Research on the Construction of Blended Learning Model Based on Micro-Lecture Teaching, Semi-Flip Classroom and the Ketangpai

Ruihua Mu[1, a *], Bin Liu[1,b], Wei Chang[1,c], Jia He[1,d], and Jing Yang[2,e]

[1]School of Environmental and Chemical Engineering, Xi'an Polytechnic University, Xi'an, Shaanxi, 710048, China

[2] School of Urban Planning and Municipal Engineering, Xi'an Polytechnic University, Xi'an, Shaanxi, 710048, China

[a] 20131102@xpu.edu.cn; [b] mu10909042@163.com; [c]43783593@qq.com; [d]2602848922@qq.com; [e]20020706@xpu.edu.cn

* The corresponding author

Keywords: Blended learning; Classroom teaching; Modern educational technology

Abstract: With the development of information-based teaching technology, flipped classroom and blended learning are more and more favored by teachers, among which blended teaching seems to be of great concern. Firstly, the advantages and disadvantages of micro-lecture teaching and flipping classroom teaching are analyzed. Then, the Ketangpai is introduced. Finally, combining the current teaching situation of domestic universities, a blended learning model is constructed by micro-lecture teaching, semi-flip classroom and the Ketangpai which aims to provide an exploratory study to improve the quality of classroom teaching in local colleges and universities.

1. Introduction

With the continuous development of teaching reform, local colleges and universities attach great importance to the improvement of classroom teaching quality. The school actively responds to the reform policy and regularly organizes key teachers to train of information-based teaching means. However, there are some problems in schools such as some teacher's viewpoint of advocating teacher-based teaching which may cause the problems of low student participation, poor learning enthusiasm, lack of integration within and outside the class, lack of group discussion and individualized development and single evaluation of student achievement. In the current era of "Internet +", the construction of the blended learning can fully integrate the teaching inside and outside of classroom, and give full play to the advantages of network-based extracurricular learning [1].This study firstly analyzes the advantages and disadvantages of micro-lecture teaching and flipping classroom teaching, then based on the advantages of both, combined with the Ketangpai platform, tries to build a blended learning model of micro-lecture teaching + "semi-flip classroom" + Ketangpai platform. The construction of this model is expected to be applied to the classroom teaching of colleges and universities in various localities, and conduct basic groping research for classroom teaching reform.

2. Micro-lecture Teaching, Flipping Classroom Teaching and Ketangpai Platform

2.1 Micro-lecture Teaching.

With the continuous deepening of education reform, the study of college students has been divided into fragmentation. In the era of "Internet +", the learning resources of micro and small videos are increasingly favored by students [2].Micro-lecture is the best one in this kind of learning resources. It always uses audio and video as carriers to fully express teaching content.

The advantages of micro-lecture mainly include the following two aspects. Firstly, the video

  DOI: 10.25236/meici.2019.044

content is very flexibility. Teachers can freely combine video content according to their own teaching content or students' knowledge needs. They can also divide a completed teaching video into several knowledge modules. Besides, it can integrate scattered knowledge module videos into a complete one in order to meet the needs of teachers and students. Secondly, the teaching forms are diversified with a variety of instructional design. Traditional instructional design consists of three basic dimensions: knowledge and ability, processes and methods, emotional attitudes and values. Based on the three dimensions, teachers can work favourably using online video course in the micro-lecture. In the processing of micro-lecture teaching, we can use the knowledge points of teaching department, or use a certain part of teaching content to design and develop the situational video. Introducing this kind of teaching method to the traditional teaching process can enable learners to use micro-lecture and consolidate key knowledge [3].

However, in the micro-lecture production process, we may encounter some difficulties inevitably. For example, the quality of micro-lecture production is difficult to guarantee. At present, most college teachers have abundant professional knowledge and they have great ability to teach students everything in the classroom. However, if it involves the production of a micro-lecture, many teachers will have nothing to do. Because the production of micro-lectures requires professional departments and professionals people to complete. It is a difficult task for teachers to collect information. Therefore, in recent years, there have been some micro-lecture production companies, such as "Super Star", "Smart Tree", "School Online" and other companies. However, most of their service targets are enterprises. So we are lack of teaching teams, educational experts and relevant technical personnel of theory teaching.

Secondly, the content of micro-lecture is improperly selected .At present, information-based teaching methods are gradually promoted in different universities, but most teachers do not understand the concrete concept of micro-lecture. Some courses are obviously not suitable for micro-lectures. Even these courses are forced to make to be micro-lecture teaching courseware, the effect of class is not ideal. Some courses are suitable for micro-lecture making, but they cannot be needed because of the inappropriate content selected [4].

Based on the above analysis of the advantages and disadvantages of micro-lecture teaching, in order to ensure the quality of teaching, the micro-lecture which we have built are all coordinated by professional production teams and front-line teachers. Besides, all members of our group do best to make every stage of the micro-lecture. In addition, our teaching team regularly invites domestic and international micro-teaching teachers to visit and guide, and select excellent teachers to study in designated training institutions to make up for the low level of micro-class production and the inappropriate production of micro-class content, thus ensuring the quality of micro-teaching teaching, Fig.1 is the advantages and disadvantages of micro-lecture teaching and corresponding measures.

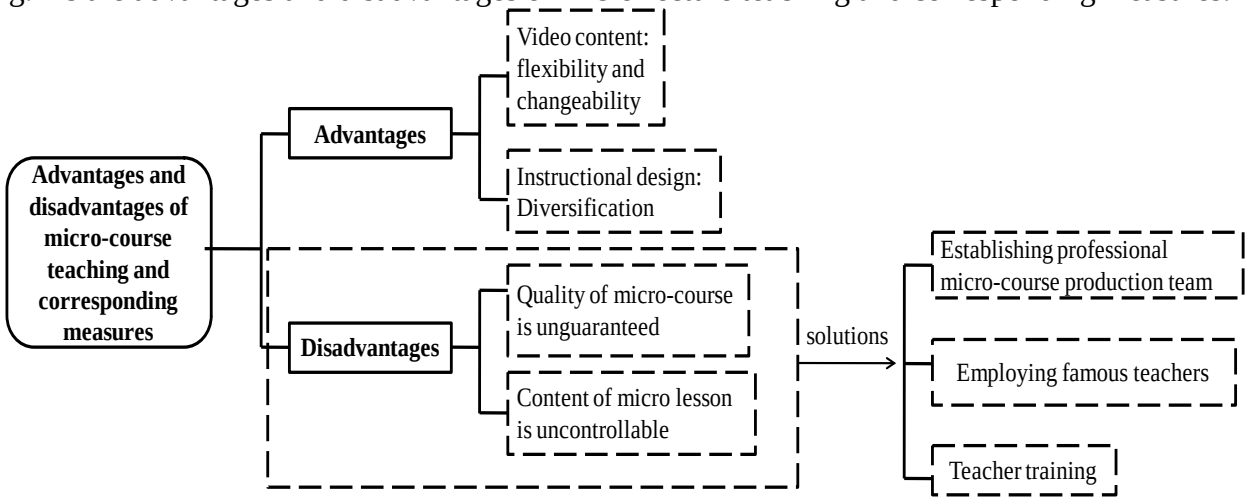

Fig 1. Advantages and disadvantages of micro-lecture teaching and corresponding measures

2.2 Flipping Classroom Teaching.

The traditional classroom form is to give priority to teacher's teaching. The main task of students is concentrating on listening and taking notes. Students have little time and space to communicate with teachers. After class, students go home to complete their homework, and teachers regularly correct students' assignments. While in the flipping class, students need to listen to lectures and watch videos at home before class and do discuss, answer questions, as well as do homework in class. The flipping classroom completely reverses the teaching process. Most of the time is spent on discussion, interaction and communication between teachers and students. After class, students need to watch course teaching videos in advance which ensure each student's participation through the sign-in system. Therefore, the basic point of view of flipping classroom is that the students learn independently and do assessment by signing before class. During class, teacher guides students to discuss, communicate, solve the common problems of most students through teamwork and answer the questions raised by individual students for internalization of curriculum content. After class, using different platforms to push test papers and practice questions to students in order to further enhance the internalization effect [5].

The flipping classroom realizes the flipping of teaching form. It is a new discussion of the curriculum, which not only improves teaching efficiency, but also adapts to the needs of students' learning, and gradually transforms the students from instilling learning to independent learning. Flipping classroom has realized the flipping of teaching process which is student-centered. The students' learning style is reversed. The students change from the original "fragmented" learning to the "integrated" learning. The flipping classroom realizes the flipping of teacher-student role. In the past, teachers occupied the dominant position, while in the flipping classroom, students occupy the dominant position [6-7] where the teacher only plays a guiding role. In order to express vividly the difference between traditional classroom and flipping classroom, we made a comparison diagram which was shown in Fig. 2.

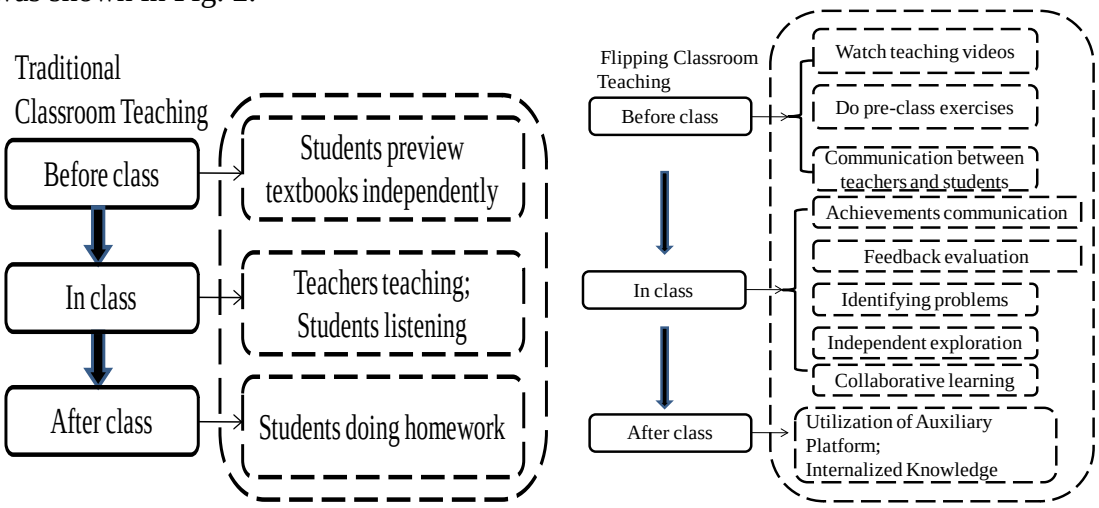

Fig 2. Schematic diagram of traditional classroom teaching and flipping classroom teaching

However, because the traditional teaching model has been deeply rooted in the classroom in our domestic universities, most teachers, especially older teachers, are unwilling or difficult to accept this new teaching model which is completely opposite to the previous teaching model. To some extent, this phenomenon has created obstacles for the promotion and use of flipping classrooms. In addition, the smooth operation of flipping classroom requires students to have strong independent self-learning ability and self-discipline ability. If students can't preview course content in advance, it is difficult for teacher to carry out the class discussion and other aspects in classroom. So the normal operation of the flipping classroom is difficult to guarantee.

Therefore, it is difficult to fully implement the flipping classroom in domestic universities in a short period of time. In order to adapt to the current teaching reform, combined with the reality of classroom teaching in China, this study proposes a "semi-flip classroom" teaching model. The

schematic diagram is shown in Figure 3. In this teaching model, students complete listening class in half of the time and complete the discussion, answer questions, and homework in the other half of the time. After class, students use one part of time to complete online classes and another part of time to complete homework.

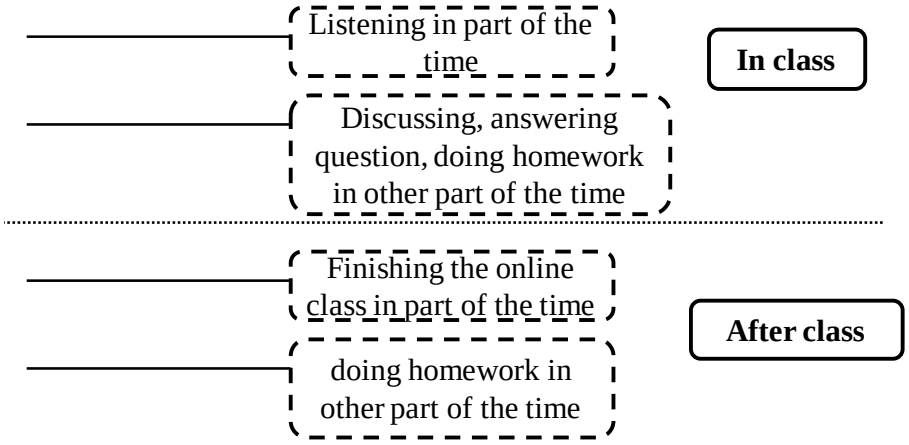

Fig 3. Schematic diagram of the semi-flip classroom teaching model

2.3 Ketangpai Platform.

Ketangpai is an interactive platform focusing on blended teaching. It is based on the concept of blended teaching and closely integrates with the big data teaching management model to create a new teaching experience [8] for college teachers and students. The built of this platform is to fully release the initiative, originality and creativity of students and return teaching to the essence. Figure 4 shows the main functional models of Ketangpai, including resource sharing, discussion zone, intelligent testing, borderless teaching space-time, private letter space and real-time monitoring.

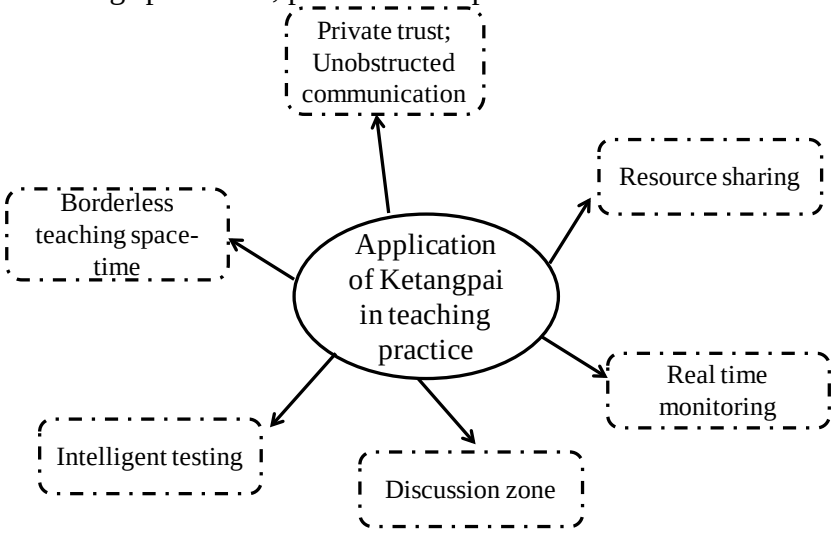

Fig 4. The six functional models of Ketangpai platform

3. Micro-lecture +“Semi-flip”+ Ketangpai Platform Blended Learning Model

Based on the teaching philosophy of “semi-flip” classroom, this study constructs a blended learning model which consists of micro-lecture teaching, "semi-flip" classroom and Ketangpai platform (shown in Fig. 5). In this model, there includes three parts, pre-class, in-class and after-class. The specific implementation of each part is as follows.

The first part is pre-class. In this part, we can realize the online teaching through micro-lecture. Before class, teacher decomposes teaching content into different segments according to the syllabus of the course. Then, teachers write script, design courseware and record micro-course. The

micro-lecture content is used as the learning resource for students. Teacher will send the recorded micro-courses to students before class, and students can do watching anytime and anywhere to prepare for class.

The second part is in-lesson. During this time, we mainly aim to realize the student-centered and teacher-led teaching process through "semi-flip classroom. Students can learn micro-videos, discuss, answer questions, and do homework in the classroom. They can also complete online learning, discussion, answering questions, and homework in the classroom. Students can discuss in class, at the same time, they also can watch micro-videos, which depends on the actual situation of the students. Similarly, students can watch micro-videos at home or participate in discussions and other activities at home.

The third part is after-class. We can form a collaborative learning activity station through Ketangpai platform. Collaborative learning is teacher-assisted offline learning. We set up the Ketangpai platform to further refine the undigested knowledge points in class and urge students to practice the relevant topics repeatedly to enhance internalization effect.

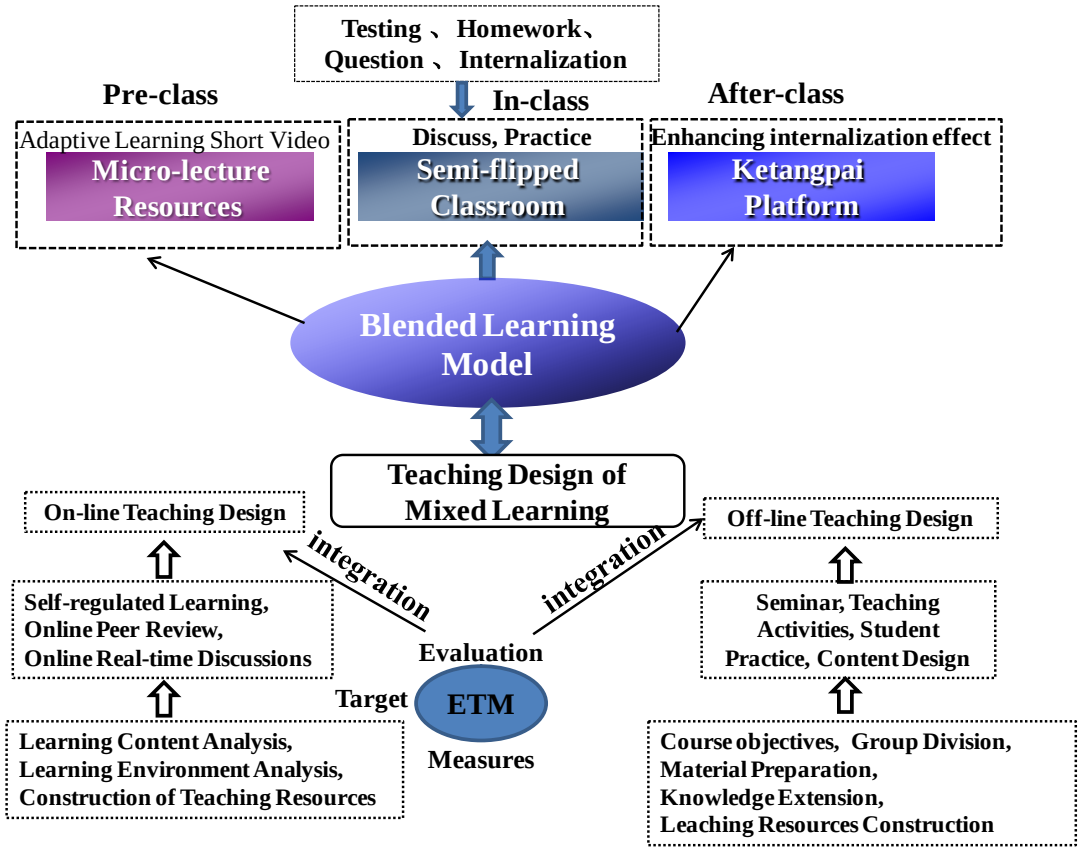

Fig 5. Micro-lecture + "semi-flip" + Ketangpai blend learning model

The blended teaching model constructed in this study mainly includes three parts: pre-class preparation, class communication and after-school tutoring review. The first part is preparation before class. This session uses the micro-lecture resources recorded by teachers as the teaching content. Before teaching, teachers need to transfer short video of teaching to cloud for students learning online. The online part is the main difference between the blended model and the traditional model. When designing online, it is necessary to make clear the orientation of the overall training goal of the teacher's unit, to clarify the professional foundation of the student.

The second part is interaction in class. In this part, we take the “semi-flip” as classroom teaching method. In class, students can do expansive learning and difficult research. The classroom is used to solve rigid needs. Teachers should redefine the teaching content and customize learning topics according to students’ categories so as to realize the organic combination of knowledge points in class and knowledge points in online platform. The teachers should design knowledge point according to the students' learning feedback, difficulty coefficient and knowledge points.

The third part is review after-class, using the Ketangpai platform for communication, which realizing real-time counseling and answering questions for students to achieve internalization of knowledge.

4. Summary

Micro-lecture + “semi-flip”+Ketangpai blended learning model is a new type of classroom teaching design. This teaching model helps to open the teaching concept of student-centered learning, to innovate teaching practice and to improve teaching quality. It is an effective way for ordinary classroom teaching moving to smart classroom teaching. However at present, the educational philosophy of most college teachers in China cannot fully advance with the times, and there are teachers and students who are not suitable for the changes in the teaching structure. Therefore, in order to realize the value-added of the blended teaching model, it requires the practice of a large number of front-line teachers and the continuous exploration of researchers in teaching theory.

Acknowledgements

This work was supported by Teaching Reform Project of Xi’an Polytechnic University (No. 19JGYB18); The Higher Education Science Research Projects in 2019 of Shaanxi Institute of Higher Education (No. XGH19139).

References

[1] X.Y. Du: *Research on the Construction and Application of Learning Space Based on Blended Learning* (MS., Shanxi Normal University, China, 2017), p.11.

[2] W.L. Luo: *Research on the teaching design of college physical education micro-class——Jishou University "Babao Copper Bell Micro Lesson" as an Example* (MS., Jishou University, China, 2018), p.12.

[3] A.D. Zhang, R. Lu and J.P. Hu: Education Teaching Forum, (2019) No.15, p.252.

[4] X. Guo: *Construction and Application of Micro-class Evaluation System Based on Teacher Professional Development* (MS., Bohai University, 2018), p.14.

[5] G.Q. Bao, J.W. Wang and J. Xue: ShiJian TanSuo, (2019) No.1281, p.73.

[6] H.L. Yang: *The Practice Research of Flipped Classroom Promotes Deep Learning of College Students-Take the “Learning Science and Technology” Course as an Example* (MS., Inner Mongolia Normal University, China, 2018), p.18.

[7] K.L. Zhang: *Research on the Design of the Flipped Classroom for Promoting Graduate Students’ Deep Learning* (MS., Jiangnan University, China, 2017), p.7.

[8] G.C. Sun and M. Yang: Curriculum and Teaching, (2017) No.4, p.103.