives and lack of assessment mechanism
Student internship is difficult	Lack of professional practice and cooperative corporates or practice platforms

## **4 Practical teaching reform method of engineering management major for applied talents**

Based on the above research and analysis of the practical teaching of engineering management, the innovative teaching reforms can be carried out according to the content and characteristics of the engineering management course and the problems existing in the current practical teaching.

### **4.1 Strengthening the design of practical teaching courses and the improvement of the ability of teachers**

In view of the unreasonable design of practical teaching courses and class hours, it is necessary to optimize and enhance the teaching methods and overall teaching ability of the teaching staff in the reform<sup>[8]</sup>. Teachers should pay attention to the proportion of practical teaching content in curriculum design and class schedule and, at the same time, improve their professional skills and practical teaching ability. For example, teachers can incorporate and use real-life engineering projects as teaching examples in the teaching of professional courses such as architectural drawing, engineering valuation, bidding and contracting, and contract management. This can improve the students' understanding of theoretical knowledge in actual engineering projects, hence gaining a certain understanding of the actual practical experience.

In addition, in practical teaching, teachers should also strive to encourage the universities or colleges to arrange for students to enter the workforce or companies for internships. Theoretical knowledge is best combined with innovative practical courses and professional internships<sup>[9]</sup>. In the arrangement of students' graduation projects, teachers should also arrange for the cooperation of students and companies so that the project will be more practical.

### **4.2 Clarify practical teaching objectives and strengthen practical supervision and assessment**

Reforms addressing the problem of unclear practical teaching objectives and supervision mechanism should focus on giving students' clear, practical learning goals. Before students enter the companies, enterprise, or

practice base for their practical internship, teachers need first to carry out the 1–2 practical pilot course according to the syllabus and teaching objectives so that students have a clear understanding of the theoretical knowledge and be able to apply them in their practical training. Second, it is necessary to have clear strategies and systems for student assessment and supervision in practicals, and each component needs to have assessment of practical learning outcomes. The supervision and assessment of practical teaching should be the driving force in promoting the close integration of students' theoretical knowledge and practical abilities. This allows for students to successfully apply their theoretical knowledge in actual practice. In addition, linking the practical teaching content with the main vocational qualification examination content in the industry is also one of the ways to strengthen the effective supervision and assessment of practical teaching. This can encourage the students to take the initiative to apply for vocational qualification which helps students to meet the requirements of application-oriented talent training and gain more advantages in future employment.

### **4.3 Establishment of an innovation practice base for engineering management**

In view of the difficulties encountered in students' practical teaching and the lack of practical venues, the school can collaborate with the corporations or companies for mutually beneficial internships or practical training for students<sup>[10]</sup>. Using corporations or companies in the society as the students' practical teaching base, students can have the opportunity to integrate into the actual workforce and acquire practical experience. In addition, universities and colleges can also improve and enhance practical teaching by establishing innovative practical teaching bases. In the establishment of the practical teaching base, it is necessary to pay attention to the connection between the teaching base and the actual practical needs of the students. In the design and construction of the teaching base, attention should be paid to combine the theoretical content with the actual practical of the students and in the management and utilization of the teaching base. The practical teaching base should also have some social and economic benefits and provide certain funds and support for the practical teaching of engineering management majors. The establishment of a practical teaching base

should serve its true function in practical teaching and not too format based. Instead, it should enable students to truly grow into engineering management talents with social application-oriented capabilities through the learning process at the teaching base.

## 5 Conclusion

In summary, the engineering management profession and cultivating applied talents in this field are particularly important in the rapid development of China's economy. It is essential to closely link the school's practical teaching with the needs of social development and the needs of corporate talents. In the practical teaching reform, college teachers should continuously strive to strengthen the exploration of new ideas and methods for the training of talents in engineering management.

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