

Research and Practice on improving the teaching ability of civil engineering teachers in Higher Vocational Colleges

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Abstract: This article study the problems existing in teaching of Civil Engineering Specialty such as poor docking between the students' position ability and enterprise demand, the teachers' weak ability of information teaching and so on. Then lifting scheme of teaching ability is proposed from determining the goal of improving teachers' ability, speeding up the training of high level "Double Teachers" teachers, improving the application ability of teachers' new technology and teaching research ability. In practice, good results are achieved.

1 Introduction

The birth of new technology in the construction industry, especially the BIM technology, the assembly technology and the development of the concept of green building, has brought new opportunities and challenges for professional teachers in Vocational Colleges and universities. Under the new demand for industrial upgrading, the teachers of civil engineering in higher vocational colleges have been put forward new requirements in the aspects of new knowledge and new skills. They need urgently to grasp the information products of the new era in order to be competent for teaching.

2 The main problems in the teaching of Civil Engineering

2.1 the poor docking between the students' position ability and enterprise demand

Under the new requirements of BIM technology, assembly construction, green intelligent building and other construction industry upgrading, the students' position ability in the traditional talent training program is not well connected with the needs of enterprises. The students need to master new knowledge and new skills urgently to adapt to the transformation and upgrading of the construction industry.

2.2 the teachers' weak ability of information teaching

Under the new requirements of the upgrading of the construction industry, information technology has been an inevitable teaching tool. If the teachers still stay in the traditional teaching methods, they can not meet the information teaching needs of BIM technology, assembly construction, green building and other aspects. The teacher is very difficult for the development of three-dimensional teaching resources, and they can not meet the current teaching mode of current "Internet plus" online and offline.

3 Countermeasures to improve the information ability of professional teachers

3.1 the program that the teaching needs guide engineering is carried out and the improvement goal of the teachers' teaching ability is set

3.1.1 Research activities for civil engineering majors in vocational colleges is carried out in order to determine the need for improvement

We will carry out research activities on the development trend of the construction industry, the

enterprise's demand changes for talents of civil engineering, and the civil engineering majors in vocational colleges. Through these researches, we determine the new direction and new needs of the upgrading of the construction industry, determine the goal and direction of talent training, so as to determine the shortage of the ability and development direction of civil engineering professional teachers.

3.1.2 According to the professional teaching guidance plan, we should constantly improve teachers' promotion target of their ability.

In accordance with the "views on the comprehensive start of the development of teaching guidance program for higher vocational education" (No. 4 of Lu teaching and service [2015]), the teaching guidance scheme of civil engineering majors in higher vocational colleges is taken as an opportunity to determine the goal of improving teachers' ability. The teaching guidance scheme of Civil Engineering Specialty in higher vocational colleges has the characteristics of serving the career development of the students, the modular new curriculum system based on the typical work items, curriculum content development focusing on school-enterprise cooperation, the "teaching and doing" integration, the professional standard and the industry standard as the reference, the rich and colorful teaching resources, the scientific and pluralism teaching evaluation, and the ability to promote the organic cohesion in the middle and high vocational colleges. According to the professional teaching guidance plan, we should constantly improve teachers' Promotion target of their ability. Focusing on the teaching guidance program of Civil Engineering Specialty in higher vocational colleges, we determine the goal of improving teachers' ability.

3.2 We should carry out the project of improving teachers' double quality and speed up the training of high level "double qualification" teachers

3.2.1 A double quality training mode of "school enterprise parallel" should be established

We make enterprise experts to school teaching normalization. Experts from related enterprises are invited to proofread teachers' training, including applications of the latest professional software applications, new industry dynamics analysis, and training of new construction technologies. The number of the training from the technical experts and skilled craftsmen hired industry enterprises accounted for more than 80% of total number of teacher training in school.

Meanwhile, we make the teachers' participating to the enterprise practice and study training normalization. Part time staff assists cooperative enterprises in solving production technology problems, participating in the technology research of cooperative enterprises, and participating in training of employees.

3.2.2 "Coach type" teachers should be trained.

According to the selection and management method of teaching masters, we organized the "coach type" teaching teacher selection. It will have certain enterprise experience and industry influence, higher research ability and social service level, strong innovation and practical operation ability as an important index for evaluation. Through school based training, enterprise training, domestic study, study abroad and other measures, we will train and bring up a number of "coach type" teachers that is well-known in the society and have great influence in related industry enterprises.

3.2.3 Professional leaders who have an impact on the industry should be fostered.

professional leader selection criteria is established. we gradually improve the selection, training and assessment mechanism of professional leaders, and cultivate professional leaders with strong teaching ability and the influence in industry enterprises. The school enterprise "double professional leader" system is put into practice. In addition to the professional leaders in the school, 1 other part-time teachers with industry influence are also taken as professional leaders. Professional leaders are selected to participate in academic exchanges, advanced study, and overseas training. This gives full play to the leading role of professional leaders in teaching research, teaching reform,

education and teaching, science and technology services, and technology research and development.

3.2.4 The construction of the backbone teachers should be strengthened.

We should optimize the selection and management of the backbone teachers, formulate the criteria for selecting the backbone teachers, and improve the participation of the backbone teachers in all kinds of business training, domestic visits, academic exchanges, and practicing in enterprises. We gradually improve the ability of the application of information technology, the basic teaching ability, the professional practice ability and the learning ability of the new knowledge and new technology. The backbone teachers should be selected to train outside the country in order to learn the idea of international advanced teaching and explore the international perspective of teachers.

3.2.5 A first-class teaching and scientific research team should be built.

Through project research and results development, we can enhance the overall level of professional research in order to research how to integrate the latest technology of construction industry into teaching.

3.3 The implementation of teacher training program to enhance teachers' new technology application ability and teaching research ability.

3.3.1 We should implement the training system of the whole staff.

A full training program is established in order to organize regular training such as teaching and research exchange training, enterprise expert training, cold and summer vacation education staff training, and participate in the training of various industry associations, provincial training and national training. The professional skills, information technology and teaching ability are included in the training content. Every semester, more than 20% of the professional teachers are selected to sent to the industry enterprises and the school training base for practice and training. Each year, 20% teachers are selected to take part in national and provincial training and select 2 backbone professional teachers to train abroad. We actively strive for 1 provincial training projects of professional backbone teachers in higher vocational colleges.

3.3.2 We should improving teachers' teaching research and practice innovation ability.

With policy guidance and intensive training, the teaching ideas of teachers are constantly improved, teachers' teaching ability and the sustainable development of teachers are improved by the forms of lecture training, Teaching observation, teaching and research competition, and personality guidance. By the way of researching and studying in enterprise, part-time or hang up, the teachers participate in enterprise training, product research and development, undertake horizontal topics, technical services in order to improve teachers' practical innovation, application research and social service ability. we organize teachers to participate in information teaching and training, information teaching contest, micro class competition and other activities, so as to improve teachers' information technology application ability. The backbone teachers are selected to visit the developed countries in the vocational education by visiting studies, cooperation and communication, subject study and teaching in the short term. This can broaden the horizon of teachers' internationalization and improve teachers' international quality.

3.4 The projects of the construction and sharing of high-quality courses can enhance exchange of the advanced technology and the high-quality courses.

3.4.1 Construction of high-quality resources sharing courses promote the sharing and mutual construction of course resources.

The construction of excellent courses should be led by teachers with profound academic attainments, rich teaching experience and distinctive teaching characteristics, and the team members should include professional teachers and enterprise technical backbone. In the process of the construction of excellent courses, we should speed up the transformation of education and teaching ideas, promote the reform of teaching content and teaching methods with the integration of modern information technology means and new professional technology to the curriculum resources and

teaching design. After the completion of excellent courses, we should make efforts to promote the sharing mechanism of the curriculum so that it serves not only the builders but also the other professional teachers, not only in the schools but also in the enterprises, the local economic construction and the social development service.

3.4.2 Building digital textbooks in order to strengthen the interactivity of teaching materials

Multimedia technology is used to digitize traditional paper contents and transform them into interactive textbooks suitable for all kinds of electronic terminals. It is convenient for students to learn online and offline, in and after class. With the website of curriculum resource sharing, the digital textbooks are to create the students' learning with "no schoolbag", "no campus" and "no teacher". Through the timely and orderly interaction of digitalized teaching materials, teaching plans and assessment tools, learners can experience the realistic learning environment sitting in the classroom.

3.5 improving the incentive and restraint mechanisms in order to ensure the effectiveness of high-level teaching staff

3.5.1 The construction of teachers' Morality should be strengthened

In the process of implementing the "opinion on the establishment and improvement of the long-term mechanism of University Teachers' ethics", we should adhere to the socialist core values to guide the construction of teachers' ethics, and continue to carry out the special education of teachers' ethics with the emphasis on the core values education, ideal and belief education, legal education and professional ethics education. We should further improve the evaluation system of teachers' ethics, and regard teachers' moral performance as an important part of teachers' assessment and evaluation. The teachers' oath activities are regularly carried out to enhance teachers' sense of professional mission, sense of honor and social responsibility. We make the moral construction as the important content of training.

3.5.2 Incentive policies should be formulated

The professional leaders and key teachers should be given priority in the aspects of Job title evaluation, job promotion, and evaluation of advanced, etc. We should give priority support professional leaders and backbone teachers in practical training, business training, domestic and foreign visits, academic activities and research projects.

3.5.3 The system of check and evaluation should be perfected

The development standards of teachers are set up. According to the requirements of teachers' growth and development goals and capabilities, we systematically design the teachers' growth stages, tasks, examinations and promotions. A series of measures such as strengthening learning training, skills training, enterprise exercise, research and development of science and technology are adopted to help teachers achieve their goals and tasks and promote the overall improvement of teachers' ability. Formulating The assessment criteria for employment of the professional leaders, the boneback teachers, the director of the department of teaching and research and the part-time teachers should be formulated. We should carry out classification management and assessment and evaluation.

4 Implementation effect

After 4 years of teaching practice, the group published 5 papers on teaching reform, one of which was included by EI, got 5 awards for students' skills competition, completed 2 provincial high quality resource bank and 1 of the high quality resource repositories in the college and got 11 awards for the project. These had a good radiation driving effect on the teaching ability of civil engineering teachers at home and abroad.

The development of the information wheel of the times will never stop, and the construction industry is no exception. The special teachers of the building must be brave to face the new

development requirements of the new situation. The full-time teachers of architecture are keeping up with the impact of the BIM technology, assembly technology and green intelligent building in the construction industry. The teachers' ability will be promoted to keep up with the pace of the times. The teachers must improve the quality of teaching and cultivate qualified people in the new era.

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