



## Design and Application of Flipped Classroom with Online Teaching in International Finance Courses

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**Abstract:** According to the previous research on online teaching mode, taking international finance course as an example, flipped classroom is applied to online teaching in colleges and pre-class, in-class and after-class design is carried out. This mode of teaching is adopted for students majoring in financial engineering at grade 2021 and traditional mode of teaching is adopted for students majoring in financial engineering at grade 2020. The research findings are as follows: Flipped classroom with online teaching significantly improves students' evaluation of teachers' teaching satisfaction. Although the adoption of this mode also improves the average test score and teaching quality evaluation of this course, the significance is not high, and the impact degree is weaker than that of teaching satisfaction evaluation.

**Key words:** flipped classroom, online teaching, teaching satisfaction

### Introduction

Flipped classroom originated in 2000. With the development of the Internet, this teaching model has gradually become popular and triggered controversy around the world. It refers to the reconstruction of the learning process, the conversion of learning content in class and after class, students from passive acceptance to active learning. Under this model, college teachers do not impart knowledge in class, but independently learn before class through video and other network methods, and mainly answer questions and communicate with students in class.

In addition, with the advent of the post-crisis era, countries are engaged in the game of market pattern around the new international financial order. In the face of the two powers of Europe and the United States, China, as an emerging economic power, how to keep its national interests from being infringed while maintaining cooperation with other countries is the top priority. Under this background, China needs more professionals in international finance. However, higher education bears the inescapable responsibility. How to reform the International Finance course and expand the online teaching mode is of great significance for training applied international financial talents.

### Literature Review

There are almost no relevant researches on the application of flipped classroom with online teaching in colleges and universities, and most of them are researches on flipped classroom of teaching mode alone or combined with other teaching modes. Relevant researches mainly focus on the following aspects:

#### 1. Research on influencing factors of teaching satisfaction

Van Raaij and Schepers (2008) tested the validity of TAM model in an online learning environment, and concluded that perceived usefulness significantly affected technology use behavior, and pointed out that perceived ease of use indirectly affected individual technology use behavior mainly due to individual perceived usefulness<sup>[1]</sup>. Wang Yuliang (2017) built a model of influencing factors for students' learning based on the theory of rational behavior, and the research results showed that in the flipped classroom teaching mode, subject attitudes and subject norms affected students' learning behaviors, in which learning environment, learning tasks, teaching management, and learning evaluation and feedback significantly affected subject norms. Online learning resources and classroom teaching design positively affect students' subjective attitudes<sup>[2]</sup>. Hu Guoliang (2017) conducted an empirical study using structural equation model and concluded that classroom teaching design, teaching atmosphere and teaching effect have a significant impact on teaching satisfaction under the flipped classroom model, in which classroom teaching design and teaching atmosphere have no direct impact, but teaching effect has the greatest impact<sup>[3]</sup>. Zhang Bei (2014) conducted an empirical study on teaching mode by using SEM model, and the results showed that students' expectation of learning had a reverse impact on teaching satisfaction, and independent learning, practical teaching and teaching quality had a significant positive correlation with teaching satisfaction, among which teaching quality had the most significant impact<sup>[4]</sup>.

#### 2. Research on teaching model design and effectiveness

Bill Tucker (2012) proposed that the application of flipped classroom teaching mode lies in the change of teaching methods. Before class, students mainly learn basic knowledge online, while students mainly solve problems and

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internalize knowledge offline<sup>[5]</sup>. Jon Beermann (2011) proposed that flipped classroom teaching is a process of communication, discussion and interaction between teachers and students and among students<sup>[6]</sup>. Huang Zhifang (2019) introduced deep learning theory, built specific teaching modes of pre-class, in-class and after-class, and concluded through action research that this mode had a significant impact on students' knowledge mastery and ability cultivation<sup>[7]</sup>. Tian Miao (2019) combined the multi-modal theory with flipped classroom to investigate the application effect of this model in the curriculum, and the research showed that this model is conducive to the improvement of teaching effect<sup>[8]</sup>. Yang Xiaoyan (2018) combined flipped classroom and TBL teaching mode in teaching practice, and concluded that this mode has a significant impact on the improvement of experimental teaching effect, which is conducive to enhancing students' teamwork ability, independent thinking ability and learning interest<sup>[9]</sup>. Peng Hongchao (2020) pointed out that flipped classroom teaching mode has a significant impact on students' individual and group cooperation results as well as their communication and interaction with classmates, which increases students' sense of personal responsibility and teamwork to a certain extent and lays a foundation for the training of applied talents<sup>[10]</sup>.

To sum up, domestic and foreign scholars have studied the teaching model from different perspectives, conducted empirical research on students in higher vocational colleges and colleges and universities, and discussed strategies to improve the teaching effect or teaching satisfaction in colleges and universities. However, the previous research mainly studied the flipped classroom mode separately, and the research on the application of flipped classroom teaching mode to online teaching in colleges and universities is even less. Based on previous research on online teaching mode, this paper takes the international finance course taught by the author as an example to design the application of flipped classroom with online teaching in pre-class, in-class and after-class. This mode of teaching is adopted for students majoring in financial engineering at grade 2021 and traditional mode of teaching is adopted for students majoring in financial engineering at grade 2020. Data of various variables were obtained through online questionnaires and in-depth interviews on QQ and wechat, and the research conclusions were finally drawn.

### Design of flipped classroom with online teaching in international finance courses

#### 1. Pre-class teaching design

Before class, students mainly learn basic knowledge through teaching videos. First, the school establishes a teaching team composed of three teachers at least. In order to guide students to use online resources for independent learning better, the teachers in the team need to cooperate in front-end analysis and teaching design, collect and develop teaching resources. For example, record short videos of basic knowledge teaching, make PPT courseware, design learning task points, exercise tests, and so on, upload relevant teaching resources to the Super Star Learning platform. Students can log in the Super Star Learning platform and enter the class invitation code for video learning. While watching the teaching videos, they can have discussion in the learning Connect class group online. After the completion of the video learning, the exercise test will be carried out online, and the teacher will adjust the teaching design according to the test results and students' feedback. Since pre-class video learning mainly depends on the initiative of students, teaching videos, PPT and exercise detection can be set as task points, and teacher's terminal background can check which students have not completed the task points, and the network attendance rate and the number of online discussion and communication are included in the assessment criteria of the regular grades at the end of the semester. In addition, in order to prevent some students speed the teaching video for the purpose of achieving the attendance rate, the teaching video and PPT viewing are set to prevent dragging and switching. The specific pre-class teaching design process is shown in Figure 1.

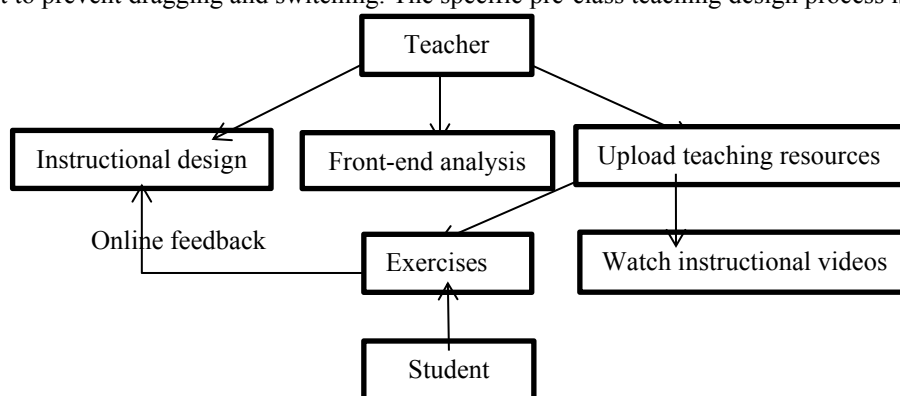


Figure 1 Pre-class teaching design of online teaching

#### 2. In-class teaching design

Due to the application of flipped classroom with online teaching in universities, teaching tasks must be completed online no matter pre-class, in-class and after-class. In-class, teachers conduct live teaching through the Super Star Learning platform, Tencent Classroom and other software, or open teacher screen sharing through Tencent QQ class group for teaching. During the live broadcast process, students feedback the problems existing in pre-class video learning through the text chat function in the live broadcast room. The teacher explained these problems and the test results in detail through live broadcasting or on-screen video and voice sharing. After deepening the basic knowledge, the teacher

organized the class members to carry out cooperative exploration activities: Introduce cases - raise questions - arrange tasks, and each group will cooperate and discuss through QQ group or wechat group. In the process of group cooperation and exploration, teachers will join the group to participate in the communication and discussion of each group and provide personalized guidance to answer their doubts. In order to prevent some students from "free driving" in the process of group discussion, The leader of each group will record each discussion and record the communication content and personal views of each student. Finally, each group will present the discussion results in the classroom online, and the teacher will make live comments on the class presentation results of each group. Groups or individuals communicate and display their own views to deepen the cognition of teaching content and improve students' ability of independent learning, problem solving, analysis and teamwork. The specific in-class teaching design process is shown in Figure 2.

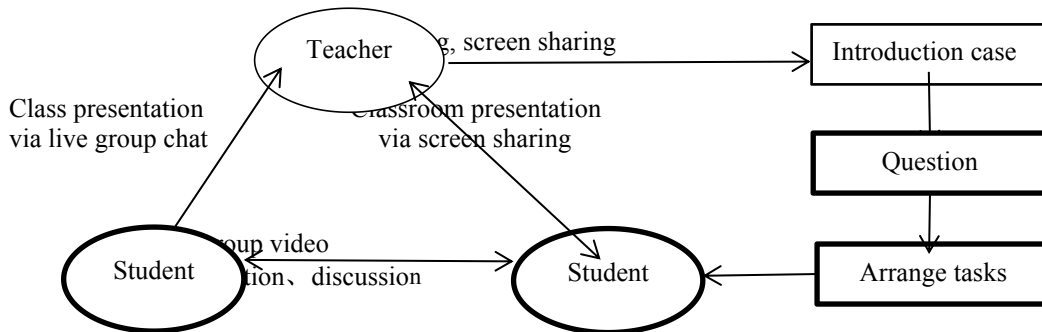


Figure 2 Pre-class teaching design of online teaching

### 3. After-class teaching design

After class, teachers publish exercises to consolidate basic knowledge, upload hot videos on topics related to the course for students to watch, so as to divergent thinking and expand extracurricular knowledge, and publish topics for students to discuss after class and express their views online. Teachers collect pre-class task completion, class discussion and class presentation through the learning platform for teaching reflection, analyze and summarize the problems in the teaching process, adjust the course design of each stage accordingly, improve all kinds of teaching resources on the learning platform, and improve the classroom teaching content. In order to improve the students' grasp of the basic knowledge of the course, understanding ability and knowledge expansion ability. The specific after-school teaching design process is shown in Figure 3.

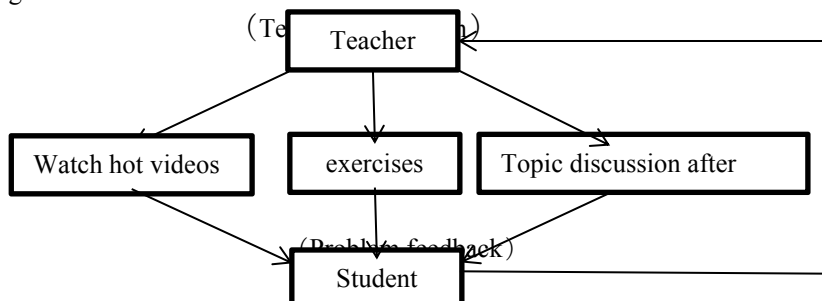


Figure 3 Pre-class teaching design of online teaching

### Descriptive statistical analysis

Taking the course of international finance taught by me as an example, the subjects of this study were 198 students majoring in financial engineering in a university of 2020 and 2021. Firstly, the subjects were divided into experimental group and control group. Classes 1 and 2 of grade 2021 major in financial engineering were selected as the experimental group (104 students in total), the flipped classroom online teaching mode was adopted (the above pre-class, in-class and after-class designs were applied to the flipped classroom online), and Classes 1 and 2 of grade 2020 major in financial engineering taught in the traditional teaching mode were selected as the control group (97 students in total). This research uses data from the scores of international finance courses of Class 1 and 2 of Financial Engineering, grade 2020 and 2021 of a university, including paper scores and attendance scores. This survey adopts the form of online questionnaire conducted by Weixing and QQ and wechat interviews to obtain teaching satisfaction, teaching quality evaluation data and data of various control variables. Likert5-level scale was used to measure the indicators of each control variable. The values assigned to each variable were ranked from low to high: "Very poor" =1; Difference =2; "General" =3; "Better" =4; "Very good" =5. 295 questionnaires were distributed to the experimental group and the control group, and 291 questionnaires were recovered in total, of which 130 were recovered in the experimental group and 161 were recovered in the control group.

The same test paper was used to test the students in each group at the same time, the experimental group and the control group's intra-group and inter-group differences in final scores was found before and after the teaching reform, as shown in Table 2 below. As can be seen from Table 2, the average score of the control group was 61.47, and the average score of

the experimental group was 62.14. The average score difference between the two groups was 0.67, indicating that the knowledge mastery level of the two classes before the teaching reform was similar. After the teaching reform, the average score of the control group was 65.70, and the average score of the experimental group was 74.21. The average score difference between the two groups was 8.51, indicating that the average score difference between the two groups was large. In both the control group and the experimental group, the average score after the reform was higher than that before the reform, but the average score of the experimental group was higher than that of the control group.

Table 1 The intra-group and inter-group differences in final scores between the experimental group and the control group before and after teaching reform

course test score	the control group	the experimental group	diff
before	61.47	62.14	0.67
after	65.70	74.21	8.51
diff	4.23	12.07	7.84

According to the online questionnaire evaluation of students' satisfaction with teaching before and after teaching reform, the intra-group and inter-group differences in teaching satisfaction between the experimental group and the control group before and after the teaching reform are obtained, as shown in Table 2 below. Before the teaching reform, the average evaluation of teaching satisfaction of students in the control group was 2.473, and that of students in the experimental group was 2.387. The difference between the two groups was small, and the control group was slightly higher than the experimental group, indicating that there was almost no difference in the level of teaching satisfaction of the two classes before the teaching reform, and both were between unsatisfactory and average level. After the teaching reform, the average evaluation of teaching satisfaction of students in the control group was 3.015, and that of students in the experimental group was 4.476, showing a significant difference between the two, indicating that the teaching satisfaction level of the experimental group was higher than that of the control group, and the teaching satisfaction level of the control group was at a normal level, while the teaching satisfaction level of the experimental group was between satisfactory and very satisfactory. In each group, the teaching satisfaction level of the two groups was improved after the teaching reform, but the improvement degree of the experimental group was higher than that of the control group.

Table 2 The intra-group and inter-group difference of teaching satisfaction between the experimental group and the control group before and after teaching reform

teaching satisfaction	the control group	the experimental group	diff
before	2.473	2.387	-0.086
after	3.015	4.476	1.461
diff	0.542	2.089	1.547

According to the questionnaire evaluation of students' evaluation of teaching quality before and after teaching reform online, the intra-group and inter-group differences in teaching satisfaction between the experimental group and the control group before and after teaching reform are obtained, as shown in Table 3 below. Before the reform, the average evaluation of teaching quality of the students in the control group was 2.154, and that of the experimental group was 2.229. The difference between the two groups was small, indicating that there was little difference between the two groups before the reform. After the teaching reform, the mean value of teaching quality evaluation of students in the control group was 2.987, and that of students in the experimental group was 3.536, indicating that the mean value of the experimental group was slightly higher than that of the control group, and the experimental group was at the average to good level, while the control group was at the average level. In each group, the teaching quality of both groups was improved after the reform, but the improvement degree of the experimental group was slightly higher than that of the control group.

Table 3 The intra-group and inter-group differences in teaching quality between the experimental group and the control group before and after teaching reform

teaching quality	the control group	the experimental group	diff
before	2.154	2.229	0.075
after	2.987	3.536	0.549
diff	0.833	1.307	0.474

### Conclusions and suggestion

In this paper, the students of Class 1 and 2 of financial engineering in grade 2021 who adopted the flipped classroom with online teaching mode in a university are taken as the experimental group, and the students of Class 1 and 2 of Financial engineering in grade 2020 who have completed teaching with the traditional teaching mode are taken as the control group. The research finds that: Compared with the traditional teaching mode, the experimental group of students using the flipped classroom with online teaching mode had an average score of 7.8445 points higher in this course test, 1.5471 points higher in the evaluation of teachers' teaching satisfaction, and 0.4743 points higher in the evaluation of teachers' teaching quality. This indicates that the adoption of flipped classroom with online teaching mode in Class 1 and 2 of

Financial Engineering in grade 2021 significantly improves students' evaluation of teachers' teaching satisfaction. Although the adoption of this mode also improves the average test score and teaching quality evaluation of this course, the significance is not high, and the impact degree is weaker than the evaluation of teaching satisfaction.

Therefore, according to the research conclusions, the following suggestions are put forward: First, optimize the design of online classroom teaching. Enrich pre-class and after-class learning design, innovate learning channels in various ways, diversify learning modes, appropriately increase students' after-class learning time, and the teaching design in class directly affects the teaching quality. Teachers should change the traditional monologue teaching in the online classroom, and adopt personalized and discussion-style teaching methods to enable students to learn independently before and after class. Answer questions and deepen basic knowledge in class. Second, actively make use of the major network teaching platform. Since the flipped classroom online teaching mode has little impact on teachers' teaching quality, teachers do not need to record their own explanation videos for basic knowledge teaching videos. They can choose high-quality online courses or MOOC teaching videos recorded by famous teachers in major universities, download the teaching videos and upload them to the learning platform for students to complete basic knowledge learning.

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