

Discussion on the Construction of Civil Engineering Structure Laboratory in Colleges and Universities

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Abstract: In the current civil engineering teaching process, concrete structure experiment has become an indispensable experiment. We all know that the standard for testing truth is experiment, and at the same time, through experiments, students can also have their own hands-on ability and innovation ability get promoted. Based on this, this paper analyzes and studies the current situation and problems of the university's structural laboratory teaching in our country, and then proposes the corresponding reform and development measures through the summarized problems, hoping to provide a useful reference for the current civil engineering structure experiment in colleges and universities.

1. Introduction

The experimental teaching of civil engineering can play a certain role in guiding and training students' theoretical knowledge learning and hands-on ability. Therefore, it is very necessary to build civil engineering structure laboratory in colleges and universities. This paper analyzes and summarizes the current development of the civil engineering structure laboratory and the future construction direction.

2. The Necessity of Structural Laboratory Construction

2.1 The need for talent development

Civil engineering can be said to be a relatively traditional engineering science department in our country. Its purpose is to cultivate a variety of engineering construction talents needed in the civil engineering field. In particular, in the past few years, it has not been discussed that in the course teaching, or in professional construction and professional development, the number of courses required for structural experiment teaching needs to be consistent, and the number of students who carry out related learning is also continuously improved. Hydropower construction engineering and construction engineering technology, as well as road and bridge engineering technology and other related majors also need to set up a structural experiment course opposite to it.

2.2 The need for professional construction

In accordance with the requirements of high-efficiency civil engineering related professional training objectives and engineering construction for talent knowledge, it is necessary to set up experimental courses related to reinforced concrete structure experiments and structural tests for relevant professional students. After the completion of the construction, the structural laboratory needs to complete the teaching activities that need to be completed on a daily basis, and also requires itself to be able to be used in a practice place for student internships and competitions. The current construction scale and construction level of the structural laboratory need to be consistent with the requirements put forward by the professional construction. On the basis of careful investigation and research, it is determined by integrating with the professional and the specific situation of the school, so that it is not possible to blindly seek for excellence. It has caused problems that are contrary to the specific situation. Experimental equipment can be said to be the main indicator for measuring the comprehensive school-running ability of a school. It must always

be consistent with the needs of curriculum teaching and student practice, as well as scientific research and technology development and service. It can be said that this is also the current structure. The main content that the laboratory can't ignore in the construction.

2.3 The need for teaching resource sharing

Many colleges and universities do not have well-equipped structural laboratories, which is inconsistent with the requirements of different professional construction and growing structural experiments. Therefore, it will also have an impact on the further development of civil engineering related courses and majors. In recent years, with the development of our national colleges and universities, the professional level has been continuously improved, and the number of students has increased due to the expansion of the school. This kind of situation also makes the structural laboratory open to teachers and students of different schools, and different universities. It can also fully use the resources provided by the structural laboratory to complete related activities such as teaching and scientific research, prevent the occurrence of repeated construction loss, truly realize the sharing of experimental teaching resources, and strengthen inter-school cooperation and communication.

2.4 The need for scientific research and the combination of production, education and research

The well-equipped structural laboratory not only can create a better experimental condition for daily teaching, but also provide the necessary infrastructure for production, learning and research, and at the same time, it can better teach teachers and improve teaching. Level to create the required conditions. The structural laboratory can provide the required working conditions for scientific research and scientific and technological development, thus improving the level of scientific research of teachers. Really realize the integration of production, study and research, strengthen the connection and communication and cooperation with civil engineering enterprises, and play an important role in completing the school-enterprise cooperation and the combination of engineering and learning and improving the efficiency of running schools.

3. Problems Existing in Current Laboratory Construction

3.1 Teaching problems

Learning civil engineering expertise must be a combination of theory and practice. After students have learned the theoretical knowledge, they must also use hands-on practice to confirm and consolidate the relevant theoretical basis. The operation of the experiment should be completed under the guidance of textbooks and teachers. The knowledge principles have a certain correlation with each other. However, the design of concrete structures is not unique in itself. There is still a great error between theoretical calculation and concrete construction. This situation will make some students unable to accurately grasp the experimental results. So that the overall experimental process produces unpredictable conditions and is overwhelmed.

3.2 Research issues

The civil engineering profession involves many different research projects, all of which use experiments to complete the research. At present, many teachers in civil engineering schools in China have very heavy teaching workloads every week. The teaching tasks can be said to be very heavy, so naturally it is impossible to ensure that teachers have sufficient energy to carry out relevant scientific research work. This kind of situation also makes some college teachers do nothing in scientific research work and lack the enthusiasm of scientific research work. As a result, the effective utilization rate of scientific research results is not high, which limits the continuous and rapid development of high level of school specialization [1].

3.3 Management issues

The structural laboratory is in a subordinate position in the overall teaching work, so the

experimental teachers who specialize in experimental guidance and research work lack sufficient attention. Such a situation will make the experimental teachers' enthusiasm and work efficiency at work influences. In addition, there will be defects in the management system. Managers lack sufficient attention to the improvement of the experimental teachers' business level, which will directly lead to the lack of some full-time experimental teachers, and the large potential of professional experimental technicians. One situation also has a serious impact on the quality and effectiveness of experimental learning in civil engineering students.

3.4 Student level of integration

The lack of equipment in the structural laboratory will make the students' own learning and experiments must be completed by many people after the grouping of the landscape. This kind of situation makes the cycle of the course teaching experiment prolonged, making the teacher's experimental teaching task constant. growth of. In such a situation, the teaching tasks of the teachers are very difficult, and the students' learning tasks are not very inconvenient. At the same time, the process of assessing the results of the students' learning results also lacks a fair operation. Laboratory sites are often restricted, instruments and equipment are generally overweight or super large, and the test pieces used in the current experiments are also some very large, limited equipment, so that students do not summarize the process of carrying out It is a kind of situation that can ensure that each person can make the test piece and complete the operation. This kind of situation also makes the students not have a deep understanding of the equipment and the purpose of the experiment, and can not fully mobilize the enthusiasm of the students. It also has an impact on the creativity and development of students' creativity and hands-on ability.

4. Research on the Reform of Laboratory Construction

4.1 Strengthen experimental training and implement open management

University administrators need to re-examine the important role played by experimental teaching in the civil engineering professional teaching process, and focus on the specific construction work of the current school, pay attention to the position and role of experimental teaching in the professional teaching of students. Changing the past thoughts of experimental teaching in the auxiliary position of theoretical teaching, it really regards it as a non-negligible auxiliary means of theoretical teaching, and also needs to pay attention to the effective integration between theoretical teaching and experimental teaching, especially in the case of High-skilled applied talents need to pay attention to the important position of experimental teaching. The civil engineering major is a very practical profession. The requirements for students' innovative ability and hands-on practical ability are very high. In the future, open experiments will be continuously offered in the course teaching, and the reform of experimental teaching will become an inevitable development. Trend [2]. Actively promote the open experimental teaching of civil engineering professional teaching, through independent thinking, let students find problems, observe problems, think about problems in the experimental operation, and then solve problems, and gradually develop hands-on practical ability and innovative ability. In addition, the establishment of an open and comprehensive laboratory can effectively improve the practice level of the school's civil engineering profession as a whole, and then combine it with relevant scientific research projects, which will greatly help the experimental teachers' business and quality improvement.

4.2 Increase investment in experimental equipment and increase equipment utilization rate

At present, the enrollment scale of colleges and universities nationwide is still in a continuous improvement trend. Many new disciplines and new professions are constantly improving. The experimental equipment of structural laboratories also needs to be the same as the development of the current era. The progress is keeping pace with the times. The equipment can be said to be unable to meet the teaching needs, then based on such a situation needs to be properly eliminated. At present, some experimental methods have been produced in the experimental teaching. The

experimental equipment provided by many colleges and universities is not even satisfied with the research and teaching requirements of the students. Therefore, the current reforms for school experiments require an orderly plan as a whole, rationally complete the fundraising required, and continue to receive the funds needed for laboratory construction, based on the strengthening of laboratory infrastructure. It is necessary to strengthen the investment in experimental equipment, and at the same time continue to eliminate some old and aging experimental equipment, so that it can provide more advanced experimental equipment for civil engineering students, provide me with precise experimental instruments, and also need It can be opened to the outside of the school, greatly improving the input efficiency and output efficiency of the experimental equipment [3]. In addition, the research institute is also actively seeking more opportunities to organize teachers to research and discuss related research topics, and to rationally regulate the use of laboratories, and at the same time formulate more preferential policies, and take scientific and rational development of scientific research results. The incentives enable it to motivate more experimental workers to complete the development of the experiment, enabling them to work in IE Labs to create a better learning environment, and also need to strengthen the use of experimental equipment itself. In the experimental teaching, students need to be encouraged to conduct research and experiments on civil engineering majors, so that students can actively make brains and make design experiments on their own to reward students who have achieved good results in experiments. In this way, the enthusiasm of teachers and students in work and study can be fully mobilized, so that they can create an excellent atmosphere for the use of the laboratory, continue to expand the use space of the laboratory, and truly enhance the use value of the laboratory [4] .

4.3 Improve the experimental system and strengthen the construction of the teaching staff

Along with the continuous construction of structural laboratories, the attention of university administrators to experimental teaching has increased. At the same time, this has also put more strict requirements on experimental teaching for teachers. The training of teachers has become impossible. A task that is neglected. University administrators must set up perfect rules and regulations for experimental management related to civil engineering. In addition, they need to give overall training to the experimental teachers' own teaching level and business level, and actively handle the promotion and work of teachers. Relevant issues such as the promotion of treatment, on the basis of praise and reward for work performance, the enthusiasm of teaching in the work has been improved, so that more experimental teachers can work hard in the process of experimental teaching and at the same time can achieve self-value improvement [5]. In addition, in order to enable the experimental teaching of colleges and universities to proceed more quickly, it is also necessary to strengthen the system of building a strong teaching ability and a high-quality teaching team, using the school-enterprise joint system, to recruit some experienced and professional teaching. The expert of knowledge completes the teaching in the school. Through such a form, the students of civil engineering can fully appreciate the charm of the experiment in the process of experiment teaching, and at the same time strengthen the purpose of the experiment. It can also provide favorable guarantee for the quality of experimental teaching in the system, so that it can maintain sustained and stable development, and constantly build a team of experimental teachers with professional level and professional quality guaranteed [6].

5. Conclusion

The study of civil engineering involves a lot of structural experiments, so in the university, the structural laboratory is the main place for scientific research and practical innovation as well as technology development and social services. It provides scientific and effective changes to the setting of structural laboratories, combined with engineering. Practice the current holistic nature. Effective and effective design of the experiment, and the use of demonstration and teaching, can create a good experimental platform for students, so that the ability to improve hands-on and innovation can also complete the innovation of scientific research, firmly establish a professional Knowledge has enabled the society to meet the needs of the training of civil engineering

professionals.

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