

# Overview for Development and Core Elements of Flipped Classroom Concept

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## Abstract

The flipped classroom concept has evolved into one of the most popular classroom teaching forms in the world. Contemporary Curriculum Reform with flipping classroom concept is of great significance to improve the quality of talent training in application-oriented universities. In this paper, the development and core elements of flipping classroom concept are summarized. The key to the flipped classroom concept is “flip”, which refers to the reform of the traditional classroom teaching form, including the flipped of curriculum and teaching status, flipped of teaching and learning process, flipped of “doing for learning” and “listening for learning”.

## Keywords

Flipped Classroom, Flipped of Curriculum and Teaching Status, Flipped of Teaching and Learning Process, Flipped of “doing for learning” and “listening for learning”.

## 1. INTRODUCTION

With the development of information technology, the flipped classroom teaching model has become a classic method of education reform at home and abroad, and has developed into one of the most popular classroom teaching forms in the world. Under the general environment of improving the construction ability of application-oriented undergraduate colleges and the new requirements for the cultivation of application-oriented talents, new concepts of teaching reform is gradually presented, and the flipped classroom has been rapidly developed. With the help of flipped classroom concepts, cultivating new classroom teaching models and reforming classroom teaching in applied undergraduate colleges is a very meaningful educational exploration.

Flipped classroom has developed into one of the ideal classroom teaching concepts which receive much attention and focus. The success of the flipped classroom in practice indicates that the teaching concept is scientific and is a practical theoretical path in the process of contemporary teaching reform. Especially in the context of the construction and development of application-oriented undergraduate colleges, in-depth study of the revelation of flipped the classroom on the reform of curriculum teaching is of great significance for improving the quality of talent training in application-oriented undergraduate colleges.

## 2. DEVELOPMENT OF FLIPPED CLASSROOM CONCEPT

The formation and development of the flipped classroom concept is a process of deep integration of information technology and classroom teaching. Flipped classroom is a teaching method originated from the United States. The flipped classroom can be traced back to the Peer Instruction method that emerged in Harvard in the 1990s. In 1993, Eric Mazur founded computer-assisted teaching, using computer-assisted teaching to make up for the shortcomings

of traditional teaching methods, began the transformation of teachers from "instructor" to "coach", and published related books to introduce teaching mode [1][2]. In 2000, Maureen Lage, Glenn Platt and Michael Treglia of the United States published the paper "Inverting the Classroom: A Gateway to Create an Inclusive Learning Environment" [3], which introduced their use of "Introduction to Economics" at the University of Miami in the United States. The "flipped teaching" mode marks the birth of the flipped classroom concept. In 2000, J. W. Baker published the paper "The Classroom Flip: Using Web Course Management Tools to Become the Guide by the Side" at the 11th International Conference on University Teaching [4]. In 2004, under the guidance of the flipped classroom concept, Salman Khan developed a large number of online course resources [5] In 2007, the chemistry teachers Jonathan Bergmann and Aaron Sams [6][7] of Woodland Park High School in Colorado, USA, use video software to record PPT and attach explanation sound, and upload the recorded video to the Internet, marking the trend of flipped classroom practice. Since 2010, Flip Classroom has continuously expanded to other professional fields, such as lawyer education, doctor education, and teacher education, and has become the most popular modern classroom teaching concept in the field of professional education.

In the course of its development and reform, China has also joined the experiment of flipped classroom teaching reform. In 2011, Chongqing Jukui Middle School introduced the "flip classroom" teaching model [8]. Under the school concept of "being the best self", combined with the school's "541" efficient classroom mode, they explored "four steps before class" and "five links in class" for the development of Jukui Middle School. The basic model of flipped classrooms of Jukui Middle School has achieved a very significant effect of curriculum reform, and has become a model for the application of flipped classrooms in China. In 2013, the C20 MOOC (High School) was jointly initiated by the Research Center of the East China Normal University and more than 20 famous high schools in China [9]. The alliance aims to promote the development of large-scale online public micro-video courses in Chinese high schools, improve the talent training model, and realize the reform of the school teaching model. It provides a good practical platform for promoting the implementation of "flip classroom" and accelerates the practice of flip classroom in China.

### 3. CORE ELEMENTS OF FLIPPED CLASSROOM CONCEPT

Flipped classroom can also be called "reversing classroom", which refers to readjusting the time inside and outside the classroom, transferring the decision-making power from the teacher to the student, which can give the student more freedom and put the process of knowledge transfer outside the classroom. Students choose the most suitable way to receive new knowledge, and put the process of internalizing knowledge in the classroom, so that there is more communication and exchange between students, students and teachers [10].

Compared with the traditional education model, flipped the classroom realized the reverse of "teaching" and "learning" in time and space, endowed new meanings of "teaching" and "learning", and played a huge role in the reform of educational ideas. However, in the course of teaching practice, many front-line teachers believe that flipped classrooms are the teaching tasks of teachers in the classroom, can be made into videos using information technology. Whereas students can watch the video in advance after class, and the main tasks of students in the classroom are to review and write homework. Compared with the traditional indoctrination teaching method, this teaching mode of making video as the core task of flipped the classroom only exchanges the teaching task in time and space, and does not produce a real sense of teaching goals and teaching methods. Moreover, many teachers, when doing the teaching reform of flipped classroom, found that using the flipped classroom concept could not achieve the expected teaching effect, so they questioned this teaching model. Based on this, we need to

clarify what are the core elements of flipped classroom, and what teaching elements have been flipped in this classroom reform.

### **3.1. Flipped of Curriculum and Teaching status**

The idea of flipped classroom concept provides a staged and creative solution to the gap between curriculum and teaching. The concept of flipped classroom has completely reversed the status of the curriculum and teaching. Under the concept of flipped classroom, the form of textbooks has diversified and is no longer limited to traditional textbooks, but includes teaching videos, learning conclusions generated by joint learning and discussion, and course-related learning obtained through multiple channels. Teachers are no longer just the transferers of book knowledge, but must carefully select and design the content of the curriculum activities to achieve effective interaction and cooperative exploration based on the core content of the curriculum and the learning situation of students.

In the flipped classroom, the status of teaching is promoted, teaching becomes the derivative and pioneer of the curriculum, the curriculum is no longer the "manager" of the teaching activity, and the teaching activity becomes the center of the curriculum practice. This flip allows the course to be continuously updated during the teaching activities, such as the production of mini-teaching videos, which allows students to refer to the course content anytime and anywhere, and record the difficulties of the course content [11].

Various forms of teaching activities can increase learners' enthusiasm and attention, increase students' desire to learn independently, and change the original passively accepted learning state. It can be seen that flipped the classroom has completely changed the curriculum and teaching status, provided a solution for the integration of curriculum and teaching, and provided a basis for the construction of an ideal classroom teaching form.

### **3.2. Flipped of Teaching and Learning Process**

The concept of flipped classroom reversed the process of "teaching" and "learning", changed the primary and secondary positions of teaching and learning, and designed the process of "teaching" with "learning" as the center [12]. Flipped classroom emphasizes the teaching concept that the student is the main body and the teacher is the main direction. In the flipped classroom, the focus of teaching is "learning". Students must use network learning, autonomous learning, cooperative learning and problem-oriented learning to achieve diversified learning activities, and "teaching" becomes the guidance of learning activities.

Teachers must focus on creating an environment that is conducive to stimulating learning interest, guiding and encouraging students to study autonomously after class, and utilizing class time for active and social learning activities to achieve high-level learning tasks and multi-ability training goals. According to their own development needs, students show more curiosity and more learning input in the learning process, participate more in the learning discussions organized by teachers, discuss the learning methods, and improve learning ability. In this learning mode, "teaching" no longer occupies the main position and "learning" becomes the main body. Teachers are gradually marginalized in the flipped classroom, and students' own learning ability and learning mobility are becoming stronger and stronger.

In the flipped classroom, students have mastered most of the learning content through the self-learning after class. Mutual discussions in the classroom can solve some common problems, and through communication with teachers, they can better absorb the curriculum content, the entire teaching returns to the original meaning of teaching activities-"creating teaching activities for the needs of students' learning". Flipped the classroom reverses the flow of "teaching" and "learning", and decomposes the difficulty of knowledge and the number of learning, which promotes the degree of knowledge acquisition and absorption of learners, and further makes teachers clear that students and learning are classroom teaching activities.

### 3.3. Flipped of "doing for learning" and "listening for learning"

Flipped classroom turns the "listening for learning" to "doing for learning" [13], that is, the student's "learning" controls the teacher's "teaching", using individual learner's personal experience, independent learning way to complete the accumulation of knowledge. In this class, the teacher's "teaching" is not a sufficient condition, but only a necessary condition. Students become active learners, they don't need to remember those "dead knowledge", but to understand the origin of knowledge and the effect on future learning by exploring problems and cooperating and discussing. Particularly, in the flipped classroom, teachers can use micro video to make most of the teaching content into video in advance, and students can learn part of the learning content in advance after class and record the issues that need to discuss. In the precious time in the classroom, teachers no longer need to repeat the teaching content in the video, but leave more time for communication with students, stimulating students' learning potential.

In the flipped classroom, you can also build a discussion mechanism in the student classroom, divide students into several discussion groups, students can freely discuss the problems encountered in the learning process, and increase the fun of student learning. By increasing self-learning time and self-learning activities, students are allowed to complete their learning activities during their own inquiry process, to achieve "doing for learning", which enables all the students' senses to participate in the learning process. Therefore, flipped classroom completely changed the traditional "listening for learning" method to "doing for learning" method, changed passively receiving knowledge to active learning, and used students as the main body of teaching activities, which improved the quality of the teaching process and the learning effect of the students.

## 4. CONCLUSION

The paper summarizes the development history of flipped classroom and its significance to the reform of contemporary classroom teaching model. The three core elements of the flipped classroom concept are elaborated, including the flipped of curriculum and teaching status, the flipped of teaching and learning process, and the flipped of "doing for learning" and "listening for learning". We expect to use the flipped classroom concept to carry out teaching reforms in the courses of electronic information engineering, so as to enhance students' learning initiative and learning ability to meet the requirements of application-oriented undergraduate colleges.

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