

A study on the application of flipped classroom model in universities based on learners' perspective

Yuchen Guan

Department of Chinese International Education, Shandong University, Jinan, China, 250100

Abstract: *Since the concept of flipped classroom became a hot topic in 2011, it has been practiced in China for 5 years. At present, China has formed a number of online resources and project resources, such as Super Star Video Teaching Network, which provide a rich resource environment for the teaching practice of flipped classroom [1]. Many colleges and universities gradually carry out the flipped classroom teaching mode. However, many students in colleges and universities are resistant to flipped classroom. In order to investigate the reasons for the negative attitude of college students toward flipped classroom, this study conducted an interview survey with seven students from different colleges and universities, with different majors and more experience in flipped classroom. Through the analysis of the interview scripts, it is found that there are problems such as biased teacher's orientation, generalized micro-class videos and lack of in-depth classroom interaction in the application of flipped classroom mode in colleges and universities, and the corresponding improvement measures for the application of flipped classroom in colleges and universities are proposed in response to the problems.*

Keywords: *Flipped Classroom, Interviews, Learner Perspectives*

1. Introduction

The origin of flipped classroom implementation in universities can be traced back to the Peer Instruction founded by Eric Mazur, a physics professor at Harvard University in the early 1990s. Since Mazur believed that the traditional teaching model did not enable students to understand the knowledge well, he proposed to let students learn the class content by themselves in class and ask relevant questions in class, so as to deepen students' He believed that the traditional teaching model did not allow students to understand the content. Although the concept of "flipped classroom" was not introduced at that time, it is not difficult to find the shadow of flipped learning in it[2]. In the mid-1990s, Maureen J. Lage and Glenn J. Platt of the University of Miami Business School conducted the first "flipped classroom" experiment in a course on "Principles of Microeconomics. The "flipped classroom" experiment was conducted for the first time in the "Principles of Microeconomics" course. The flipped classroom provides students with self-study chapters of relevant books and chapters, as well as videos and courseware, and a dedicated website with corresponding e-learning resources[2]. Compared with Mazur's peer teaching method, the flipped classroom teaching experiment conducted by the University of Miami led to further refinement and development of the flipped classroom. Since then, the flipped classroom has quickly gained popularity. As of early 2012, flipped learning has been practiced in more than 30 cities in over 20 states in two countries (mainly in the US)[2]. In 2011 and 2012, the Wall Street Journal, The Economist, The New York Times, The Washington Post, and other mainstream media gave enthusiastic attention and positive coverage to the flipped classroom, and Canada's Globe and Mail named the "flipped classroom" as the major technology change that affected classroom teaching in 2011. The Globe and Mail of Canada even named the "flipped classroom" as a major technological change affecting classroom teaching in 2011[3].

The flipped classroom is defined as a classroom where the easiest part of the teaching task, knowledge transfer, is moved outside the classroom for students to learn on their own, making full use of the opportunities for active social interaction between teachers and students in the classroom, and between students and students in the classroom, to achieve deep learning, and to develop students' problem solving, creative thinking, high-level reasoning and critical thinking skills. The goal of education is to develop students' problem solving, creative thinking, high level of reasoning and critical thinking skills[3]. It is characterized by the fact that the student becomes the main subject of learning, and the teacher changes from being the "lecturer" and "instructor" to being the "supporter" and "guide" of self-learning. "The content of the class is changed from knowledge explanation and sorting to problem-oriented discussion

and application of knowledge.

After development, the flipped classroom model has been widely implemented in foreign countries, and has also achieved good teaching results. According to a June 2012 survey conducted by Education Consulting, Inc. of 453 teachers who have adopted the flipped classroom, 67% of the teachers surveyed reported that their students' performance on standardized tests had improved, and 80% of the teachers surveyed believed that their students' learning attitudes had improved[4]. Typical examples include a flipped classroom in a high school math class in British Columbia, Canada, a flipped classroom in a math lab class at Weil Valley State University, and a flipped classroom in a calculus class at Bliss School in Potomac, Maryland, USA[5].

In recent years, all levels of education in China have gradually changed the traditional teaching mode and tried to apply the "flipped classroom" model, aiming to improve the quality of education. The scope of flipped classroom pilot projects in China is wide, including universities, secondary schools and middle schools, and the most influential schools are located in Beijing, Tianjin, Shanghai, Ningbo, Chongqing and Guangzhou. In the process of practice, many schools have localized and improved the flipped classroom in accordance with their own needs[6]. The application of flipped classroom has achieved certain results. However, I found that many students in universities have a negative attitude towards the "flipped classroom" model. In order to investigate the reasons for students' negativity towards "flipped classroom", analyze the problems of "flipped classroom" in colleges and universities, and help improve the application mode of "flipped classroom" in colleges and universities and enhance the quality of education, the author applies qualitative analysis to the application of "flipped classroom". In order to analyze the problems of "flipped classroom" in colleges and universities and to help improve the application mode of "flipped classroom" in colleges and universities and enhance the quality of education, the author applied the method of qualitative research and conducted in-depth interviews with seven sophomore students from Shandong University majoring in Chinese International Education, Energy and Power Engineering, Geological Engineering and Biological Science, and discussed the acceptance level of "flipped classroom" teaching mode in colleges and universities and the existing problems from the perspective of learners.

2. Literature Review

In recent years, flipped classroom has been widely used in primary and secondary schools and universities in China, and there are many studies on it. A search of the Internet database shows that 66,862 articles on the topic of "flipped classroom" have been retrieved. Many scholars have analyzed the advantages of the "flipped classroom" over the traditional classroom. In terms of achievement, flipped classroom can improve students' performance (Li Jingnan and Wu Zhongjie, 2015) [7]; in terms of learning experience, flipped classroom can better motivate and enhance learning experience (Miu Jingmin and Wangqiong, 2015)[8]; in terms of learning ability, flipped classroom can improve students' thinking quality (Zhu Zhiting et al., 2015)[9], develop students' independent learning and cooperative learning ability (Pan Bingchao, 2015)[10]. At the same time, many studies have identified challenges in the implementation of flipped classroom in China. From the perspective of teachers, they face challenges in terms of teaching philosophy, knowledge and skills structure, role orientation, and workload (Wu Renying and Wangtan, 2017)[11]; from the perspective of teaching technology, the conditions and environment for flipped classroom need to be improved, and it is difficult to construct a knowledge curriculum (Zheng Ruiqiang and Luyu, 2016)[12].

From a comprehensive analysis of domestic studies, most of the existing flipped classroom studies are based on the perspective of teachers (Wang Xiaodong and Zhang Chenjingzai, 2013)[13] or quantitative analysis through questionnaires (Yang Jiumin, 2013)[14] to study the implementation effects and reflections of the "flipped classroom". Despite the limitations and challenges of the implementation of flipped classroom in China, most of them are positive about its effectiveness. The majority of students' comments on the flipped classroom are not positive, as I have heard in my daily life. Further analysis of the literature reveals that there is a lack of qualitative analysis to study the effectiveness of flipped classroom in universities and its reflection through the learners' perspective.

3. Method

In this study, the author designed an interview questionnaire and applied a qualitative research method to conduct in-depth interviews with seven students from different universities in China who had

rich experiences in "flipped classroom". Details of the interviewer information are shown in Table. 1. The questions were designed from the learners' perspective in terms of their awareness, acceptance and existing problems of the "flipped classroom" teaching model in higher education, discussing their awareness of the concept of flipped classroom, their specific experience of flipped classroom, their acceptance of flipped classroom and the reasons for it, and the corresponding improvement measures of flipped classroom. The questions will be designed in terms of awareness of the flipped classroom concept, specific flipped classroom experiences, acceptance of the flipped classroom and reasons for it, and corresponding improvement measures.

Table 1. Interviewee Information

Interviewee	School	Major	Interview time	Interview Duration
Interviewee Z	Shandong University	Chinese International Education	2022.5.20 17: 15	25min
Interviewee Y	Shandong University	Chinese International Education	2022.5.20 18: 00	22min
Interviewee C	Shandong University	Chinese International Education	2022.5.20 19: 00	35min
Interviewee F	Shandong University	Biological Sciences	2022.5.21 19: 00	32min
Interviewee J	Shandong University	Energy and Power Engineering	2022.5.22 19: 00	19min
Interviewee LY	Shandong University	Chinese International Education	2022.5.23 21: 00	20min
Interviewee T	Shandong University of Science and Technology	Geological Engineering	2022.5.23 20: 00	22min

4. Analysis

The "flipped classroom" refers to flipping the teaching structure of "teachers teach in the classroom during the day and students do homework at home at night" and building a teaching structure of "students complete the internalization process of knowledge absorption and mastery in the classroom during the day and learn new knowledge at home at night". The teaching structure of "students complete the internalization process of knowledge absorption and mastery in the classroom during the day, and learn new knowledge at home at night" is a new classroom teaching structure that allows students to complete the internalization process of knowledge absorption and mastery in the classroom, and complete knowledge learning outside the classroom[15]. The author found that the interviewees did not have a correct understanding of the "so-called" flipped classroom after the interview. The details of the respondents' understanding of the concept of "flipped classroom" are shown in Table 2.

Table 2. Interviewees' perception of flipped classroom

Interviewee	Interviewees' perception of flipped classroom
Interviewee LY	Correctly perceive the flipped classroom as a flip in the distribution of in-class and out-of-class activities
Interviewee C	The flipped classroom is considered to have flipped the online and offline delivery model. Flipped classroom is a class taught using online resources.
Interviewee F	
Interviewee Z	It is believed that the flipped classroom flips the roles of the teacher and the students. The flipped classroom is where the students speak and the teacher listens.
Interviewee Y	
Interviewee J	
Interviewee T	

Therefore, in universities, teachers' unclear perception of the concept of "flipped classroom", which leads to the misuse of the "flipped classroom" model, is the biggest problem in the application of "flipped classroom" in universities. This is the biggest problem in the application of "flipped classroom" in universities. After interviewing students and analyzing the so-called "flipped classroom" they have experienced, I found that students do not like the existing flipped classroom model in universities for the following reasons.

4.1 Teachers become evaluators of instruction and students are stressed

In the original concept of flipped classroom, teacher and student roles are redefined. "The flipped classroom transforms the teacher from a knowledge transferor in the traditional classroom to a facilitator and guide of learning. This means that teachers are no longer at the center of knowledge interaction and application, but they are still the primary facilitators of learning that students engage in. When students need guidance, teachers then provide them with the necessary support." [16] What teachers should do to change from the role of knowledge transferor to knowledge guide and facilitator is to provide students with learning materials for independent learning, such as microlecture and materials, and to help students internalize knowledge in the classroom, such as organizing group discussions and designing in-depth exercises.

4.1.1 Teachers do not provide study materials, making self-study difficult

Interviewee J said, "Maybe because this (flipped classroom) is self-presentation, self-preparation and self-research, so (teachers think students') understanding will be deeper. Because the flipped classroom is where we go and collect the information and tell it ourselves, I couldn't find the focus of the lesson at all. Another thing is that when you go online to find these materials, it (online materials) is mixed because you can't tell if it's completely correct because of the Internet, and you may be wrong if you find this." The word "on their own" shows that in the actual "flipped classroom" model in higher education, students seem to be completely independent and do not receive guidance and help from the teacher. Teachers allow students to "speak" and "prepare" on their own, but they do not have a good grasp of their own role, as they are not the lecturers of knowledge, but they do not provide learning assistance, and therefore they do not enter the role of instructors and facilitators of knowledge. Without the teacher's control of the teaching content and scaffolding help, students need to find their own materials to study after class, and it is difficult to perfect the construction of their knowledge system, which makes learning more difficult.

4.1.2 Flipped classroom becomes performance evaluation criteria

Interviewee C mentioned, "This counts as part of our grade, just like a general classroom pre (short for presentation, presentation)." Therefore, when the flipped classroom model is applied in colleges and universities, it seems to change from a lecture mode to a grade evaluation mode, i.e., students present their knowledge for self-study and the teacher scores them according to their presentation as part of their grade evaluation, and the teacher becomes the evaluator rather than the instructor of teaching, which makes students feel deeply powerless due to the lack of help when they learn content they do not understand at all. This makes students feel a deep sense of powerlessness due to the lack of help in self-study of content they do not understand at all.

4.2 The content of microlecture is general, which makes students' self-learning difficult and less rewarding

In the original concept of "flipped classroom", the teacher should record micro-lesson videos related to the content of the course in advance for students to watch and learn in class, and the content of the videos are mostly explanations of the simple and easy-to-understand contents of the course, which are short and concise and easy for students to learn by themselves.

Interviewee F said: "I attended a class where teacher let us watch the online unified microlecture. The microlecture contains so many videos, and every video is long and very complicated and hard to understand, so you can't really learn by yourself." The word "unified" shows that the teaching videos provided by teacher are not targeted, but for the general public. Additionally, their content is general and does not focus on the teacher's own curriculum. What they provide is just a pile of universal knowledge. Students cannot grasp the focus of their own courses according to such videos, which makes the knowledge transfer part of the "flipped classroom" mode much less effective.

4.3 Classroom interaction exercises are monotonous and lack depth

Due to the inaccurate positioning of roles and the reversal of roles of teachers and students, students experience the "flipped classroom" in a way that almost all classroom activities are in the form of group presentations of what they have learned in class. This model only repeats what students have learned in class, and most teachers do not engage in further discussion and interaction with their students. Interviewee J said, "Because I don't feel that I have the ability and knowledge to talk to the students about

the course, and I don't really have the ability to respond to the questions that the students ask in class."

This misuse of the "flipped classroom" model only repeats the knowledge transfer part, which completely misses the process of knowledge internalization, and the repetitive knowledge teaching process does not achieve optimal results due to the imperfect knowledge system of the students.

5. Improvement measures for flipped classrooms in college districts

Through the interviews, it is easy to find that there are many problems in the application of "flipped classroom" in Chinese universities, but many interviewees expressed positive attitudes towards some of the teaching, learning concepts and learning methods contained in it. Therefore, when applying the "flipped classroom" model, colleges and universities should make appropriate adjustments according to students' favorite parts in order to achieve the most optimal learning effect.

5.1 Streamline teaching videos with permanent validity

From the interviews, it can be judged that students are positive and dependent on the use of the teaching micro-lesson model, and use it as an important basis for revision. Interviewee F said, "If I learn a foreign language, I feel like it (flipped classroom), like German, I can listen to the teacher's pronunciation again after the class." Interviewee T said, "I hope we don't have a deadline for the self-study videos. Because that means we don't have a way to go back and watch it again later in the exam, which is not good for revision." Nowadays, teachers mostly rely on MOOC and Know to Play platforms, and most of the platforms set the video playing time and so on for the courses, which is cumbersome and restrictive, and not conducive to students' free use of videos for learning. Teachers can consider sharing the videos to students when their academic achievements are protected, so as to maximize the utilization of microlearning.

In addition, from the knowledge teaching part of the "flipped classroom", the self-study videos provided by teachers are general in content and obscure in explanation, which makes students' self-study difficult. Therefore, considering the reasonableness of the workload of students and teachers, university teachers should try their best to record simple personal micro-lesson videos on the content they want students to study. This allows students to have a clear understanding of the content they are going to learn, making it more accessible to them and saving class time.

5.2 Adjust the use of the "flipped classroom" ratio to the course objectives

The "flipped classroom" is a learning model that maximizes pre-study time to achieve good learning results. Therefore, it is necessary to plan the proportion of "flipped classroom" according to the course objectives, because the workload of students after class is significantly higher than that of traditional mode. In the specialized courses, the proportion of "flipped classroom" can be adjusted appropriately, which can not only build the basic knowledge system of the subject for students, but also leave more space for students to explore their professional knowledge and cultivate their academic research ability. For general education courses, where students have little foundation, the goal is to popularize students' basic knowledge in multiple fields, so the proportion of "flipped classroom" can be reduced and the focus of teaching can be on popularizing knowledge.

5.3 Optimize classroom activities and reject the formalism of "use for the sake of using"

Most of the "flipped classroom" models in which students participate are in the form of "students talking and teachers listening", and teachers basically do not provide reference materials and take the effect of student presentations as a form of assessment for students. This practice confuses "classroom demonstration" with "flipped classroom", and loses the teaching effect that "flipped classroom" should have. Teachers can design more in-depth and discussable questions for students to prepare their presentations, which can help students internalize their knowledge more than just explaining it.

6. Conclusion

This paper analyzes and discusses the problems of the "flipped classroom" model in colleges and universities from the perspective of learners through interviews with seven students from four different majors and proposes corresponding improvement measures. The analysis reveals that, when applying the

"flipped classroom" model in universities, the teachers' deviations in role reversal, the lack of detail in the production and selection of teaching microlearning videos, and the lack of depth in the design of classroom activities have led to the difficulty of students' self-study and the lack of systematic self-study knowledge system, resulting in the increase of classwork pressure and the lack of significant improvement in learning effect. On this basis, we propose measures in terms of the content of micro-learning videos and the proportion of "flipped classroom", taking into account the burden and pressure of students and teachers.

However, due to the small number of interviewees in this study and the limitations of the distribution of the interviewees by major, grade, and gender, the analysis may not be comprehensive. The study can be further improved by expanding the number of interviewees and selecting students from different majors for interview analysis.

References

- [1] Long Jingjing. Review of flipped classroom research [J]. *Journal of University of Science and Technology Beijing (Social Science Edition)*, 2016, 32(06):113-118.
- [2] Qin Weiwei. Flipped learning: A new paradigm of classroom teaching reform [J]. DOI: 10.13811/j.cnki.eer.2013.08.014.
- [3] Zhiyuan, Yan. The Operability Strategy of Flipped Classroom of Public Art Education in Colleges and Universities Based on Micro Course Model[C]// 2018.
- [4] Qu G, Ding S, Dong X. Reflections on the Application of flipped Classroom Teaching Mode in Colleges and Universities[C]// 7th International Conference on Education, Management, Information and Mechanical Engineering (EMIM 2017). 2017.
- [5] Zheng Yanmin. Case analysis of flipped classroom teaching practice at home and abroad[J]. *Information Technology Education in Primary and Secondary Schools*, 2014, No. 146(02):44-47.
- [6] Wu Wenchen, Hu Xiaoyong. Global progress of flipped classroom teaching research: current status and cases [J]. *Digital Education*, 2016, 2(04):59-63.
- [7] Li Jingnan, Wu Zhongjie. Practice and reflection of flipped classroom in college English[J]. *Chinese Foreign Languages*, 2015, 12(06):4-9. DOI: 10.13564/j.cnki.issn.1672-9382.2015.06.002.
- [8] Zhang J, Zhang Y, Rong W. A Study on the Application of Flipped Classroom in College Course Teaching[C]// the International Conference. ACM, 2017.
- [9] Zhu Zhiting, Guan Jueqi, Qiu Huixian. Practice and reflection on the domestic application of flipped classroom [J]. *Electrochemical Education Research*, 2015, 36(06):66-72. DOI:10.13811/j.cnki.eer.2015.06.012.
- [10] Pan Bingchao. An experimental study on the application of flipped classroom model to university teaching [J]. *Electrochemical Education Research*, 2015, 36(03):83-88. DOI:10.13811/j.cnki.eer.2015.03.012.
- [11] Shnai I. Flipped classroom technology from teachers' perspective: implementation experience, barriers and perspectives. 2015.
- [12] Peng X. A Brief Analysis of the Application of "Flipped Classroom" Mode in College English Listening Teaching[C]// International Conference on Humanities Science, Management and Education Technology. 2019.
- [13] Wang Xiaodong, Zhang Chenjingzai. Research on the application of "flipped classroom" in university teaching: an example of English course in educational technology[J]. *Modern Educational Technology*, 2013, 23(08):11-16.
- [14] Liao YH, Lee MF, Sung YT, et al. The Effects of Humor Intervention on Teenagers Sense of Humor, Positive Emotions, and Learning Ability: A Positive Psychological Perspective[J]. *Journal of Happiness Studies*, 2023.
- [15] Shu X. An Empirical Study on a Flipped Classroom in Open University Teaching Based on an Ecological Perspective: A Case Study on a Translation Theory and Practice Course[J]. *Asian Association of Open Universities Journal*, 2015, 10(1):53-63.
- [16] Wang Y, Tong W, Lv Q, et al. Flipped Classroom Teaching System Design under the Background of Subject Reform Based on Information Technology[J]. *Journal of Physics Conference Series*, 2021, 1852(2):022041.