The Performance of Online Teaching for Flipped Classroom Based on COVID-19 Aspect

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Author’s contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

Many universities adapted online teaching as their strategies based on the consideration of COVID-19. The objective of this study aimed at verifying the procedures and effects of flipped classroom for online teaching. Qualitative method was employed and data was collected by students' class summary after they have finished the online teaching course of Tourist Psychology at department of tourism management, Sichuan University of Science and Engineering. Findings reported that flipped classroom for online teaching is executable. Furthermore, before-class activities, in-class activities, and after-class activities could promote learning performance. Moreover, sense of humor for teacher and the atmosphere within the class were found to have the positive benefits to the flipped classroom for online teaching. Finally, universities should make some policies to teachers to encourage their adaption of flipped classroom is suggested.

Keywords: Flipped classroom; online teaching; COVID-19.

1. INTRODUCTION

Since the end of 2019, the incidence of unidentified viral infection pneumonia in Wuhan, on January 12, 2020, the World Health Organization (WHO) officially named the new coronavirus that caused the outbreak of pneumonia in Wuhan as the "2019 New
Coronary virus (2019-nCoV)." On January 30 of the same year, WTO announced that the outbreak of the new coronavirus had been listed as a public health emergency of international concern (PHEIC), and on February 12th it named the pneumonia of the new coronavirus infection "COVID-19". The appearance of COVID-19 has been affected not only the normal work and life but also the study of all grades of students. In order to overcome the epidemic, universities and colleges, under the guidance of relevant policies of the central and local governments, have launched a variety of online learning to ensure the smooth and orderly development of school education and teaching. Take the spring semester of Sichuan University of Light and Chemical Engineering as an example, the school as scheduled online classes, through live broadcast, video, video conferencing and other network teaching models, as well as teachers in accordance with content and requirements of the curriculum, to create a "cloud" three-foot podium. All teachers and students with practical action to achieve the "teachers non-stop teaching, students do not stop classes, learning does not extend" the goal.

However, most teachers and students have become accustomed to the physical classroom way of class, all theoretical classes are changed to online teaching, there are still many problems, such as teachers using teaching platform: technical ability, teaching materials, teaching platform flow and signal problems, learning results, online teaching for many senior teachers is a great challenge. For students who are scattering faced a technological problem, insufficient learning materials and unstable signals and the like. In addition, compared with traditional existing online teaching, in the past, online courses were mostly quality elective courses (compulsory or optional), with low academic scores and often recognized by students as sustenance courses. At present, the theoretical curriculum has been changed and imparted through online teaching, not only affecting the teaching habits of teachers, but also affecting the students' study of knowledge theory and future work skills, and how the learning effectiveness has become an important issue of concern to educational authorities, schools, teachers and students.

In response to the above, flipped classroom is considered to be an active way of teaching and learning, encouraging teachers to use higher-level thinking to teach, and encouraging students to actively participate in a variety of learning activities [1]. It is generally believed that this model stems from the redefinition of the role of teachers in the teaching and student learning process, as well as the flexibility of the teaching space, which utilizes the many teaching possibilities offered by technology and interaction [2]. For example, providing extra-curricular activities such as course video and flipped online discussion topics or issues in advance help students acquire knowledge and skills, which in turn improves their satisfaction with flipped classroom learning [2]. In other words, flipped classroom can positively improve students' learning outcomes, including knowledge, skill, and learning satisfaction [3,4] which is a good strategy of courses designing and communication [5]. However, there is no research to explore the effectiveness of flipped classroom teaching in online courses, and an important gap is formed between the theoretical aspects of flip-over classroom and online teaching and the practical aspects of teaching. Under the priority situation of epidemic prevention and control, such as how to implement the flipped classroom in the online course, and clarify its learning effectiveness and make suggestions, in addition to making up the theoretical gap, the first-line teaching will have a positive guiding and demonstration role, and help educational administrators to study the relevant policies of the flip classroom, better take into account the epidemic prevention and control, promote teaching activities and ensure the learning results of students.

Taken together, the purpose of this study is to explore how online teaching can engage in flipping the classroom, how the impact of flipping the classroom on the effectiveness of teaching, and put forward management implications.

2. LITERATURE REVIEW

In recent years, there has been a change in the way lectures in higher education are being delivered, going from the traditional instructor-based teaching model to active and student-centered learning experiences that generate engagement and contribute both to the acquisition of knowledge and the skills necessary to enter into the labor market [2]. The flipped classroom was first used by Lage et al. [6] and later popularized as an active teaching method by Bergmann and Sams [7]. Both research studies considered that inverting or flipping the classroom implies the acceptance that many of
the activities that were normally developed previously inside the classroom now occur outside it, and vice versa [2]. Bergmann and Sams [7] define this method in general terms as an approach in which the place where the different tasks are performed changes so that students watch the lectures on their own time outside the classroom. Instead, in the classroom, they perform the activities that have traditionally been considered homework, focusing on the parts of the material causing them difficulty [8,9,10].

The flipped classroom has been viewed an active learning methodology that encourages higher-order thinking and active participation from students [11]. Study has pointed out that it emerges from the redefinition of the teacher role in the teaching-learning process [12]. Furthermore, the flexibility of teaching spaces, taking advantage of the multiple possibilities offered by technology and interaction are concerned. Therefore, this methodology proposes to use blended methods, whereby virtual resources, such as videos or self-made texts, are used to transmit knowledge, and the face-to-face classes are used to consolidate knowledge through interactive activities, such as problem solving, role-playing games, discussions, and collaborative work dynamics [11,13].

Moreover, previous studies have demonstrated that flipping the classroom helps students to better understand and prepare material and to learn more about the course [14,15,16]. This means students get the materials teacher offered in advance can help them pre-read the coming course topic. Hence, flipped classrooms is likely to directly and positively affect students' knowledge. Additionally, Love et al. [17] pointed out that students in this active learning context develop a higher level of ability to work in groups [18] and help students to improve their ability to learn on their own [19]. This implies that flipped classrooms is likely to enhance students' abilities and skills, and directly and positively affect students' skills.

3. METHODOLOGY

3.1 Participant and Education Platform

In order to achieve the above research purposes, after considering the feasibility and budget of the study, the tourism psychology of the Department of Tourism Management of Sichuan University of Science & Engineering was chosen to be the target for the online course flip classroom. The course is a compulsory subject for the third core, with three credits (48 period), with a total class size of 39. Based on the consideration of information traffic and stability, this study uses Tencent conference software platform as the implementation platform for online teaching flipped classroom. The platform provides video conferencing, shared screens, instant chat rooms and document upload slots, which meet the research needs.

3.2 The Basic Procedure of Teaching Online for Flipped Classroom

Prior to the first lecture, students obtained the course objectives, course progress (12 lectures in total), teaching methods, textbook versions, and the method and proportion of the grade assessment through the class group, and were informed of the class time (four lessons at a time, three hours) and the use of software (to facilitate the students to download and install and test beforehand). The subject of the lecture is the introduction to tourism psychology, tourism motivation, tourism perception, tourism attitude, personality, guest-me communication and communication, tourism service psychology (i), tourism service psychology (ii), the treatment of tourist complaints, the occupational psychology of practitioners, the psychological health care of practitioners and the personality management of practitioners. Refer to the operation mode of [2]. The basic procedures for this study of online teaching flipped classes include pre-school activities, in-class activities, and after-class activities, as described below.

3.2.1 Pre-class activities

A. Give the material in advance. Before each formal lecture, the class materials (ppt and supplementary materials) are provided, and students are informed in advance of the learning priorities of each lecture, the cases and discussion issues in the briefing document, the content index and discussion of the supplementary materials, and the course knowledge points (drawing questions) and so on.

B. Review activities. From the second lecture, before class to arrange 10 minutes for pre-class review activities (question-and-answer session), for students randomly asked the previous course knowledge points, to make a record, as the basis for the usual grade assessment.
C. Feedback activities. From the third lecture, 3-5 minutes before class to carry out personal assignments and group homework explanation feedback, show the assignment scored well individual students or groups, as the students' next personal/group homework learning and improvement reference.

3.2.2 In-class activities

A. Guide. In the formal class, each lecture teacher, depending on the situation, draws 3-5 students to read the content of ppt (a page of 30 words or less as a principle), as the basis for participating in the assessment of the results of the class.
B. Ask. Each lecture teacher according to the teaching progress and knowledge point (course learning focus) materials or examples, ask 3-5 students answer synopsis or examples.
C. Panel discussion. Each presentation arranges at least one inter-sessional panel discussion (the discussion time is set for 10 minutes) and posts the group answers in the meeting real-time chat room within the specified time as the basis for the group discussion performance assessment.
D. Share activities during class hours. Each hour of rest and 10 minutes, teachers share photos and stories of the school's teaching style (3-5 minutes) and encourage students to share campus life.

3.2.3 After-class activities

A. Personal work. Once a week, students are required to write lessons and summary, as a basis for personal usual performance assessment.
B. Group work. Once a week (twice), students are required to conduct after-school group discussions on the materials or topics given, as the basis for the group's usual grade assessment.
C. Summary of the course. At the end of the course, students are required to write a summary of the course's learning as a basis for analysis of learning effectiveness.

3.3 Data Collection

The Data collection in this study includes secondary and initial data. The initial material comes from the course summary written by the students after the end of the course, which is the main material for the evaluation and analysis of learning effectiveness. The secondary material comes from a lot of literature review of previous studies. In the main data source section, a total of 39 students' course summaries were obtained yielding 29250 words.

3.4 Coding and Analyzing

This study will participate in the students' course summary, and hand over to the researchers for mutual inspection to confirm the correctness and internal reliability of the written manuscript. The course summary is written by students, and the study committee sends an email to the teacher after receiving it, which is correct and representative. Secondly, the two experts circle the key words, respectively on pre-class activities, in-class activities, after-class activities, knowledge acquisition, skills acquisition and other ability acquisition circle selection and coding. Then, the key words selected by the researchers were compared to confirm their reliability. Finally, the researcher explains and interprets its representative significance according to the general distribution of dimensions, subjects and sub-topics.

4. RESULTS AND DISCUSSION

According to the basic information of the participants, of 39 respondents, 3 were males and 36 were females. Regarding class attendance, 34 were full attendance while 5 have been excused more than one times.

4.1 Students' Cognition of Online Teaching for Flipped Classroom to Pre-class Activities

First of all, in the online teaching for flipped classroom of pre-class activities, a total of three subjects were extracted, respectively, preview materials, quizzes and homework feedback, and comprised a total of 18 sub-topics. According to the sub-topics, participating students have a strongly cognitive response to the random questions before the formal class, and realize that such activity measures can not only consolidate the knowledge learned by the mat (# 405), but also deepen the grasp of the existing knowledge points (# 428). Furthermore, asking questions can also promote the understanding and communication among students, as #407 student said," every time before the class, the random interaction in the classroom, let us fear, tight, nervous and hate, really have a little "hate ". But it's wonderful: if someone asks me to judge a
teacher, I'm sure it's a responsible, tough and humorous teacher. Then change my opinion that some of the students in our class. Because usually in the school teaching, they do not have so many speaking opportunities, it happened that many of my classmates seemed different from what I had imagined this time.

However, the participants' cognition of preview materials and homework feedback is weak. The original purpose of providing preview material before class is to let students know the content of the class and possible problem to be discussed in advance, so that they can preview and think in advance. Obviously, there is still room to improve the communication between the students and the teacher. In addition, in terms of homework review and feedback. Many students will give feedback to the teacher on their usual (current week) experiences, such as "this homework review learned the method of analysis." However, it is not reflected in the summary of learning, probably because there are many things to be written in the summary, which has not yet aroused everyone's resonance.

4.2 Students' Cognition of Online Teaching for Flipped Classroom to In-class Activities

In general, a total of five thematic topics were extracted, including a total of 100 sub-topics for the introduction and random questioning, sense of humor, classroom atmosphere, group discussion, and thoughts after class. The explanation is as follows.

4.2.1 Guide and Question

Guided reading and random questioning are the most intimate activities among students who are interested in the online teaching flipped class. They retrieve 31 sub-topics in total. The results show that when teachers engage in online teaching for flipped classroom, inter-curricular guidance and random questioning activities are conducive to everyone's active participation in the classroom (#436), which improves the concentration of classmates and the classroom atmosphere (#416). This result shows that online teaching cannot play videos all the time, asking students to read the contents of the briefing file in real time, and it can improve the concentration of students. Classroom explanations ask questions in a timely manner, asking students to give examples or explanations, so that everyone can be more engaged and actively participate in classroom activities.

4.2.2 Sense of humor

A total of 19 sub-topics have been selected for the sense of humor, and almost half of the students have such a recognition. For example, "the teacher's sense of humor also makes our entire course more dynamic" (#413), "I believe his humorous language, plus his agile performance will definitely bring different surprises" (#415). The analysis results show that teachers can improve students' attention and learning interests through humorous language and tone, which also shows that teaching skills with a sense of humor will affect students' cognition of online teaching for flipped classroom. Existing flipped classrooms rarely touched on the personality traits and teaching skills of teachers. The study found that to make up for the shortcomings of existing flipped classrooms, which can be used as reference for other research in the future.

4.2.3 Classroom atmosphere

A total of 16 sub-topics are captured in the classroom atmosphere, and nearly half of the students have such recognition. For example, "Every class has a set of life or work sharing. The combination of graphics and text is very interesting and can offer some knowledge and experience to us"(#438)," Let's discuss and analyze in a small group together, which will make the classroom atmosphere more active, attract our attention, and allow each of our classmates to participate "(#434). The analysis results show that online teaching can also promote the classroom atmosphere by sharing the lives and discussions of teacher and students, so that teaching boring psychology courses can also arouse students' interests and attention in learning and achieve the purpose of learning course knowledge. In addition, both of the online teaching and flipped classroom literature lacked a discussion of the classroom atmosphere, nor did it discuss the classroom atmosphere on learning effectiveness. The study found that the existing online teaching and flipped classroom literature were also insufficient.

4.2.4 Group discussion

A total of 9 sub-topics were retrieved in the group discussion. For example, "I prefer the group discussion. Everyone can express his/her own opinions and opinions" (#428). Opportunities, but also make the classroom interesting "(#430)," We have group discussions and exercise our communication and collaboration skills "(#433). It
shows that the group discussion activities in the online classroom for flipped classroom, in addition to personal exercise opportunities, also have group members to communicate and learn, think more broadly, and effectively improve students’ abilities to think and solve problems.

4.2.5 Share after class

A total of 25 sub-topics were retrieved during the class sharing. For example, "Teacher will share some funny things for us in each class, letting us relax" (#401). "Teacher is very well prepared, including some small jokes or other classmates' lives outside the classroom" (#407). The analysis results show that the sharing activity after class not only relieves the tedium of online courses, but also makes online courses more interesting. Students get some interesting daily life stories of teachers and teaching and research work experience from them, which may have a positive demonstration and guidance to students' attitudes towards life and future work attitudes into the workplace.

4.3 Students’ Cognition of Online Teaching for Flipped Classroom to After-class Activities

Two topics and 40 sub-topics were extracted and were described as below.

4.3.1 Personal homework

A total of 16 topics were extracted in Personal homework. For instance, "after each class, we have timely classroom homework or course experience, and a lot of teachers ignore the link" (#438). "homework is often called writing, I do not know how to jump out so many ideas to come to" (#435). "After class, there are homework, and will let us write thought or summary" (#426). "after each class, the teacher will also arrange some homework, let us write the day's learning and learned a brief summary" (#422). The results of the analysis show that the individual homework of after-school activities in the classroom, which can enable students to reflect and summarize the knowledge they have learned and recall the interesting things in the course. In addition to helping to systematize knowledge, this activity is more important than combing through the potential future usefulness of this knowledge. As the students put it in their personal summary, "For me personally, there is the harvest of classroom knowledge, and there are other people's philosophical gains." Read more, the book has its own gold house, the book has its own face as jade. Learn to think, and to deal with problems to grasp the key points to analyze. Learn to express, there is suitable for easy to understand better. My study career has been continuing, the road is long and long, I will go up and down and ask for. (#439) "is an example.

4.3.2 Group work

The group assignment scored 24 sub-topics. For example, "Almost every groups in our class will discuss together, the strength of the team is strong, and every time we share the group results" (#409). "The course is combined through theoretical knowledge and case, let us discuss the analysis in groups, and then draw conclusions" (#410). The results of the analysis show that the group assignments of classroom after-school activities in online teaching for flipped classroom, has the emotional function of cohesion group, so that everyone has more opportunities to learn and collaborate, in addition to knowledge learning, more communication and teamwork ability training. In other words, the group's activities bring together students to discuss specific issues, not only to train students' thinking skills, but also to train students to fight alone and team skills, as well as to improve students' ability to adapt to work.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

According to the analysis and the results mentioned above, the following conclusions are obtained in this study:

1. Under reasonable arrangements, online teaching can still engage in flipped classroom activities. These flipped classroom activities include pre-class materials, pre-class sampling, and homework feedback;

2. The activities of online teaching for flipped classroom in the department of Tourism Management can improve students' learning effectiveness, including knowledge learning, skills and engagement. Among them, pre-class and class questions can improve students' concentration and deepen knowledge of professional knowledge, humor can help ease boring course content, active classroom atmosphere, group discussion and group assignments help improve
students’ communication skills and team operation ability, but also promote emotional communication between students, personal homework can allow students to reflect and summarize the knowledge learned, recall interesting things in the course, help to systematize knowledge;

3. The characteristics of teacher humor and classroom atmosphere are conducive to the promotion of online teaching for flipped classroom. Online teaching and flipped classroom are people-to-people activities, knowledge providers and classroom atmosphere can affect the activities, and then affect the effectiveness of activities. Therefore, the characteristics of teacher humor and classroom atmosphere play an important role in promoting online teaching flip classroom activities.

5.2 Recommendations

5.2.1 Best award flipped classroom teachers

Online teaching can still engage in flipped classroom activities, and flipped classroom activities really help improve students’ learning effectiveness. Therefore, it is suggested that schools should make perfect laws and regulations to exchange and share opportunities and incentives for teachers to ensure that the existing flipped classroom seeds can continue to transfer positive energy.

5.2.2 Systematic application of flipped classroom mechanism

For the teachers who have not yet put into the flipped classroom activities, the school can take the stage training, formulate the method of gradual implementation, let the whole school teachers and students move up, and systematically introduce the flipped classroom mechanism. For example, the new teachers should be standardized first, and at least one course should be turned over each year for three years after independent teaching; the sunset clause should be set for the existing teachers, and at least a certain number of hours should be provided for each semester after three years.

5.2.3 Consolidation of flipped classroom system

After gradually establishing the flipped classroom mechanism, the school can link the flipped classroom with the performance reward to achieve the purpose of consolidating the flipped classroom system. For example, according to the current regulations of scientific research awards, it can cooperate with the teaching reform process and related measures of schools and colleges, and the teaching results reach the goal of teaching reform, and give the order of reducing the teaching hours, giving priority to the promotion, or certain performance awards.

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COMPETING INTERESTS

Author has declared that no competing interests exist.

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