



# **Problems and Countermeasures in Practical Teaching of Civil Engineering**

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**Fund project:** 2019 Research Project in Transportation Vocational Education "Research and Practice of Efficient Classroom Teaching Based on Mobile Terminal", project number 2019B33

**Abstract:** The Civil engineering major is no stranger to many students. It is an important course in Chinese colleges and universities that involves a wide range of knowledge. Since the understanding of many key points needs a combination of theory and practice, students of the Civil engineering major have relatively more practical courses. There are various problems in the practical teaching of civil engineering majors, such as limited experimental tools, monotonous teaching content, and low teaching effectiveness, etc., which not only discourages the learning interest of Guangzhou University students but also affected the construction of the overall teaching system of the Civil Engineering major. This article discusses the typical problems in the current practical teaching of civil engineering and proposes teaching solutions to these problems according to students' characteristics and aptitude.

**Keywords:** Civil Engineering; Practical Teaching Problems; Countermeasures

## **1. Typical Problems in Practical Teaching of Civil Engineering**

### **1.1 Low interest of students and Insufficient Importance Attached to Practical Teaching**

Interest is the best teacher for students. Even for senior students, it is impossible to force them to learn without understanding. The practical teaching is particularly important for students of civil engineering. Before entering the real workplace, students do not have many opportunities for hands-on knowledge of civil engineering. After entering social work, they realize what they have learned is really useful in the construction of roads, bridges, houses, and other buildings. However, in the current model of teaching, the interest of students has been ignored because teachers do not attract enough attention to students' learning initiatives. The most common phenomenon in universities and colleges is that teachers only regard practical teaching as an auxiliary part in the overall curriculum that they only go through the motions without highlighting the importance of practical works. Besides, teachers usually just explain and demonstrate the knowledge blankly in teaching, without paying attention to provoke students' interest and active thinking. Most teachers lack a unique teaching system.

### **1.2 Insufficient Hardware Facilities Causes Students Have Few Practical Opportunities**

In recent years, the state has promulgated a number of measures to support the development of pedagogy and teaching, and the educational conditions of students have been greatly improved. However, China is a country with a large population that needs education, and there are quite a lot of various schools. There are still many colleges and universities that have insufficient hardware in practical teaching. Some experimental sites are small and the facilities are insufficient so that many practical exercises cannot be carried out effectively. Then, there are limited old experimental tools. Therefore, in the experimental class, students have to take turns to operate the equipment. In order to cope with

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doi: 10.18282/le.v9i4.1071

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this lack of hardware facilities, many experiments can only be demonstrated by teachers, and students just watch on the side. As a result, students get easily encounter difficulties in understanding some knowledge points by simply looking at the phenomenon without practicing them personally, which has led to learning difficulties. In the long run, these problems have reduced the learning efficiency and enthusiasm of civil engineering students.

### **1.3 Singular and Unstable Internships**

For students of other majors, it is not difficult to find a company for graduation internship, but for students of the civil engineering major, this process is not so easy. Every year when it comes to the internship, many students will face great difficulties in looking for an internship. They often need to depend on the school and teachers to contact and communicate with large construction companies to have an internship chance. Even if they can find an internship, it is unlikely for them to participate in the real construction activities after successfully entering the company. They do not really have the opportunity to systematically understand practices in the survey, design, inspection, real estate, and so on. In addition, the frequent replacement and instability of the internship company is also a prominent problem. Many students have just adapted to one construction environment, then they are forced to stop or switch to another construction site. In fact, it is not surprising that this phenomenon occurs. The interns have just entered society with just a shallow understanding of the theory and almost no practical experience. No wonder the companies are afraid to bear all the unexpected risks that students may encounter during the internship process. It is difficult for them to assign students within fixed and long-term projects, especially some high-risk construction activities. Therefore, companies usually do not allow interns to participate in the construction.

## **2. Strategies for Solving Problems in Practical Teaching of Civil Engineering**

The knowledge of civil engineering is widely used in construction, transportation, water conservancy, and other fields. It is very important in promoting social and economic development. Thus, to solve the problems existing in the practical teaching of civil engineering requires a series of targeted and feasible solutions.

### **2.1 Establish an Incentive Mechanism and Strengthen the Construction of Faculty Team**

The responsibility of teachers is to mostly open a window for students to let them explore the outside world. At the same time, every professional field has its pleasures of learning. Only when the teacher first forms a unique and efficient teaching system and pays attention to the development of students' interests, can students be willing to invest more time and energy to study this course. In the practical teaching of civil engineering, the teacher plays a very important role to inspire and guide students. In order to further encourage teachers to improve teaching approaches and innovate teaching systems, a set of teaching incentive mechanisms should be established to strengthen the construction of teaching faculty for practical teaching, for example, to regularly invite senior engineers with rich experience in construction, supervision, design, inspection, survey, etc. from all walks of life to the school to teach and communicate with students. This practice will, on the one hand, inspire teachers' enthusiasm for teaching. On the other hand, it can also enrich the teaching experience of students and achieve better teaching results.

### **2.2 Expand Teaching Methods with the Help of Information Technology**

Hardware facilities are the basis of practical teaching for the civil engineering major. To make practical teaching more than just talking on paper, a good foundation must be in place. In various expenditures of the school, it is necessary to realize the main contradictions and actively apply for funds to increase investment in the hardware facilities required for the practical teaching of civil engineering to create a better practical learning environment for students. For schools whose education resources are really difficult to achieve better conditions, new ideas and methods should be introduced in the teaching process. In the 21st century, schools and teachers should learn to expand the teaching methods of civil engineering majors with the help of information technology. For some practical exercises that are not risky, they should encourage students to accomplish on their own and allow students to divide themselves into groups and complete the task on time. A video about the experiment can be recorded, which will not only increase students' learning interest in practical teaching but also allow teachers and students to use these videos for later evaluation and discussion. This will greatly improve the sense of participation of students and stimulate their learning passion for civil engineering.

### **2.3 Strengthen School-enterprise Cooperation and Set up Steady Practice Base**

Due to the strong professionalism of the civil engineering major in practical teaching, there are certain risks in real work. For the internship demands of each batch of students, the school should come up with more countermeasures and provide more support for students. With the fact that there are not many practice units and most practice bases are unstable, the school should give it full attention, strengthen the school-enterprise cooperation to establish a batch of long-term cooperation units, stabilize the practice bases, and let students participate in the internship with confidence. Regarding the work arrangements during the internship, students should be given various chances to take part in different roles to solve diversified problems in special circumstances when special treatments are required. The school can actively communicate and negotiate with the internship units to develop a set of suitable positions for students, and an "internship plan" that is suitable for the actual needs of the enterprise as well. In this way, the school can provide high-quality professional technical talents to go to the right places to work and maximize the value of teaching.

### **3. Conclusion:**

The practice is one of the important aspects of the teaching of civil engineering. Although there are many factors that affect the practical teaching of civil engineering, these constraints must be analyzed scientifically and rationally. Teachers in colleges and universities should not get self-satisfied nor stick to the traditional method, to better pass professional knowledge on students. In the process of problem-solving, it is very important for teachers to control the quality of teaching in the process. In the practical teaching of civil engineering, teachers should actively think and innovate to inspire students to learn and enriching teaching content through examples and experiments. Teachers are also encouraged to use multiple information technologies to systematically summarize and present the teaching content to arouse students' interest in learning. Students majoring in civil engineering are the future builders and constructors for the country, so it can be said that the perfection of practical classes of civil engineering is to lay a solid foundation for the future construction of the country.

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