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Investigation and Analysis of the Practice Teaching Effect of Architectural Environment and Equipment Engineering Specialty

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Abstract: Practical teaching is one of the important components in the training program of building environment and equipment engineering. In order to investigate and analyze the effectiveness of practical teaching in this profession at this stage, this paper will pass the investigation background, investigation methods and investigation results. The results analysis and other aspects are discussed in order to provide theoretical references for relevant institutions and teaching and research personnel.

1. Introduction

With the continuous improvement of China's education system, practical teaching has also received more attention in this process. At the same time, for the problems discussed in this article, each employer pays more attention to the graduates themselves in the process of absorbing talents. The practical ability. Combining these two points, it is very necessary to investigate the development of practical teaching in the building environment and equipment engineering. For a long time, most colleges and universities in China have had excessive attention to theoretical teaching, the practice sites and practical equipment which are difficult to meet the needs of practical teaching. If the relevant universities can not improve on such problems, then students should master the theoretical part. And understanding will inevitably be affected as a result. In severe cases, students will not be able to meet the needs of employers in the follow-up job hunting process. The construction environment and equipment engineering profession is very practical, and the application of various types of equipment and the mastery of architectural design methods need to rely on the development of the practical teaching process [1]. In order to ensure that the implementation of this teaching process can achieve the expected results, this article will combine the specific findings to study new practical teaching methods.

2. Survey Background

In the traditional training mode, the course system of building environment and equipment engineering is mainly composed of a large number of theoretical courses. Most of the practical parts can only be verified simply by the theory in the textbook. Under such a teaching mode, it is difficult for students to master follow-up learning. The practical skills that should be possessed in the work phase, the theoretical teaching effect may also be affected. Under such a background, most colleges and universities in China have paid attention to the implementation of practical teaching in the overall talent training process, and also set up practical content such as curriculum design and training programs, but because of professional instructors, new practice equipment, etc. The lack of such practical teaching links is often difficult to achieve the desired goals, which in turn leads to the



financial and human resources investment in such courses.

Combining these two points, on the basis of strengthening the emphasis on practical courses, universities should still improve the existing practical teaching methods by combining the requirements of students' practical ability, innovation ability and cooperation ability. In order to ensure the effective development of this work, the first thing for colleges and universities to do is to investigate the current practical teaching results, and then analyze the problems still existing in the teaching process, combine the analysis results with the talent training objectives, and finally build a perfect Practical teaching system. This article focuses on the construction environment and equipment engineering.

3. Investigation Method

The practical teaching links of the building environment and equipment engineering mainly include: experiment, curriculum design, graduation design, etc. Although the teaching methods used for these teaching links are different, for the final teaching objectives, the setting of these teaching links is set up to improve students' practical ability. Combining this point, this paper mainly uses Table 1 to conduct a questionnaire survey, and summarizes and analyzes the valid questionnaires, and finally draws the survey results.

Table 1 Investigation on the effect of the practice of teaching environment and equipment engineering

	Name of the respondent:					
	learn the internship	Production Practice	experim ent	Course Design	Graduation internship	Graduation Project
Engineer quality						
Engineering concept						
Construction knowledge						
Construction organization ability						
Operational knowledge						
Operational management capability						
Design parameter determination method						
Load Calculation						
Hydraulic Calculation						
Equipment selection						
CAD and design drawing						
Technical report preparation						
Data collection capability						
Personal comprehensive literacy improvement						

Note: Please type "√" in the corresponding column that you think is effective or useful.

Based on the above survey, the actual teaching effect will be influenced by the students' own learning attitude and basic level [2]. Therefore, based on the collection of survey data, the researchers should still Targeted interviews with the respondents, combined with the information obtained during the interview and the results of the data survey to complete the research process. On the other hand, when selecting the respondents, in order to ensure that the students have completed the graduation design and at the same time guarantee the authenticity of the survey results, the researchers should try to select the graduates who are about to leave the school to conduct an investigation, but for the investigators themselves. This part of the personnel can not directly be responsible for the practical teaching of the respondents, and should be familiar with the practical teaching links of the building environment and equipment engineering. Under such a survey mode, the authenticity of the survey

data will be well protected, and the evaluation and analysis of the survey results can be more objective.

4. Survey Results

First of all, for the survey results obtained by Table 1, the students of building environment and equipment engineering have the highest recognition of graduation design, about 80%. Most students think that graduation design can effectively improve their design ability and Master the design method and at the same time effectively train your own comprehensive literacy. The student group's recognition of curriculum design is slightly lower than that of graduation design, which is about 60%. Most students affirm the positive role of curriculum design in design ability and design method mastery. The graduation internship process can play the most comprehensive role for students. About 60% of the students believe that this practical teaching process can play a role in construction knowledge, construction organization ability, operation management, etc., and can effectively improve themselves. For comprehensive cognitive literacy, for cognitive internships, students' recognition of this practical teaching link is much lower, and the data is also significantly lower than graduation internship. Finally, for the experimental course, students' acceptance of this practice is very low, and most of the survey items are maintained between 20% and 30%.

Secondly, through the development of the interview process, students' own learning interests and learning attitudes will affect their judgment on the effect of practical teaching. From the survey data, students with higher grades in the undergraduate stage will recognize the various practical aspects. In general, it is higher than other students. Among them, the recognition of graduation design among these students is the biggest difference with other students, about 10%.

5. Analysis and Discussion

Combined with the above content, the recognition rate of the students in the building environment and equipment engineering has been at a relatively high level. This result is most obvious in the graduation design, followed by the graduation internship and curriculum design. For the experimental course, most students are difficult to improve through this practical teaching. In response to such a situation, universities should start to improve from the following aspects:

5.1 Combining Students' Own Characteristics to Determine the Practice Link Teaching Method

Combined with the above content, the theoretical basis and the understanding of the practical curriculum will affect the teaching effect of the practical curriculum. Therefore, relevant teachers should try their best to teach students in accordance with their aptitude in the process of practical teaching, and determine the teaching method according to the characteristics of students. In order to ensure that practical teaching can maximize the expected effectiveness.

First of all, for some students with poor theoretical foundation, the teacher should assist this part of the students to complete the simple theoretical verification, numerical calculation and other processes in combination with the contents of the textbook. Through the increase of these practical teaching contents, this part of the students has theoretical knowledge. The mastery of nature can better meet the standards. At the same time, students' interest and confidence in practical teaching can be effectively improved.

Secondly, for students who cannot correctly understand the practical teaching links, this part of the students often have problems such as poor concentration and serious plagiarism in the practical curriculum. The effect of practical teaching is naturally difficult to guarantee. In response to such a situation, colleges and universities can invite some outstanding graduates of the building environment and equipment engineering to return to school to communicate with the students in the school. In this process, students can naturally better understand the high standards, high requirements of the practical ability of the building professionals in the market, and thus better completion of the undergraduate practice.

Finally, teachers should consider students' preferences and classify them into "theoretical" and

“practical”. Different types of teaching methods and evaluation criteria are adopted for these two types of students to ensure that all students can gain some things in the practice of teaching.

5.2 Strengthen The Capital Investment in The Software and Hardware Equipment of Each Laboratory in The Undergraduate Stage

The experimental process runs through the entire undergraduate teaching of the construction engineering environment and equipment [3], and combined with the survey results above, most students' recognition of the actual effect of this practice is very low. The lab hardware and software equipment is too old and the experimental site is tight, which is the main reason for such conditions. In order to improve these problems, colleges should start from the following aspects:

First of all, colleges and universities should be able to increase the capital investment in the basic laboratory on the basis of the original, replace the hardware equipment or software platform that has been eliminated in the market, and dispatch special personnel to manage the resources in the laboratory to ensure this. Some resources can be maximized.

Secondly, for the setting of experimental content, in addition to the content in the textbook, colleges and universities should appropriately add some content that needs group cooperation or need to conduct in-depth inquiry. With the help of these contents, students can naturally participate better. In the experimental course, and with the help of these experimental contents, the relevant theoretical knowledge can be better grasped.

Finally, in order to solve the problem of the experimental site, the university should reorganize the existing experimental courses, and if necessary, properly compress the theoretical teaching content and give students more practical opportunities. On this basis, the relevant laboratory administrators of the university can open the laboratory to the students of the building environment and equipment engineering during non-teaching time, allowing students to experiment with their own needs.

5.3 Pay Attention to The Role of Graduation Design and Graduation Internship in the Overall Practical Teaching System

It is not difficult to find out the contents of the survey and the survey results above. Graduation design is one of the most important components in practical teaching in colleges and universities. Colleges and universities should also regard students' evaluation of this teaching link as the main factor in judging the effect of practical teaching. For teachers responsible for graduation design, this part of the teacher should be able to fully pay attention to this teaching process, maximize their auxiliary role, and ensure that students' comprehensive ability and comprehensive quality can be effectively exercised at this stage. . In order to achieve such a goal, the graduation design instructor should be able to complete the guidance and teaching process according to the following points: First, the teacher should guide the students to complete the data collection work in combination with the graduation design topic. In this process, in addition to the professional websites commonly used in China, teachers should be able to assist students in reading advanced technologies and programs in foreign construction fields, laying a good foundation for the determination of subsequent design plans. Second, teachers should review the issues that exist in the initial program. Due to the limitations of practical experience and theoretical knowledge reserves, undergraduate students are likely to have unscientific or unreasonable conditions in parameter design and overall program design. Graduation design instructors should undertake auxiliary student discovery in this process. They should take the responsibility for problems, problem solving, and improvement of existing design solutions. Finally, the teacher should complete the evaluation of the students in combination with the students' own characteristics.

For the graduation internship, this practice is the most important way for students to directly contact the actual working environment before entering the job [4], and in order to ensure that the setting of this link can play the expected role, the university should be related to enterprises cooperate to assist students who are about to participate in the work to participate in the actual work, and then through this practice process to examine their own shortcomings in practical ability, theoretical knowledge, etc., and improve in the follow-up learning process.

5.4 Pay Attention to the Cultivation of Students' Comprehensive Qualities in the Practice Teaching Links

In addition to professional skills, students in the building environment and equipment engineering must have professionalism such as hard work, pragmatism and rigor [5]. For these contents, relevant teachers should be able to infiltrate the professionalism of students into the overall practice. In the teaching system, the subtle influence on students has gradually improved the students' comprehensive ability. In order to better meet such requirements, colleges and universities can regularly send some students to the actual construction site to visit and learn, to help students realize the need for the above professional qualities. On the other hand, teachers can reward students who perform well in practice teaching and can play a leading role in order to stimulate students' enthusiasm in the practice process and ultimately achieve the purpose of improving students' comprehensive quality.

6. Conclusion

In summary, at this stage, the construction environment and equipment engineering students are generally satisfied with the effectiveness of the practical teaching, but for the experimental courses, cognitive internships, etc., there are still a large number of students who believe that they cannot pass these. The link gains growth or gains. In the process of follow-up development, colleges and universities should further attach importance to the practice teaching process, increase the capital investment in laboratory software and hardware equipment, assist relevant teachers to teach students in accordance with their aptitude and quality education in the process of practical teaching, and finally achieve effective use of practical teaching. Carry out the goal of cultivating students' comprehensive literacy and improving students' practical ability.

References:

- [1]Gu Shiyan, Sun Qing, Ao Yonghua, et al. Exploration of practical teaching reform in building environment and equipment engineering[J]. Journal of Shenyang Agricultural University, Social Science Edition, 2011, 13(2).
- [2] Li Rui. Teaching practice of experimental technology in building environment and equipment engineering [J]. Science and Technology Innovation Guide, 2009, (28).
- [3] Li Rui, Hao Xuejun, Zhan Shuhui, et al. Research on the characteristics of building environment and equipment engineering And construction [J]. Higher Architecture Education, 2011, 20 (6).
- [4]LI Fengcui, ZHOU Hengtao, MA Liangtao. Exploration and Practice of Construction of Architectural Environment and Equipment Engineering Specialty[J].Journal of Henan University of Urban Construction,2010,19(3).
- [5] Xia Xuefeng. Some Thoughts on the Discipline Construction of Architectural Environment and Equipment Engineering Specialty [J]. Urban Construction Theory Research (Electronic Edition), 2014, (19).