NATURAL AND SOCIAL SCIENCE STUDIES
http://www.physi-med.com

The application of flipped classroom model in the teaching of specialized courses in Application-oriented Universities

Jun Luo[1], Yu-lan Yu[2]

[1] *Department of Management, Guangdong University of Science & Technology, Dongguan 523083, Guangdong, People of Republic of China;*

[2] *Department of Psychology/Research Center for Quality of Life and Applied Psychology, Guangdong Medical University, Dongguan 523808, Guangdong, People of Republic of China*

ABSTRACT

Flipped classroom can be regarded as the teaching mode of contemporary major teaching technological change. First, the flipped classroom model which is suitable for universities was constructed based on the investigation and research on autonomous learning of university's students. Then the application of flipping the classroom to universities was described in detail from the perspective of teachers and students. At last, the challenges of the flipped classroom faced in the universities were pointed out.

Keywords: Flipped classroom; Teaching model; Application-oriented University

Two American chemistry teachers adopted flipped classroom teaching model In 2007 to promote the use of this model in primary and secondary education in the United States, and they began to experiment with this new model of instruction in math classes in 2011. Since then, the "flipped classroom" has become the focus of contemporary educators, and it was named as a major teaching technological change of classroom teaching in 2011 in Canada's Globe and Mail.

1. The necessity of the application of flipped classroom in the teaching of specialized courses in applied-oriented universities

1.1 The necessity of cultivating students' initiative learning ability

According to statistics, only 60% college students can guarantee an average of one hour to study after class every day and most of them spend their time on entertainment and they are seriously lack initiative in learning. Some college students have serious imbalances in network applications and they use it as

Received: September 1, 2017; Reviesd: September 12, 2017; Accepted: September 15, 2017.
First Author: Jun Luo, Master, Lecturer of Department of Management, Guangdong University of Science & Technology, research direction: Management Science
Corresponding Author: Yulan Yu, Department of Psychology, Guangdong Medical University, Tel: 15918362976, Email: yuyulan@gdmu.edu.cn

entertainment tool instead of a learning tool. Some students are not separated from mobile whatever spare time or class time.

1.2 The necessity of the development of modern educational technology

Modern multimedia teaching can not only save a lot of time of blackboard-writing so that teachers can deliver more information and knowledge to the students in the class time, but also combine with text, video, image and animation and other modern information technology to make the variety of teaching methods. But if the amount of information is expanded blindly in the classroom, students have no deep impression to the knowledge, and even the students don't keep up with the rhythm of the multimedia courseware, which leads them to feel nervous and tired.

1.3 The necessity of training innovative talents

At present a teaching model of university is based on the teacher's instruction and it is without considering the differences between the teaching objects and the students' individual needs. The authority of teachers makes the students' lack of classroom autonomy, which limits the development of students' questioning, criticizing, exploring and innovating ability. However, the flipped classroom is a student-centered teaching model, and its essence is to let students learn how to study, to form active learning and to improve their creative thinking ability.

1.4 The necessity of professional development of teachers

Teacher's job burnout is fatal to an individual or student. Teachers can create personalized teaching mode and look for their own teaching ideas, create a unique teaching style, show own personality charm according to their own experience and experience by flipped classroom, so that students love the classroom and teacher is more passionate spirit, eliminate the occupation burnout and feel a sense of achievement and occupation honor.

2. Model design of flipped classroom teaching in applied undergraduate course

Professor Robert Talbert summed up the implementation model of the flipped classroom after years of accumulation of teaching. The model pointed out that operation procedure of flipped classroom is divided into two stages before class and in class. Students watch the video and practice before class stage and there are fast, a small amount of assessment, solving problems to promote knowledge internalization and summary, feedback three links in the course of stage [1].

Professor Zhang Jinlei of Nanjing University has built a more perfect model of flipped classroom on the basis of Robert Talbert's model [2]. The model reflected the student-oriented education thought and focused on how to effectively apply the flipped classroom.

The core idea of the flipped classroom teaching mode is to transfer knowledge before the class, to complete the process of knowledge digestion application in the classroom. Imparting and digesting knowledge still is a process of interaction between teachers and students. There were no a practical interpretation of flipped classroom model of Robert Talbert and Professor Zhang Jinlei. Authors of this paper built a suitable flipped classroom teaching mode in application-oriented universities in China(see Figure 1). This model emphasizes not only the student-oriented teaching concept to form the self-regulated learning ability of the students, it is also helpful to guide teachers in the concrete practice to clarify the roles and tasks of students.

3. The application of flipped classroom in the teaching of specialized courses in applied-oriented universities

3.1 The function of teachers

The role of teacher's role has changed in the flipped classroom model. The role of teachers evolved From the traditional knowledge initiator to the student's learning facilitator and instructor. Teachers try to

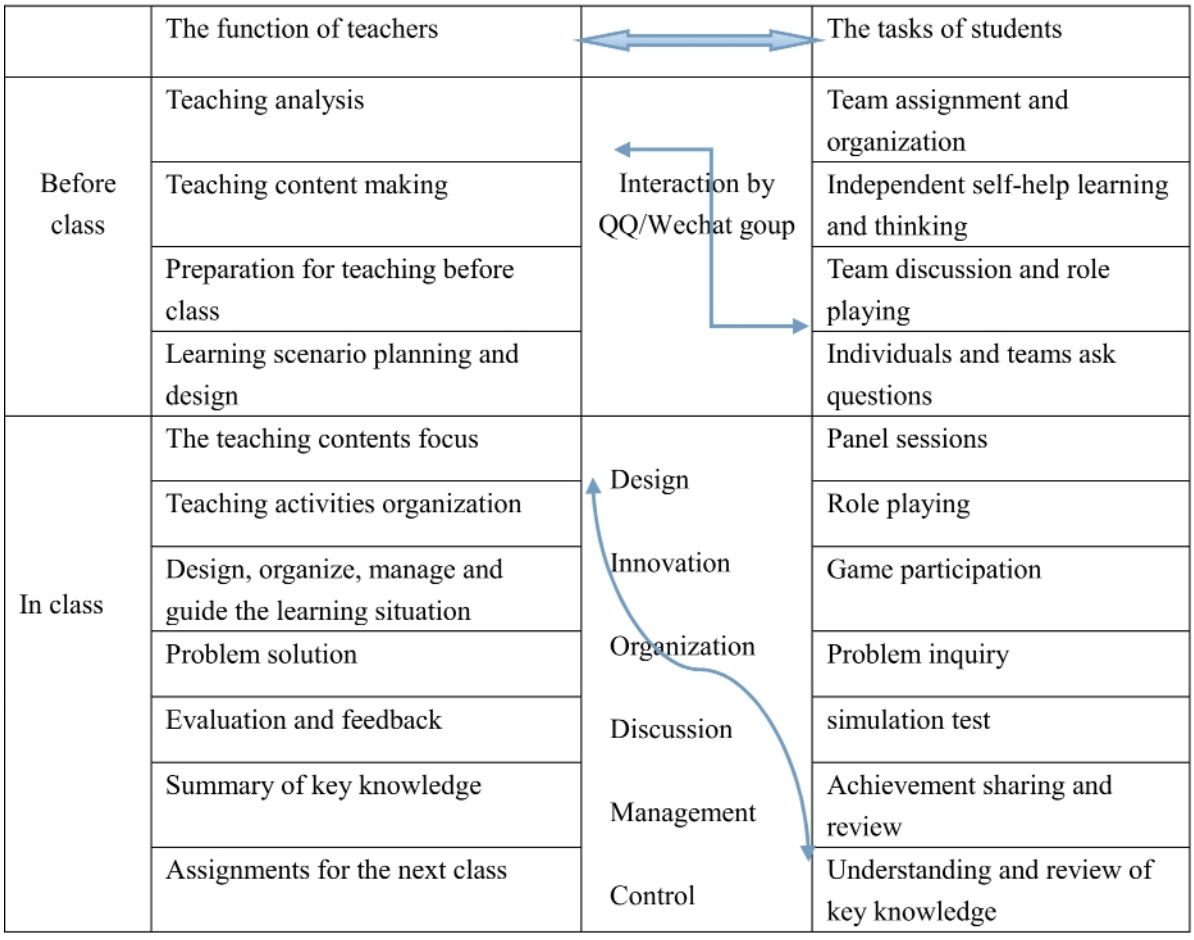

Fig. 1 the flipped classroom teaching model of applied courses in application-oriented university

their best to minimize teaching time to let students participate in learning and interactive practice situation.

3.1.1 Preparation before class

Firstly, teaching analysis. Specialized courses in applied-oriented universities pay more attention to the practical application, so teachers should grasp the integration of teaching content and social practice to analyze how to use in social practice, what are the problems in the application process, what difficulty will encounter during the understanding of students before or in class and how to build an problem, game, case, or situational representation based on application.

Secondly, teaching content making. Most of professional courses in applied-oriented universities are modular practical courses, teachers split modular knowledge into several teaching units according to needs of social practice and each teaching unit has key knowledge, and then relevant cases, video, games are made according to the key knowledge points and some thinking questions are asked as extracurricular learning task for students.

Thirdly, preparation for teaching before class. Teachers can use modern instant communication tools such as class QQ group, WeChat group and select the representative problems before class. Teachers should offer platform or facilities, equipment etc of students autonomous learning.

Lastly, planning and design of learning situation. Teachers should design the learn platform in class according to key knowledge, the questions of students, such as role-playing game platform, supporting facilities, and related video and case.

3.1.2 Tasks in class

Firstly, the teaching contents focus. Teachers use the question to guide the students to think, review the key knowledge in the first 10 minutes to deepen the students' understanding and memory. Teachers also use realistic cases to introduce the knowledge points of this course, throw out questions related to professional knowledge, and guide students to think.

Secondly, teaching activities organization. The learning situation platform is divided into groups, that is, team learning platform, usually dormitory as a team, the best size of about 6 students. Flipped classroom focuses on the use of spare time to active learning, and roommates are undoubtedly the best active learning team partners and the most convenient and reasonable use of brainstorming method to implement interactive learning and task division, support and cooperation.

Thirdly, design, organize, manage and guide the learning situation. Teachers build a platform in the course of learning situations, such as choosing the location, props, equipment and facilities of learning environment and organization, management and guidance of role- playing, games, confrontation between ideas and problems etc. of the members of the group. Students complete the study in interactive cooperation, enhance the interaction and cultivate communication ability, and improve the students' understanding and consolidation of knowledge.

Fourthly, problem solution. Teachers organize the members of the same learning situation platform to ask each other questions, talk about experience, and write down the key information to get personal and team performance, and then let members internal communicate and problem solve themselves. Students act as reporters and teachers become questioner for questions that need further discussion.

Fifthly, evaluation and feedback. Each learning team hands in the content on extra-curricular learning, discussion of knowledge and questions at the beginning of the class and hands in the questions, thinking and experience of members of this group in the context at the end of class. Teachers count timely team and individual performance and the corresponding ranking. Statistics results are fed back to all the students in the class every month. Teachers can also implement individualized learning design and instruction for special students using statistical data.

Sixthly, summary of key knowledge. Teachers need sum up the key information, particularly focusing on errors, biases or mistakes by aiming at the problems found and summed up in learning platform.

Lastly, assignments for the next class. According to the next teaching content, the teacher will record the knowledge points displayed by PPT courseware in advance, explain the video or knowledge points and application cases and videos. The video should be short and concise, and the key content of teaching should be presented as the main body. It is better to design some questions for students to think and discuss, and ask some questions to answer in class.

3.2 The tasks of students

The role of students will change, they are task executors, team players, and class performers.

3.2.1 Task before class

Firstly, Independent self-help learning and thinking. The flipped classroom model emphasizes the freedom of learning environment before class. Students study autonomously according to own time and rhythm and write down the questions. All these are conducive to cultivating students' time management ability and learning ability.

Secondly, Team discussion and role playing. Generally there are 2-4 specialized courses every semester in applied-oriented universities, the dormitory team needs arrange 30 - 60 minutes to discuss, for example, every Monday to Thursday, Sunday from 21:30 to 22:30, every day for a course of team learning. All these are benefit to creating team spirit and sense of honor and responsibility.

3.2.2 Task in class

Firstly, role playing and experiencing. The team is the foundation of interactive curriculum. Teachers organize dormitories as teams to study together,

select the appropriate interaction strategy, promote teams' activities effectively, allow students to add or modify, design learning environment and exert students creativity. Commonly used learning situations are story playing, brainstorming, simulation, game building, group discussion, etc.

Secondly, problem Inquiry. Students discuss and modify problems if they find out problems in learning situations. They even can be critical of teachers which trains students' critical thinking, creative thinking and team work skills.

Lastly, achievement sharing and review. Teams share their group results and experience by PPTs of cases and projects, videos in the classroom, class members and teachers write down the problems if they found questions. They discuss and comment after sharing and offer the valuable videos for other classes to use for reference.

4. The challenge of the flipped classroom in the course of implementation

4.1 The challenge of teachers' professional competence

Flipped classroom mode is student-centered, so teachers need strong practical ability and professional basic ability to mobilize the students active learning before class and participation and interaction in class. It is very important to produce good teaching videos, choose representative and typical teaching cases, select attractive and interest reading materials and reference materials, guide students' interaction, design and organize learning environment, manage and control classroom, set appropriate and professional questions etc..

4.2 The challenge of students' autonomous learning ability

It is necessary for students autonomous learning in flipped classroom , but modern college students have been accustomed to rely on teachers in traditional teaching guidance. it will still be great challenges for students to find information in library or online, put forward questions, attend in discussion without the monitoring and pressure from teachers, especially in the application-oriented private universities.

Acknowledgements

This paper is supported by the following fund projects: Ministry of education, the humanities and social sciences research project (University Ideological and political work) (Granted NO.: 16JDSZ2031); Education and teaching reform project of higher education in Guangdong Province (Granted NO.: 2016258); Guangdong Adult Education Association adult education research program (key projects)(Granted NO.: Ycx161008)

References

[1] Robert Talbert. Inverting the linear algebra classroom [DB/OL].(2011-09-21).http//prezi.com/dz0rbkpy6tam/inverting—the—linear—algebra-classroom.

[2]Zhang Jinlei, Wang Ying, Zhang Baohui. Research on flipped classroom teaching model[J]. Journal of Distance Education, 2012, (4): 48.