Original Research Article

Comparison Between Flipped Classroom Teaching Model And Traditional Teaching

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Abstract: The flipped classroom is an instructional strategy and a type of blended learning, this paper illustrated the definition of the flipped classroom and features of flipped classroom, compare the flipped classroom teaching model with the traditional classroom.

Keywords: Comparison; Flipped Classroom; Teaching Model

1. The Definition of the Flipped Classroom

The flipped classroom is an instructional strategy and a type of blended learning that reverses the traditional learning environment by delivering instructional content online or outside of the classroom. It moves activities, including those that may have traditionally been considered homework into the classroom. In a flipped classroom, students watch lectures online, collaborate in discussions online, carry out research at home while engaging in concepts in the classroom with the guidance of a mentor.

Perhaps the simplest definition of the flipped, (or inverted) classroom is given by Lage et al. Inverting the classroom means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa. While this explanation captures the rationale for using the terminology inverted or flipped, it does not adequately represent the practice of what researchers are calling the flipped classroom. This definition would imply that the flipped classroom merely represents a re-ordering of classroom and at-home activities. In practice, however, this is not the case.

Most research on the flipped classroom employs group-based interactive learning activities inside the classroom, citing student-centered learning theories based on the works of Piaget (1967) and Vygotsky. The exact nature of these activities varies widely between studies. Similarly, there is wide variation in what is being assigned as "homework". The flipped classroom label is most often assigned to courses that use activities made up of asynchronous web-based video lectures and closed-ended problems or quizzes. In many traditional courses, this represents all the instruction students ever get. Thus, the flipped classroom actually represents an expansion of the curriculum, rather than a mere rearrangement of activities.

We define the flipped classroom as an educational technique that consists of two parts: interactive group learning activities inside the classroom, and direct computer-based individual instruction outside the classroom. We restrict this definition to exclude designs that do not employ videos as an outside of the classroom activity. While a broad conception of the flipped classroom may be useful, definitions that become too broad suggest that assigning reading outside of class and having discussions in class constitutes the flipped classroom. We reject these definitions.

Educause, an organization of community leaders who focus on knowledge creation to support the transformative role it plays in higher education, describes the flipped classroom as a pedagogical model in which the typical lecture and homework elements of a course are reversed. Stephen Neshyba (2013) state that flipping is a teaching technique that involves abandoning the traditional lecture (or just not relying on it so much) and replacing it with interactive approaches that experiment with technology and require students to gather information outside of class and be prepared to engage the material in class. The Center for Teaching and Learning at the University of Texas-Austin has developed that includes acquiring knowledge outside of the classroom, applying key concepts in class, and then checking understanding and extending learning at home. The FLN's governing board and key leaders in the network now distinguish between a flipped classroom and flipped learning and assert they are not interchangeable, school work at home and home work at school, it is not necessarily embracing the pedagogical approach originally intended. FLN has established four pillars of F-L-I-P (Flexible learning environment, Learning culture, Intentional content, and Professional educator).

Scholars in western countries often defined the flipped classroom as a pedagogical approach in which students gained first exposure to new materials outside the classroom and class time was reserved for problem solving and question discussing. Therefore, a dynamic, interactive learning environment, in which the teacher provided students with guidance, took the place of the traditional

lecture-based classroom. In other words, it would be concluded that the flipped classroom was actually the movement of the traditional in-class activities out of actual classroom by adopting newly developed technologies, often in the forms of audio or video podcast.

In China, although different scholars held different opinions towards the definition of the flipped classroom, they have all agreed that the core of the flipped classroom model was inversion of classroom learning activities and individual learning activities. In addition, they also agreed that this inversion might contribute to the creation of a more harmonious learning atmosphere and student-centered teaching process. Jin (2012) wrote that the so-called flipped classroom was actually an inversion of the traditional teaching process in which teachers gave lectures in classes and students did home work after school. Zhang (2013) pointed out that the flipped classroom model was a process in which knowledge teaching was placed outside the classroom with the help of computer networking technology while reserving the class time for problem solving and question discussing.

2. Features of the Flipped Classroom

Many scholars and researchers explored teaching by video many years ago, but there was seldom results and effects at that time. But flipped classroom is flourishing and has attracted many attention due to it has its own characteristics:

2.1 The video is short but effective

Most videos just have few minutes, the longer video has only a dozen minutes. Each video aimed at solving one specific problem. It's also easy to view and play at any time. The length of video is controlled within the time range in which students can concentrate their attention, which is consisted with students' physical and mental development characteristics. Teachers put videos on the internet for students to conveniently view and play many times according to their own learning pace and ability or their spare time, students can take control and learn autonomously pre-class.

2.2 The information is clear and concise

"It doesn't seem like I'm standing on the stage lecturing to you…it like we are seating at the same desk, study together and write the content on a piece of paper" (Salman Khan, 1976). This is the difference between traditional model and flipped classroom, the teacher's head as well as the various objects appeared in the video can distract students' attention, especially students' autonomous learning.

2.3 Rebuilt the learning process

Generally, a students' learning process consists of two sections: the first is information transfer which is realized by the interaction between the teacher and students, students and students; The second is absorption internalization which is completed by students themselves after class. Due to lack teacher's support and companion's assistant and the latter one often makes students feel disappointed and lose their force power and feeling of success. Flipped classroom rebuilt students' learning process. The former done pre-class in which teaching video and online tutor given by teacher. while the latter is completed by interaction during class while teachers can learn about students' difficulties ahead and offer more effective explanation to students, The mutual communication between students is more powerful to enhance knowledge absorbing and internalization.

2.4 The convenient review and timely test

After watching the prepared teaching video in advance, 4 to 5 questions followed can test whether students have master the contents and judge for students, If some questions are not answered well, student can replay and rethink. Teachers can collect information from the cloud platform timely to know the students' learning situation. It is benefit for students to review and consolidate after some span time.

3. Comparison Between the Flipped Classroom and the Traditional Classroom

Based on some previous studies and theoretical models, Fulton (2012) summarized the following difference between traditional classroom and flipped classroom.

Table 1   an Overall Comparison Between Traditional Classroom and the Flipped Classroom (Fulton, 2012)

Timeline	Traditional Classroom	Flipped Classroom
Before class	Students are assigned materials to read Teachers prepare lecture.	Students are guild through learning section and required to generate questions. Teachers prepare learning opportunities.
Beginning of the class	Students have limited information about what to expect. Teachers make general assumption about what is helpful.	Students have specific question in mind to guide their learning. Teachers can anticipate where students need the most help.
During class	Students are guided to learn new knowledge. Teachers try to get through all the materials.	Students practice the skills they are expected to learn. Teachers guide the process with feed back and the mini-lectures.
After class	Students finished the homework usually with delayed feedback. Teachers grade past work.	Students continue applying their knowledge skills after clarification and feedback. Teachers post any additional explanation and resources as necessary and grades higher quality work.
Office hour	Students want to confirm what to study. Teachers often repeat what was in lecture.	Students are equipped to seek help where they know they need it. Teachers continue guiding students toward deeper understanding.

The table 1 is actually a comparative study between traditional classroom and flipped classroom. According to Fulton (2012), the flipped classroom can be divided into 3 sections: the pre-class, the during-class and the after-class section. During the pre-class section, it was necessary for teachers to prepare learning opportunities so that students could be guided into the new class. During the in-class session, they were required to take part in a variety of activities, like quiz, debate, which could help them to consolidate what they have learned. Because most problems and questions had been solved during class, students could get their abilities developed by

exploring some additional learning materials which were more challenging.

The traditional teaching process includes 2 parts: knowledge instruction and knowledge internalization. The knowledge instruction is accomplished through teachers' teaching in class, while the knowledge internalization ask students to complete assignment, exercise or practice out of class. this form was overturned in the flipped classroom, knowledge was completed through the assistance of information technology after class, knowledge internalization is achieved with the teacher's help and classmates assistance in class, then formed flipped classroom. For the teaching process overturned, all link of the classroom learning process have also changed accordingly.

The flipped classroom is very different from previous classes in the allocation of teaching time. The traditional classroom was dominated by teachers' explanations and passively accepted by students. The time spent in flipped classroom is mainly for interaction.

Table 2 A Comparison of the Allocation of Time Between Traditional Classroom and Flipped Classroom

Traditional Class		Flipped Class	
Classroom activities	Time (minute)	Classroom activities	Time (minute)
pre-class warming	5	pre-class warming	5
homework reading	20	homework reading	10
focus on content	30-45	focus on content	75
classroom interaction	20-35		

From table 2, we can see, in traditional class, pre-class warming takes 5 minutes, homework reading 20 minutes, focus on content 30-45 minutes, classroom interaction 20-35 minutes. However, in flipped classroom, pre-class warming is 5 minutes, homework reading 10 minutes, focus on content 75 minutes. The time allocation is reversed.

Table 3 Comparison Between Traditional Classroom and Flipped Classroom

	Traditional Classroom	Flipped Classroom
teacher	knowledge transmitter, class manager	mentor and facilitator of learning
student	passive receiver	active researcher
teaching form	class presentation + homework	pre-class learning + classroom inquiry
class content	Knowledge interpretation	problem inquiry
technology application	content show	independent learning, communication and reflection, collaborative discussion tools
assessment format	traditional paper test	multiple angles, multiple ways

From table 2 and 3, we can see:

3.1 Teacher's role transition

Flipped classroom makes teachers become the facilitator and mentor of learning from the knowledge instruction in traditional classroom. Teachers are no longer the center, but they are facilitator. When students require guidance, teachers will offer the necessary assist. Teachers become the scaffolding for students to obtain materials , utilize resources and apply knowledge into real situations.

Accompanied by teacher's status shift, teachers are facing the challenge of developing new teaching skills. In flipped classroom, students become the center of the learning process. They need to build knowledge by completing real tasks in actual participation activities. This requires teachers to use new teaching strategies to achieve this goal. The new teaching strategy needs to promote students' learning, but cannot interfere with students' choices. Teachers promote students' growth and development by designing teaching activities. After completing the study of a unit, teachers should check students' knowledge mastery, give students timely feedback, and make students clear what they are learning. Timely evaluation also facilitates teachers to make timely adjustments for the design of classroom activities and better promote students' learning.

3.2 Redistribute the class time

Adequate time and efficient study are the key factors to improve academic performance. Flipped classroom complete the extension of teaching and learning time by maximizing the preview time. Flipped classroom reduced teacher's teaching time and save more learning time for students. These activities according to real situations and attracts students to complete learning tasks in interactive collaboration. Transfer what was taught in the classroom outside the classroom and increase students' interaction in class without reducing the amount of basic knowledge display. Finally, this shift will improve students' understanding. Besides, when teachers make performance-based evaluations, classroom interaction will become more effective. According to teachers' evaluation and assessment, students have a more objective understanding of their learning situation and make them better.

3.3 Students' role change

Educators can effectively offer rich learning resources with technology tools such as Wikis and blogs, students also can obtain the knowledge what they needed from online resources. In the individualized learning supported by technology, students become autonomous learners, who can choose when and where to study, control the learning content and amount. In the flipped classroom, students is not a completely independent learner. The flipped classroom is a dynamic and students are highly participate in activities. In the collaborative learning environment supported by technology, students need to interact with classmates and teachers repeatedly to expand their deep learning. Therefore, the flipped classroom is a class that constructs deep knowledge.

4. The Flipped Classroom Models

In traditional teaching, teacher teaches students in the front of classroom with the aid of blackboard and chalk, students listen to the teacher and do exercises in their seats. In class, teacher explain the textbook knowledge points according to the teaching plan. After class, students review and do exercises to consolidate the knowledge.
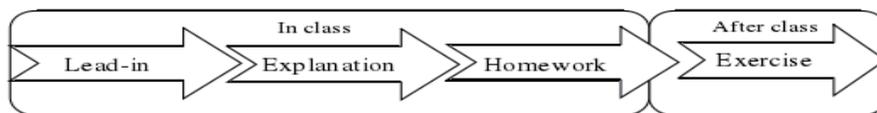
Figure 1 Traditional Teaching Model

Figure 1, Teachers mainly teach vocabulary from the aspects of pronunciation, morphology, meaning and make sentence. In the reading part, teachers teach knowledge through recording questions and answers. For the text, explain the meaning word by word, focus on the language points in the process of translation, and teach some grammar, sentence structures and collocation problems. Finally, homework is assigned to complete the exercise on the exercise book.

Among all the flipped classroom models, the models designed by Gerstein (2011) and Talbert (2014) respectively are among these most famous ones.

Gerstein (2011) designed the circular flipped classroom model and divided the whole class into 4 sessions including experiential engagement, concept exploration, concept exploration, meaning making the demonstration and application. Firstly he presented the opinion that the flipped classroom should begin with some experiential activities, such as doing crafts, experimenting, researching and so on. After that, some corresponding teaching videos were allocated to students who tried to explore some new concepts by watching those pre-class videos. Then students were asked to finish certain test and write blogs to fully understand the learned knowledge. Finally, students were required to present their learning achievement in groups.

Gerstein's model has drawn great attention from other scholars and teachers. However, some scholars have pointed out that his model was too complicated. Therefore, Robert Talbert (2014) designed the following simplified model .
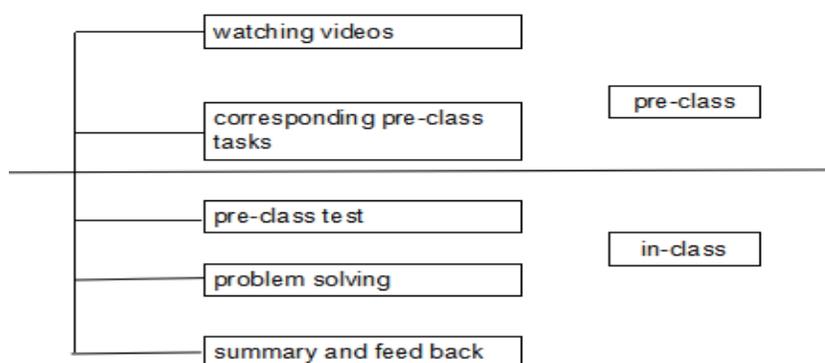

Figure 2 Bobert Talbert's Model of Flipped Classroom (Talbert, 2014)

The flipped classroom realizes the reversal of knowledge instruction and internalization. Knowledge instruction in the traditional classroom is transferred to the pre-class complete, while the knowledge internalization is transferred from doing homework activity after class to the learning activity in the classroom. In many courses, Robert Talbert, a professor of mathematics and computational science at Franklin Institute, has applied the flipped classroom teaching model and achieved great results. After years of teaching, Robert Talbert summarized the application structure model of the flipped classroom. The model briefly describe the main steps in the implementation of flipped classroom, however, The applied subject mostly inclined to the operational courses of science, the liberal arts curriculum needs further improvement.

From the above figure, it can be seen that Talbert divided the whole class into pre-class stage and in-class stage. Besides he also has pointed out that an effective flipped classroom experience should involve highly structured pre-class assignments in which students made first contact with new material, a means of accountability to ensure students finish the out-of-class work efficiently, well-designed sense making activities for students to do during classes and open lines of communication throughout the class (Talbert, 2014).

By comparing and analyzing the above two models, it can be found that both Gerstain and Talbert laid great emphasis on classroom activities and communication between teachers and students. They both agreed that communication between teachers and students were critical to the success of flipped classroom (Gersteins, 2011; Talbert, 2014).

Considering the fact that characteristics of education in China are quite different from that in western countries, some Chinese scholars (Zhang, 2012; Wang, 2013) have created some new models which took both the characteristics of the flipped classroom and traits of Chinese students and education in China into consideration. For example, according to the flipped connotation, constructivism theory and systematic teaching design theory, based on professor Robert Talbert the flipped classroom model, Zhang (2012) designed the following flipped classroom model based on his teaching practice and experience.

He divided the whole period of the flipped classroom into two parts: pre-class period and in-class period. In this period, teachers uploaded videos and exercises for students to down on the communicative platform before the class. After learning the new lesson on the Internet, students went to class with questions. Therefore, the first step of the class should be collecting and determining the questions to be discussed. Then students were divided into groups to discuss the question. In the end, feedback and a brief summary of students' performance were provided for students. In these two sections, information technologies and activities learning are two strong means.
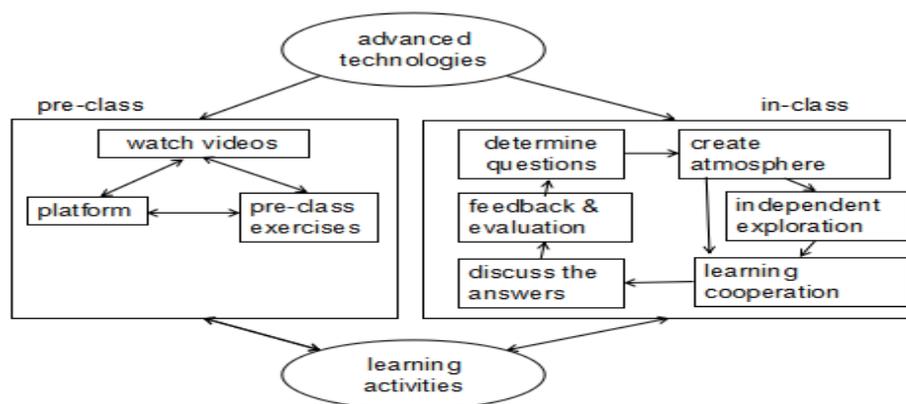
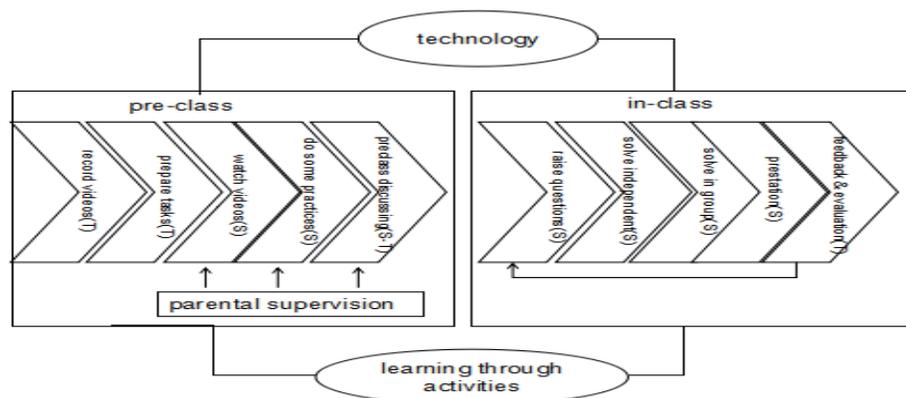Figure 3   The Flipped Classroom Model (Zhang, 2012)

Figure 4 Revised Flipped Classroom Model (Wang, 2013)

In 2013, Wang present a revised flipped classroom model based on the Albert's model which has been introduced above. In the above figure, the capital letter "S" stands for students and the capital letter "T" for teacher. According to Wang, Technologies and learning activities were two core elements which could guarantee other learning activities. With the help of technologies, teachers could search for various learning materials and made videos which students could seek the answers when faced with some difficulties. One important feature of this model is its well-ordered procedure and elaborately arranged content. However, she also pointed out there was no one-fit-all model, teachers should revise the existing model according to the concrete situation and reality, such as their students' level, learning context and the availability of learning equipment.

In February, 2013, Zhong Xiaoliu appeared Research on Instructional Design Based on the Flipped Classroom Concept in Information Environment, he created the flipped classroom model of Tai Chi ring, emphasized problem-centered, in-class links out-class, teaching and learning interacted and 4 steps progression step by step (prepare before class, memory and comprehension, application analyze and comprehensive evaluation).

The comparison of flipped classroom teaching model and Traditional one has been showed in this paper. This study presents that flipped classroom model is an more effective method for learning. It not only increases the self-efficacy of students, but also improves the independent learning capability in comparison with the traditional lecture method. The main characteristics of flipped classroom model are active learning method, group work, collaborations and Question-Answer method. It can be concluded that flipped classroom model is more effective teaching strategy as related to the traditional method of teaching.

5. Recommendations

Although the flipped classroom model is a relatively new method in education, it is quickly gaining importance because it creates time for more active learning and develops learning practices by integrating technology.Students in the flipped classroom performed better and favored the new model, feeling that flipped classroom was useful and helpful in preparing for the course.They benefited from the pre-week online lectures in the flipped classroom to prepare for the course. Before participating in a flipped classroom, teachers need to improve their knowledge and skills about using flipped classroom effectively.The flipped classroom model has the potential to create an autonomy-supportive learning environment and provide beneficial learning experiences.

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