

## Research on the Reform of Blended Teaching Model Centered on Students

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### Abstract

Civil Engineering is a professional and practical discipline. The traditional teaching model of the Civil Engineering's professional course is not fit the teaching needs well, for the breadth and depth of knowledge and the application of course. The article explores the reform of blended teaching model centered on students. Unlike traditional teaching model, blended teaching model centered on students focus on stimulating students' interest in exploring the unknown and cultivating autonomic learning, team cooperation and solving practical problems of the students. By exploring the practical teaching process, the article summarized a student-centered blended teaching mode combined with information teaching means, and gave implementation methods and recommendations for each link to provide reference for the teaching reform of higher education more or less.

### Keywords

Blending learning; Online and offline; Reform in education.

## 1. Introduction

There are many professional courses in civil engineering, so the article takes Concrete Structure Course as an example. Concrete Structure is a core professional course, including development and design methods of concrete structures, mechanical properties of concrete structural materials, bearing capacity design of concrete members, deformation and durability design of concrete structures, design of prestressed concrete members [1]. The teaching aims of the course, which has the characteristic of wide contents and high practicability, is for students to know well the basic physical characteristics and mechanical principles of concrete and master the theory of structure design and detailing requirements, and have the capacity and theoretical basis of solving problems about concrete structure.

## 2. Common Disadvantages of Traditional Teaching methods

### 2.1. The Teaching Methods Are Relatively Single

The traditional teaching method of Concrete Structure is relatively single, which is losing glamour for students. Students listen in the class, while teachers impart knowledge in class without paying attention to the progress of students' grasping and the significance of students' thinking. The teaching method leads to what the teachers teach is more than what the students get, also, the lack of students' creativity and practical application [2].

## 2.2. It Is Difficult to Effectively Improve Students' Learning Enthusiasm and Innovation Ability

Traditional course teaching often adopts the teacher-centered teaching mode, which emphasizes the imparting of theoretical knowledge and takes students as the indoctrination object. Education centered on imparting knowledge and repeating practise limits the innovation and the leaning autonomy of students, even the desire for exploring the problem. It is difficult for students who are almost spoon-fed like this to be innovative[3].

Because of the practicality of Concrete Structure Course, it runs counter to the characteristic of the course and restricts the learning effect and skill upgrading in traditional teaching model which values theory over practice.

## 3. Blended Teaching Model Centered on Students

### 3.1. Learning Resources Online

With the deepening of education informationization, the reform of teaching mode has a good foundation and supporting platform. All kinds of new teaching models based on the Internet sprout and grow up quickly, especially MOOC (Massive open online course). MOOC, which is a new course of open education in recent years and the product of "Internet plus education", has the characteristics of openness and large scale. In contrast to MOOC, SPOC, which was first proposed and used by professors at the University of California, Berkeley, is Small Private Online Course for short. Small and Private in SPOC is compared with Massive and Open in MOOC. Small means students scale typically range from a few dozen to several hundred, while Private means restrictive admission conditions are set for students, and only those who meet the requirements can be included in the SPOC. However, whether taking MOOC or SPOC as teaching way, in order to let students really learn and master the essence of the course, teachers need to design the whole teaching in the perspective of students<sup>[4]</sup>.

### 3.2. Integrated Online and Offline Blended Teaching Into Flipped Classroom

In teaching practice, we skillfully combined flipped classroom to carry out multi-angle online and offline integrated teaching, and achieved good results. So called "Flipped Classroom" or "Inverted Classroom" is a teaching way in that teachers readjust the time in and out of class and transfer learning decisions from teachers to students, meanwhile, replanned the use of classroom time and realized the innovation of the traditional teaching mode. The main points of implementation are as follows:

#### (1) Before class

The teacher assigned flipped classroom tasks before class. For example, let students through independent exploration learn about "flexural performance of normal section of flexural member", "structural form of the floor" and so on. Driven by the goal task, students will explore actively and directionally. In this link, teachers can provide a series of MOOC resources for students to learn independently. When certain requirements are met, students are eligible to apply for SPOC courses, and to have online discussions and exchanges, and to receive the corresponding points. Goal-driven students usually show strong learning motivation. In this process, students can learn and gradually master knowledge through independent exploration. At the same time, they will dig out deeper problems and carry out further exploration with these questions. Enthusiasm and curiosity of students' will be constantly stimulated out in this series of processes.

#### (2) In class

Compared with the traditional teaching model, in which teachers focus on imparting knowledge, in the integrated teaching mode, teachers select some representative students play the role of "teacher" to do the teaching and explanation to the other students, like the flip of teacher and

student identity. If the students have any questions, they could ask and discuss the questions online by "Rain Classroom", while the "teachers", who are played by students, finishes their explanation, all of the students could discuss offline or in groups. Usually everyone's question will come to a conclusion in the heated discussion, also a deeper question is appeared in the heated discussion. It creates a virtuous circle that the students internalize and absorb knowledge by Multi-angle on-line and off-line integrated teaching.

### (3) After class

The students summarize the results of discussion, form a study report after class. This cloud promote the students to master, absorb and sublimate the knowledge point, to achieve the purpose of applying what they have learned. At last, the teacher assigns an after-class extended exercises, to make the classes open and enhance students' innovation capability.

## 4. Conclusion

Blended teaching model centered on students focus on students, which takes the learning effects and learning autonomy of students as the teaching aims. The teaching design which is made for the students' needs, is aimed at stimulating students' desire for exploration and curiosity. The blended teaching model is not just some other teaching models added, but comprehensive integration after analyzing the students' situation and the characteristics of the teaching content. By taking the blended teaching model, the learning motivation and the knowledge assimilation of students has been greatly enhanced, what's more the learning motivation of student has been cultivated.

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