

Teaching Reform in the Course of Civil Engineering Introduction Under the Background of Online Courses

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Keywords: *civil engineering introduction, online courses, teaching reform*

ABSTRACT The course of civil engineering introduction is an important specialized basic course of civil engineering specialty. The common teaching methods in the course of civil engineering introduction is analyzed, and it is proved that traditional teaching can not keep up the students' development. In order to improve the efficiency of learning, the online courses method is adopted in the course. The comprehensive innovation of teaching measures, making of teaching micro-videos, and improvement of final exam methods carried out to expand teaching ranges, which are not be limited in the classrooms. The initiative learning ability of students is promoted, the learning interest of students is stimulated according to this teaching method, and the teaching results in classroom can be in actuality, which provides a feasible way for the teaching reform of the course of civil engineering introduction in the application-oriented university.

1. Introduction

Introduction to civil engineering is an introductory course for civil engineering major and a basic course for establishing basic concepts, contents and knowledge of civil engineering. The teaching of this course is mainly to achieve the following three goals: First is to make students more comprehensive understanding of the civil engineering involves the contents, methods, achievements and development of the field, from the perspective of subject introduction to understand the civil engineering of comprehensive, social and in the unity of technology, economy and management, preliminary build professional foundation[1]; Second, to provide students with a clear logic of the basic concepts and methods of engineering, in the process of engineering education, the preliminary establishment of professional ideas and engineering methods; The third is to improve students' interest in civil engineering, guide them to adapt to college life, follow the learning rules, develop their interest in civil engineering, build their love for civil engineering and sense of responsibility for civil engineering, and lay an ideological foundation for actively learning professional courses and cultivating the ability to learn independently[2].

With the development of the Internet and information technology and the popularity of mobile terminals, online learning is booming, and this combination of online and offline teaching has brought great impact on traditional classroom teaching[3]. As an application-oriented undergraduate university, the Huang he Science & Technology College, where the author works, actively faces this change and encourages teachers to carry out classroom teaching reform. Relying on the online course platform of the university, it promotes application-oriented talent cultivation through online course construction. The online course is the crystallization of the sharing of teaching resources and the development of modern education technology. By introducing online courses into the classroom teaching system of introduction to civil engineering, and making full use of the teaching method combining online courses with traditional classroom teaching, new ideas are provided for curriculum teaching reform[4]. This paper focuses on the process of online course construction and discusses the reform of civil engineering applied talents training mode from the perspective of course construction.

2. Problems Existing in Traditional Course Teaching

The course of introduction to civil engineering is arranged in the first semester, which is professional, comprehensive and practical. During the course construction and teaching practice, it is found that there are some problems in teaching content, teaching method and teaching mode, as follows [5] :

1) Contradiction between course content and class hours

The course of introduction to civil engineering covers a wide range of contents, covering the whole field of civil engineering, including the basic contents of many important professional courses. The class hours of this course are only 18 class hours, and the contradiction between the extensive teaching content and the class hours makes it difficult to deeply discuss professional knowledge in teaching, resulting in the common phenomenon of "full class irrigation", which leads to the low learning enthusiasm of students and affects the teaching effect.

2) The update of teaching materials lags behind

With the rapid development of civil engineering construction, civil engineering in the field of new theories, new technology, new material, new technology constantly emerging, grand scale, complex technology of all kinds of the reports of the project is often found in various media, but the speed of teaching materials, such as data update often lag behind the development of engineering practice, so must keep pace with The Times to supplement teaching in practical teaching, makes an introduction to civil engineering course content tightly combined with the engineering practice. There are also many teachers teaching PPT courseware content is old, for the latest teaching materials collection update is not timely. All these make freshmen think that the classroom cannot bring the latest knowledge, thus reducing their interest in professional learning.

3) The teaching model needs to be improved

Introduction to civil engineering course covers a wide range of content, engineering practice is very strong, we should choose appropriate teaching methods according to different teaching content, the traditional lecture-based teaching mode can not reflect the rapid development of this field. In teaching, it is worth exploring how to present various aspects of civil engineering project construction by means of modern teaching methods, introduce teaching modes such as hybrid, project, case and discussion into the classroom, and how to improve teaching effect by combining engineering examples to realize the unity of inspiration and thinking in teaching [6].

4) Single assessment method

At present, the total score is weighted by the final exam score and the score in time, the final exam score and the score in time account for 70% and 30% respectively, and the final exam assessment method mostly adopts the form of course paper. As freshmen are not familiar with the basic concepts and theories of the major, the whole process of paper writing, from the format to the content, needs the teacher's guidance [7-8]. In addition, plagiarism exists in papers. Students do not pay attention to the accumulation of daily study, and the firmness of mastering knowledge is greatly compromised [9].

5) High requirements for teachers

Introduction to civil engineering course teaching of classroom teachers have higher requirements, through teaching of introduction to civil engineering professional branch of 18 class hours, key concepts, common structure, arrangement, the future development and the stage of undergraduate teaching requires teachers is professional, is teaching, there is a certain engineering practice experience, but also be familiar with the undergraduate training plan, to achieve both in teaching knowledge, inspire interest, and indicate the direction of the teaching effect. If there are conditions, it is best to invite the specialized technical personnel on the engineering front line to give special lectures in combination with practical experience.

3. Teaching Reform Measures in the Context of Online Courses

China's online courses emerged in 2013, and many universities and colleges in China now offer online courses, with the number of users exceeding 10 million. The ministry of education to teach high [2015] no. 3 document the ministry of education about strengthening the construction of institutions of higher learning online open courses application and management opinion "pointed out that in recent years a large number of online open courses and learning platform, expand the teaching time and space, to enhance the attraction of teaching, arouse the learners' learning motivation and autonomy, promoting the teaching content, method, model and the reformation of teaching management system and mechanism for the higher education teaching reform has brought new opportunities and challenges [10]. Compared with traditional classroom teaching, online courses have the advantages of strong knowledge pertinence, adjustable learning rhythm, full monitoring of learning process, and rich and varied assessment methods [4]. The following is a discussion on teaching reform measures of civil engineering introduction course from the perspective of online course construction.

1) Strengthening instructional design

The online course focuses on the explanation of knowledge points, and the teaching content is composed of micro courses composed of important knowledge points. The length of a micro class period is generally about 10 to 15 minutes. Teachers are required to explain knowledge points accurately and efficiently in a short period of time, thus serving as an effective supplement to traditional classes. As for the design of micro-course knowledge points, higher requirements should be put forward on the systematicness and completeness of knowledge points, and regional application-oriented and talent training positioning should be combined to reflect their own characteristics in the design of teaching content and teaching methods. Based on the characteristics of this course, the knowledge points to be told are optimized and reorganized, and 2-3 micro-class videos are made for each class according to the interrelationship of teaching contents. For the learning and understanding of knowledge points in micro class, typical cases of civil engineering related to them are mostly adopted, and the problems in the cases are refined, thus triggering students' thinking and discussion. Examples include ancient Chinese Dujiangyan, Zhaozhou bridge, modern bird's nest, hongkong-zhuhai-macao bridge, Leaning Tower of Pisa, Empire State Building and other great projects; The Wenchuan earthquake and the collapse of the world trade center in the September 11 terrorist attacks; LUBan, li jie in ancient times, ZHAN Tian-you in modern times, MAO Yi-sheng in modern times and other representatives in the field of civil engineering [9]. With the rapid development of the industry, new theories and technologies are constantly emerging, so we should keep pace with The Times and timely supplement and update the knowledge taught in online courses.

2) Reform teaching mode

When the course is taught, the teaching content is simplified and the knowledge is modular. The teaching is organized by the mode of lecture system, with three different teachers giving lectures on different topics. It can not only give play to the expertise of different teachers in their respective research fields and avoid the current situation of generalizing the course, but also help to realize the teaching effect of simple and simple, and give play to the guiding role of teachers in teaching to a greater extent. Through the teaching mode of lecture system, students can practice the teaching process of "teacher-led and student-centered". In the initial learning of professional knowledge, students can receive the influence from more excellent teachers, which is of great benefit to their future learning and development. The theoretical knowledge of the course of introduction to civil engineering covers a wide range. The previous teaching practice shows that the teaching effect is not satisfactory when all the teaching contents are taught by a single teacher [5].

3) Pay attention to ideological and political education

In the micro-course production and classroom teaching, pay attention to the excavation of ideological and political elements, subtly into the teaching content. By learning the development history of civil engineering industry and field, as well as the latest science, technology and engineering examples, we can understand the professional connotation, stimulate students' patriotic enthusiasm, national pride and sense of confidence in a big country, and establish the ideal, faith and confidence to contribute to the national and social development [1]. Through typical case demonstration, online course online interactive discussion and other forms, deep to attract students to participate in the classroom, guide students thinking and comprehension, encouraging them to understand and agree with the teaching of the passed values, set up the correct concept of career, with the socialist core values of "loving, dedicated, sincere, friendly, and communities in" spirit of the great powers "for example, training students' practical, rigorous, keep improving working attitude; Through studying the rights, obligations and responsibilities of registered engineers, analyzing the relationship between engineering accidents, sense of responsibility and professional ethics, students are encouraged to establish a sense of social responsibility and a sense of reverence for the profession from the bottom of their hearts, and consciously safeguard the national and social public interests.

4) Strengthen learning management

Strengthen the teaching process and monitoring of "preview before class" + "discussion in class" + "thinking after class". Before the beginning of each project task, students are required to make full use of various information resources to preview before class. In class, assign time and topic, discuss the relevant topic fully, the teacher strengthen the guidance. After class, combined with what we have learned, we will guide students to reflect on whether the problems in the pre-class are solved or not. At the same time, the trace-based management of the teaching process of online courses should be strengthened. The whole teaching process should be published and processed on the online platform, and real-time process monitoring should be conducted [3]. According to the characteristics of this course, online videos of interdisciplinary knowledge points are provided as online resources to provide students with an extension of interdisciplinary knowledge. At the same time, an online discussion community is set up to increase the interaction between teachers and students, so as to answer students' questions in a more timely manner. In teaching, the establishment of the assessment model that focuses on the learning process is helpful to promote the freshmen to establish a good learning attitude.

4. Conclusion

In a word, the reform of civil engineering curriculum positively responds to the guidance of the ministry of education on the construction of college classroom teaching and the improvement of teaching quality. Under the condition of clarifying the existing problems of course teaching, the online course is introduced into the teaching system, which is student-centered and learning-result-oriented, and the course teaching reform is carried out from the aspects of course teaching philosophy, teaching content, teaching method and assessment form. Taking "micro-class" as the carrier, based on the online course platform, the teaching model of "flipped classroom" is adopted. Through the "hybrid learning" method combining online and offline, the theory and practice are combined to cultivate students' theoretical innovation ability and engineering application ability. Through a year of teaching reform practice, the course reform has achieved certain results. Many students said that "using a variety of assessment methods, paying attention to the usual process of learning, linking theory to practice, and teaching practice and case discussion linking arrangement more, which can improve learning interest, exercise engineering practice ability. The next step will continue to summarize, adjust, explore and research, to improve the quality of civil engineering professional application-oriented personnel training.

Acknowledgment

This work was supported by project of civil engineering brand construction of private universities in henan province (ZLG201702);Teaching reform and construction project of Huang he Science & Technology College, in 2018 (kg2018zx12)

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