

# *Research on the Application Model of Flipping Classroom in College Computer Basic Teaching*

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**Abstract:** Flipping classroom has been a hot topic in recent years. At the same time, thousands of schools both domestic and abroad have carried out or are carrying out the teaching practice and exploration of flipping classroom. As a kind of teaching mode, the flipping classroom is still in the initial stage of exploration and practice, so although the whole mode has a relatively stable model framework in macro, there are still many problems to be solved in order to grasp the micro-level teaching activity procedures. Through the teaching practice of information basic course in colleges and universities, the author carries out action research on the application of flipping classroom in information technology basic teaching in colleges and universities, in order to improve and optimize the effect of flipped classroom teaching, and to provide methods for reference and reference for solving the problems existing in the current teaching process of information technology basic course in colleges and universities.

## 1. Introduction

As the foundation of a nation, the development and transformation of education are the general concern of the state and the people. Teaching method is one of the core contents in the process of school teaching, and its reform has been a breakthrough point for experts and scholars in the industry to seek to realize educational reform.

The true traditional classroom teaching mode, which appeared in Europe in the 16th century, has a history of nearly 400 years. In the past 400 years, there have been many adjustments and changes in the traditional classroom teaching mode, but the basic mode of "speaking in class and practicing after class" has never changed. Indeed, invariance has its invariable truth, that is, this teaching mode has many advantages that other teaching modes can not match in training students. Of course, because the traditional teaching mode has so many obvious advantages, it has never been really leveraged by the reform in the past hundreds of years, and its inherent shortcomings have also been retained for hundreds of years.

Only in recent years, the emergence of the reversed classroom teaching mode supported by information technology may be able to complete the real transformation of the traditional teaching mode of "eliminating the bad while preserving the good".

## 2. Research background

### 2.1. The origin of flipping classroom

In 2011, the two subversive innovative teaching methods became the two hotspots of the international education community. One of them was the emergence of flipping classrooms. To be exact, the initial definition of flipping classrooms was more formal. As early as the 1990s, there were colleges and universities that had similar teaching practices and research on flipping classrooms<sup>[2]</sup>. For example, Eric Mazur of Harvard University found that peer-to-peer teaching can effectively promote students' knowledge. Absorption and mastery, and on this basis, computer-assisted teaching practice and theoretical research similar to flipping classroom<sup>[3]</sup>, and proposed Peer Instruction teaching method; Molin Lahe et al. opened in the university The economics course also carried out the practice of flipping classroom teaching and published papers on flipping classroom teaching methods<sup>[4]</sup>. However, it is widely believed that in 2011, at the conference of TED (a private non-profit organization in the United States, English Entertainment Design), a speech entitled "Recreating Education with Video" by Salman Khan proposed "Flip the Classroom". After that, the flipping of the classroom quickly became a hot spot for educators, and related research and practice were quickly launched around the world<sup>[5]</sup>.

### 2.2. The practice of flipping classroom teaching at home and abroad

Since the term "flipped classroom" was formally proposed and received widespread attention in 2011, many schools at home and abroad have explored and practiced it in an attempt to find a breakthrough in teaching reform. As early as early as the beginning of 2012, more than 100 schools in more than 30 cities of more than 20 states (provinces) in many countries have carried out the practice and exploration of flip classroom teaching<sup>[6]</sup>. More information is recorded, since the practice of flipping classroom teaching in American woodland high school, "this method has gone all the way, and now thousands of schools around the world are using it"<sup>[7]</sup>. Among them, the typical foreign cases of flipping classroom teaching practice are as follows: in the flipping classroom teaching practice of American Highland Primary Schools with the creation of a unique and novel learning environment as the highlight<sup>[8]</sup>, By adjusting and changing the learning environment, this paper explores and tries to carry out the teaching activities of the flipped classroom teaching mode. It will provide a good reference for the schools that will carry out the practice of the flipped classroom teaching in the future in setting up the learning environment of the class. With abundant learning resources and advanced equipment as the support to carry out the practice of flipping classroom teaching in the United Riverside School District of the United States, the extracurricular self-study link of flipping classroom teaching mode has been improved and optimized. In China, Chongqing Jukui Middle School, as an early school to explore and practice the flipped classroom teaching model and achieve good teaching results, has been reported by many domestic media. In addition, hundreds of primary and secondary schools, such as Shenzhen Nanshan Experimental School, Guangzhou Huajing Primary School, Jinan Lixia District Primary and Secondary School, Guiyang No. 1 Middle School, Nanjing Jiulong Middle School, have carried out flip classroom teaching practice, which has been reported by the media.

### 2.3. Problems in Information technology foundation as a public foundation course

The basic courses of information technology, also known as the basic courses of computer and information technology in universities and departments, are common basic courses offered by almost all majors in domestic universities. At present, there are some common problems in offering

basic information courses in colleges and universities. Firstly, because there are many majors, they often use mixed classes with multiple majors, and the information technology abilities of students in different majors are quite different. Even in the same major, due to different family conditions, the time of computer contact varies greatly. Most of the contents taught by the IT Foundation are common sense computer knowledge, which is easy to appear. Some students think it is difficult to master the same content, while others think that such knowledge needs to be talked about and feel incredible. Secondly, because the content of computer basic course involves many practical operations, it is difficult for beginners to master it only by using projection demonstration once by teachers. Moreover, teachers of basic information technology courses in colleges and universities generally have a feeling that the same lesson often has to be repeated several times because they want to give different classes, and the repetition of labour is very high.

#### **2.4. The optimization of flipping classroom teaching mode**

With the research of flip classroom practice teaching carried out in many places and achieved some results, many frontline practitioners also found that there are still many problems to be solved in flip classroom teaching mode, such as the lack of supervision by teachers in the process of extracurricular video learning, which makes it difficult for some students with poor self-learning and self-control ability to carry out extracurricular self-learning. In addition, it is difficult to carry out teaching activities efficiently and orderly. Although the flipped classroom teaching model has been widely applied in practice in various places, many variants of the model have been derived, but many problems have not been solved, and the flipped classroom teaching model needs to be further optimized.

### **3. Research process**

In this study, the action research method was adopted as a whole. The author conducted the basic teaching of information technology in the X colleges where the experiment was conducted, and at the same time completed relevant experimental research in this teaching process. The whole experiment was carried out in two rounds and was carried out and completed in the next two semesters in the 2017-2018 school year. The whole experiment was carried out in four professional classes A and B, C and D. The main purpose of the first round of experiments was to verify and discover the problem. The A professional class was used as the experimental object, and the content of the textbook was selected. The experiment of the six-course inversion classroom was carried out. The second round of experiments was a comparative experiment. The three professional classes B, C and D are the experimental subjects. The same chapter content of the textbook is also selected. For each professional class, the improved classroom teaching mode, the improved flip classroom teaching mode and the traditional transmission are adopted in the same time period. The teaching experiment was carried out by the teaching mode, and the teaching experiment of six consecutive courses was also carried out. Based on the scientific comparison of the experimental results, relevant conclusions were drawn.

On the basis of analysis, research and reference, and reference to the above reference models of flipping classrooms, combined with the characteristics of university information technology basic courses, the author summarizes the current common flip classroom teaching model (as shown in Figure 1), which is also the basis of the first round of experiments:

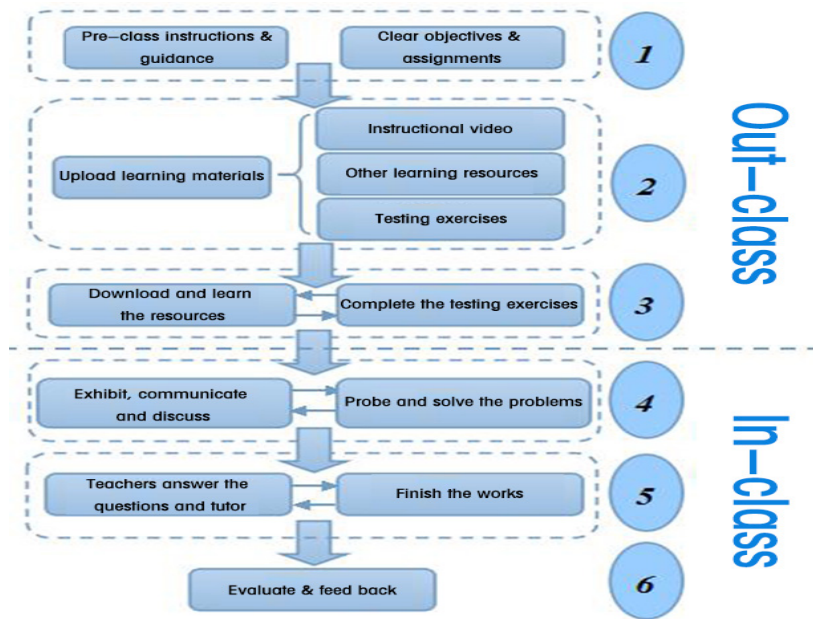


Figure1. General process of flipping classroom teaching mode

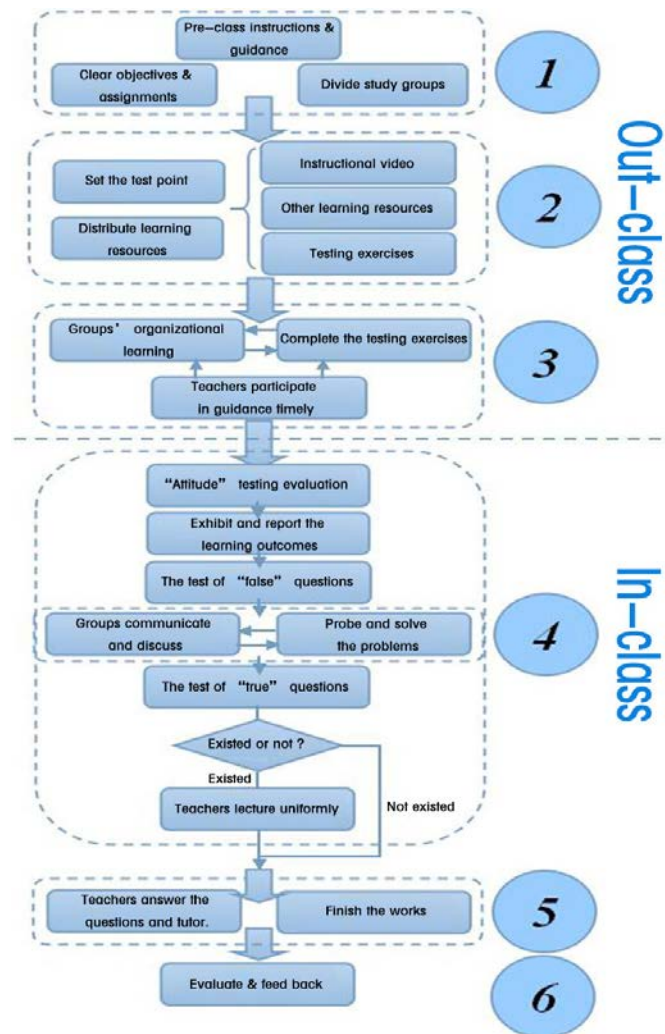


Figure2. Improved flow of the improved flip classroom application model

Through the first round of experiments, the author finds that the flipping classroom teaching mode can indeed achieve individual counseling and targeted teaching, but the author finds that the flipping classroom teaching mode has encountered many practical problems while solving the problems existing in the basic teaching of information technology in X universities. This author proposes a series of solutions, and integrates the solution into the flipping classroom teaching mode, improves the process of flipping the teaching application mode (as shown in Figure 2), and applies this instructional design to the teaching practice. The teaching effect was tested in the comparison of round experiments.

In the second round of experiment, three professional classes, B, C and D, were selected to conduct comparative experiments. The improved flipped classroom teaching mode, the improved flipped classroom teaching mode and the traditional "lecture-acceptance" teaching mode were used to teach, and the corresponding conclusions were drawn by comparing the teaching effects.

After the statistics and analysis of the related data in the second round of experiments, the author finds that the teaching effect has been significantly improved after the adjustment and improvement of the classroom model was applied to the basic teaching of information technology. Some statistical indicators show that (" $>$ " stands for "better than", " $>>$ " stands for "far better than", " $\approx$ " stands for "close"):

In terms of training students to master basic knowledge: traditional mode  $>$  reversal (new)  $>$  reversal (old);

In terms of training students' operation skills, the following are the following: reversal (new),  $>$  reversal (old)  $>$  traditional mode.

In cultivating students' problem-solving ability, the following aspects should be considered: turning over (new)  $>$  turning over (old)  $>$  traditional mode;

In the aspect of cultivating students' self-study ability, the following are: turning over (new)  $>$  turning over (old)  $>$  traditional mode.

In the aspect of cultivating students' innovative ability, we should turn over (new)  $>$  the traditional mode.

In the aspect of cultivating students' cooperative ability, the following are the following: turning over (new)  $>$  turning over (old)  $>$  traditional mode.

In terms of improving students' learning attitudes: reversing (new),  $>$  traditional mode,  $>$  reversing (old);

In terms of improving students' learning motivation: traditional mode  $>$  reversal (new) reversal (old);

The statistical results of the above experiments show that the revised and improved teaching model of flip course has obvious advantages in most indicators.

#### 4. Conclusions

The flipping classroom teaching mode obtained in this study has obvious effects on solving some problems existing in the flipping classroom teaching mode and the problems that the flipping classroom teaching mode is applied in the teaching process of college information technology and some problems existing in the teaching of information technology in colleges and universities. It can provide reference and reference for relevant research and application processes of other relevant researchers and teaching workers.

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