

# Discussion on Teaching Reform of Engineering Cost Major in Higher Vocational Colleges

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**Abstract:** As a comprehensive subject, the engineering cost major in higher vocational colleges pays attention to the innovative reform of teaching. This paper starts with the job demand of engineering cost, analyzes the vocational ability orientation of the engineering cost major in higher vocational colleges, discusses the teaching status of the engineering cost major based on the current situation, and then expounds on the ways and practices of the teaching reform of the major in higher vocational colleges given the existing problems in the teaching of the engineering cost major. The teaching reform of engineering cost majors is one of the topics that many teachers are carrying out, and it is an effective way to promote the teaching progress of the major in higher vocational colleges.

**Keywords:** Higher vocational school; Engineering cost major; Practice teaching system

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## 1. Introduction

In recent years, the new vocational education reform has begun to develop towards the mode of cultivating professional talents with vocational ability as the core. In this mode of vocational competency-based training, vocational skills and abilities are the basic teaching units, and the final teaching evaluation is no longer based on the evaluation of grades, but on the proficiency of students in certain vocational skills <sup>[1,2]</sup>. The competency-based training mode takes the ability requirements of the society for professional talents as the standard, and focuses on improving students' skilled use of vocational skills, basic cognition of theoretical knowledge, and responsibility awareness of work attitude, which can not only meet the training objectives of vocational and technical talents stipulated by the state, but also lay the ability foundation for vocational and technical talents to go out of the society <sup>[3,4]</sup>.

Curriculum teaching reform has also become the focus engineering cost specialty in higher vocational colleges, especially based on diversified teaching mode, which is the basis for achieving good teaching results <sup>[5,6]</sup>. Under the tide of its teaching reform, it is the whole idea of teaching reform to carry on the all-around teaching orientation according to the talent training mechanism in the market demand <sup>[7,8]</sup>. Moreover, the key point of

the reform lies in the deepening of its teaching, to better adapt to the needs of the reform of engineering cost specialty in higher vocational colleges<sup>[9,10]</sup>. Only by carrying out teaching reform we can provide an impetus for the progress of engineering cost teaching and promote the development of engineering cost majors in higher vocational colleges<sup>[11,12]</sup>.

## **2. Vocational ability analysis of engineering cost positions**

The demand for engineering cost professionals is mainly concentrated in construction units, construction enterprises, engineering cost consulting firms, engineering supervision companies, and real estate development companies. Each type of organization has different requirements for the skills of engineering cost staff. Generally, professionals in this field should possess comprehensive knowledge of engineering and social sciences, such as economic management, along with extensive practical experience. Engineering cost professionals should be capable of formulating construction investment plans, preparing investment estimates, developing construction drawing budgets, drafting bidding documents, managing project claims, conducting project settlements and reviews, and performing technical and economic analyses. They should also be proficient in project cost information management. As the economy and technology continue to advance, the scope of the construction cost profession is expanding into other sectors. This growth not only increases employment opportunities but also broadens the responsibilities and skill requirements for these professionals. Consequently, there are higher expectations regarding the professional expertise and comprehensive qualities of those working in this field.

## **3. Vocational ability focus on the engineering cost major at higher vocational colleges**

From the perspective of vocational abilities required for engineering cost positions, the engineering cost major in higher vocational colleges should focus on the all-round development of students. Graduates should possess a high level of comprehensive quality, developing morally, intellectually, and physically to meet the demands of frontline engineering cost management. They should have strong professional ethics and be capable of performing as cost professionals. This includes being skilled in construction quantity calculation, pricing, and cost management under both quota and list pricing models, making them high-quality application-oriented talents.

Teachers play a crucial role in cultivating students' comprehensive qualities, focusing on developing their noble ideological and cultural values, moral character, and a strong sense of social responsibility. This holistic approach ensures that students not only excel academically but also possess the ideological consciousness needed to navigate the complexities of their professional roles.

In terms of professional knowledge, students in the engineering cost major must master key concepts and skills related to civil construction, decoration, and building materials. They should be familiar with construction processes and contract law relevant to project cost management. Additionally, a solid understanding of the basic theories and methods used for preparing budget estimates is essential for their success in the field.

Practical skills are equally important. Students must develop proficiency in professional map reading and the use of specialized software for project management. They need the ability to prepare detailed budgets and settlements for various projects, conduct independent technical and economic analyses, and evaluate the economic costs of engineering projects. Furthermore, they should be able to handle project bidding, negotiate contracts with partners, manage contracts efficiently, and adapt to project risks as they arise.

To meet the demands of the engineering cost profession, students must also acquire essential core

competencies. These include the ability to organize and manage project construction, resolve unexpected technical issues, accurately evaluate project costs and bids, and monitor project progress effectively. Graduates should be versatile and capable of performing a variety of roles in the construction industry, such as construction worker, budget clerk, supervisor, or quality inspector. The combination of these skills and qualities ensures that students are well-prepared to meet the evolving needs of the industry and excel in their professional careers.

## **4. Current teaching situation of engineering cost specialty in higher vocational colleges**

### **4.1. Single teaching mode, particularly a lack of practical training**

The teaching of engineering costs in higher vocational colleges typically alternates between theory and practice. However, the current approach primarily focuses on theoretical instruction, where teachers deliver content and students passively absorb it. As a result, students often remain in a passive learning state. Additionally, the lack of hands-on practical training leads to a gap between students' theoretical knowledge and their practical skills, which is one of the major issues in the current teaching of the engineering cost major and a key focus for educational reform. To address this, engineering cost instruction must integrate theory with practice, allowing students to learn theory through practical application and use theory to guide their practical work.

### **4.2. Incompleteness of teaching content, particularly the lack of practical relevance**

The engineering cost curriculum is primarily focused on hands-on operations, making the practical applicability of the teaching content crucial. However, the current teaching platform for the engineering cost specialty is insufficient, leading to a disjointed learning experience for students. Additionally, the teaching content lacks innovation and fails to incorporate modern elements and the latest concepts in engineering cost education. This results in a disconnect between what students learn and the realities of the industry, preventing them from effectively applying their knowledge in real-world situations.

### **4.3. Lack of teachers**

The engineering cost major in higher vocational colleges covers various fields, particularly those grounded in physics and mathematics, which necessitate high standards for teachers' professional quality. In teaching these subjects, instructors must possess strong practical skills, in-depth professional knowledge, and effective teaching abilities. Currently, however, many teachers in the engineering cost specialty at higher vocational colleges lack practical teaching experience and innovative approaches. This deficiency is one of the most significant challenges facing the reform of engineering cost education in these institutions.

## **5. Teaching reform and practice of engineering cost major in higher vocational colleges**

### **5.1. Cultivate students' professional abilities through inquiry-based teaching**

Currently, the engineering cost major in higher vocational colleges emphasizes the development of students' practical abilities, particularly through practical teaching platforms where students engage in independent research. This approach enhances their professional skills to some extent. The program values an open teaching environment, especially in architectural design courses, where students' understanding of architectural structure and current developments is crucial. Traditional teaching methods have somewhat limited the cultivation of

these abilities. Therefore, by utilizing inquiry-based teaching platforms, students take an active role in learning course content, with teachers addressing students' specific interests and learning needs. This open, practical teaching environment underscores the students' central role and facilitates organized, research-oriented learning. Such an innovative approach significantly enhances the development of students' professional abilities.

### **5.2. Market-oriented teaching to enhance practicality**

Market-oriented teaching for the engineering cost major in higher vocational colleges can significantly enhance the practicality of education by making students' professional skills more targeted and relevant. To achieve this, effective planning and design of course content and class arrangements should be based on current market demands. Additionally, tailoring teaching to students' interests and individual characteristics can improve their "social survivability."

Market-oriented teaching reform emphasizes the innovative development of teaching content, focusing on its practical applicability. This approach diversifies teaching objectives and makes learning more targeted. By aligning teaching content with the dynamic market, educational programs can better integrate with market needs, which is a key aspect of reforming the engineering cost major in higher vocational colleges. This alignment also serves as a robust strategy to adapt to market changes.

### **5.3. The improvement of teaching structure in the engineering cost major**

The engineering cost major in higher vocational colleges is a comprehensive field. Therefore, effective teaching reform requires refining its teaching structure, particularly ensuring its completeness. A well-rounded teaching structure is fundamental for achieving meaningful reform in this major. A complete teaching structure is reflected in the curriculum design and planning of each professional course. It involves creating a coherent framework that supports the development of a robust professional training mechanism. Additionally, school-enterprise cooperation plays a crucial role in expanding and enhancing the teaching structure. It provides opportunities to diversify teaching methods, particularly by integrating practical teaching platforms, which can significantly improve teaching effectiveness. In summary, a complete and well-organized teaching structure is essential for successful teaching reform. This includes tasks such as discipline construction and development, which are integral to the reform process.

### **5.4. Strengthening teacher development, with a focus on practical teaching abilities**

Teaching engineering costs in higher vocational colleges emphasize practical teaching methods, necessitating the creation of well-designed practical teaching platforms that align with the course content. To support this, teachers must possess strong professional qualities to effectively build and manage teaching environments. Therefore, enhancing teacher development and improving teacher's practical teaching abilities are crucial to meet the demands of curriculum reform. This includes strengthening their overall skills to ensure they can deliver effective and relevant instruction.

## **6. Conclusion**

The engineering cost major in higher vocational colleges encompasses a range of fields, requiring diverse teaching methods and content. A key focus of teaching reform is market-oriented approaches, which aim to deepen the reform process and shape the direction of the major's development. Through a series of teaching reforms, the engineering cost major has already achieved notable results. It is anticipated that ongoing reforms will further advance the development of this major in higher vocational colleges.

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