

The Application of Flipped Classroom in Economics Teaching in Colleges and Universities

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Abstract. “Flipped Classroom” reverses the traditional classroom teaching structure and teaching process, which has triggered a series of changes in teacher roles, course forms, management modes and so on. Compared with the traditional classroom, the flipped classroom helps students shift from passive learning to active learning, from knowledge memorization to mind exercise, and it is conducive for the offline teaching mode to expand into the mixed online and offline teaching mode. In view of the characteristics and the supply and demand, college economics teaching’s optimization needs to be supported by flipped classroom. And a three-dimensional, blended and efficient teaching mode should be established, according to the course features, through knowledge transmission by the micro-video before class, discussion in class and review and application after class.

1. Origin and Development of Flipped Classroom

“Flipped Classroom”, also known as “Inverted Classroom”, requires students to learn new knowledge before class, then to be taught in class. “Flipped” means that the process of knowledge transmission is set up before class, and knowledge internalization is realized in class through diversified classroom activities, so as to achieve high-quality teaching.

At the beginning of the 19th century, U.S. Military Academy at West Point adopted the teaching method that students learn the materials provided by teachers and then group discussion in class, which initially reflected the connotation of flipped classroom.

In 1990, Eric Mazur from Harvard University founded Peer Instruction and proposed two steps of learning: knowledge transmission and internalization [1]. Traditional education pays attention to the transfer of knowledge, but ignores the importance of knowledge internalization. The teacher’s role can actually be transformed from a transmitter to a guider of knowledge.

In 2000, American scholars Maureen Lage, Glenn Platt and Michael Treglia, introduced the “flipped teaching” model employed in teaching *A Little Book of Economics* at Miami University in their paper *Inverting the Classroom: A Gateway to Create an Inclusive Learning Environment*. But they did not propose the term “flipped classroom” or “flipped teaching”.

In 2007, Jon Bergmann and Aaron Sams, two chemistry teachers in Woodland Park High School in Colorado, USA, recorded the lectures in order to help students catch up with the courses after class. But they found that the PowerPoints were popular among students. This is the origin of the flipped classroom.

In 2011, Salman Khan proposed in his speech to use video to reinvent education, which made flipped classroom popular on a large scale, and many countries began to adopt this new teaching mode.

In 2011, Jukui High School in Jiangjin, Chongqing, started to practice flipped classroom, and became the first school to apply flipped classroom in China. Later it has set off a craze for flipped classroom. Many schools begin to practice the flipped classroom, and a large number of scholars also conduct related researches.

Initially, flipped classroom was recognized by educators but they could not produce high-quality micro-videos. In 2004, Salman Khan, a Bangladeshi American, established the Khan Academy. In order to help his cousin with mathematics, Khan used a program to explain remotely, and coded

questions for tests. He produced some videos for sharing on YouTube, which were widely welcomed by the public. Later, he devoted himself to the construction of the Khan Academy to constantly expand disciplines, scales, etc. At the same time, the Khan Academy has attracted investment in capital and technology, which has further expanded its scale, thus promoting the popularity of flipped classroom throughout the country. The teaching mode of flipped classroom is also constantly enriched. At the beginning, micro-videos are used just before class for teaching in flipped classroom. Gradually, online assessments and question feedback have been added to let teachers know students' pre-learning situation. Until now, flipped classroom has not only achieved an online breakthrough, but also enriched classroom activities. This not only cultivates students' habit of self-study, but also improves their ability of independent thinking and teamwork. In the future, flipped classroom will require greater online and offline interaction between teachers and students. It has been provided technical and economic support with the development of science and technology and the rapid growth of the global economy. Flipped classroom will be more widely used in classroom teaching.

2. The Advantages of Flipped Classroom over Traditional Classroom

2.1 It is conducive for students to shift from passive learning to active learning

Whether in middle schools or colleges and universities, it can be easily found that the vast majority of students are in a state of passive learning which is boring and inefficient. The flipped classroom teaching mode prompts students to change passive learning into active learning, transforming single classroom learning into mixed learning in class and after class, which can cultivate students' self-study capability and increase their self-control ability. Traditional teaching often adopts the cramming method of teaching, so is difficult to ensure that students have really grasped the knowledge, but flipped classroom teaching uses micro-videos before class, through which students can conduct self-study. In this process, students are highly focused and they can adjust the video progress according to their own abilities, so that those backward students can also grasp knowledge with good quality and quantity. Therefore, flipped classroom can not only improve students' self-study, but also enhance the teaching quality.

2.2 It is conducive for students to shift from knowledge memorization to mind exercise

Through the efficient self-study before class, teachers no longer have to spend too much time explaining simple knowledge. Based on the feedback of online practice, teachers can timely analyze students' learning difficulties and then teach them in accordance with their aptitude. The transformation of teaching mode ensures the relatively sufficient classroom discussion time. Students in the flipped classroom can be more involved in the exploration of questions, which develops their independent thinking, thereby enhancing their thinking quality. The micro-video teaching through the Internet platform can reduce the work intensity of teachers in imparting knowledge. They can put more energy to classroom inquiry teaching, pay attention to in-depth teaching, and strengthen students' mind exercise.

2.3 It is conducive for the offline teaching mode to expand into the mixed online and offline teaching mode

Blended learning is a combination of online and offline learning on the surface, but in deep level, it is to optimize the choice and combine teaching environment, and teaching resources and so on [2]. In this new teaching mode, teachers return to the role as the guider. The teacher is an inspirer, not an indoctrinator of knowledge. The fundamental task of teaching is to train students' thinking and improve their cooperative ability. Flipped classrooms return the initiative of learning to students. Students can rationally allocate their own study time and formulate learning strategies according to their own circumstances. Thus their learning becomes more flexible and efficient. Before class, students use micro-video to get a preliminary understanding of the knowledge. In class, they grasp the knowledge deeply. After class, students can review video to consolidate relevant knowledge.

Only after students have a firm grasp of basic knowledge can they better apply knowledge to practice. The flipped classroom can help to consolidate knowledge points many times, repeatedly transmit knowledge, and deepen knowledge memorization. In the information age, the introduction of the Internet into classroom, on the one hand, can increase students' learning interest, and on the other hand, the classroom is not only limited to books, but also can timely transfer the latest knowledge to students.

3. Analysis of the Reasons Why the Optimization of Economics Teaching in Colleges and Universities Cannot Be Separated from Flipped Classroom

3.1 Discipline characteristics

Economics is theoretical and logical, which requires students to have a more comprehensive grasp of the economic theory system. With solid basic knowledge as a support, they can make new breakthroughs in practical use. However, students generally feel that theoretical economics is difficult to understand, or that theoretical knowledge is boring, leading to their lack of interest and enthusiasm. Flipped classroom provides a new way to raise students' interest by using the internet. The basic knowledge is learned through micro-video before class. In the class, the teacher will add simple explanation and supplement. After the class, there will be assignments to reinforce the review. Repeated learning can improve students' mastery of basic knowledge and further promote their overall understanding of the theoretical knowledge system.

The study of economics cannot be confined to the study of past experience. What is more important is to apply the theory to practical economic issues. Times are changing, and some theories are not enough to explain certain current economic problems. Once constrained by the underdevelopment of information technology, scholars could only conduct economic research by consulting a large number of documents. In the information age of big data, we don't need to spend a lot of time collecting data, and we have a more convenient way to know the actual economic problems. Flipped classroom can effectively combine economic theory with practical teaching. The use of the Internet in learning, related websites and learning resources will enable students to understand the latest economic trends, which will surely deepen their understanding of economics. Therefore, it is feasible to apply the flipped classroom model in economics teaching.

3.2 Students' needs

On the one hand, students' learning ability is uneven, and traditional teaching cannot teach students in accordance with their aptitude. There is a strong correlation between the network structure of some courses knowledge in economics. When students do not grasp a certain knowledge point, it is likely to affect the future study, thus throwing cold water on their learning enthusiasm. As time passes, they will give up this subject. This is also a factor affecting the rate of failure in exam. Flipped classroom teaching mode provides students with online learning platform, where students can ask questions online and teachers offer one-on-one explanations according to student's situation, so that students with poor learning ability can study after class to enhance their confidence. The flipped classroom is a good example of the student-centered teaching idea. Students have more learning freedom and their cognitive differences are respected [3].

On the other hand, the Internet has become the necessity for people nowadays, and it is more attractive to students. Appropriate online teaching can inspire students' interest in learning. Therefore, it is necessary to use the flipped classroom in economics teaching.

3.3 Teaching supply

Teaching requires effective interaction between teachers and students. Instead of allowing students to learn independently, flipped classroom requires a higher level of interaction between teachers and students [4]. Classroom teaching is often limited by the class hours, and students cannot fully discuss the problem in the class. The classroom should be a platform to train students' thinking ability and improve their cooperative capability, but nowadays fewer and fewer students

express their views in the class. Due to the limitation of class hours, teachers do not have enough time to discuss the problem with students after finishing the transfer of basic knowledge, and those difficulties which really require teachers' elaboration are not solved. Whether it is theoretical economics or applied economics, each subject needs students' deep understanding and thinking. The flipped classroom improves the learning efficiency of students, saves the time for simple knowledge explanation in class, and creates opportunities for training their innovative thinking ability.

4. Optimizing College Economics Teaching with Flipped Classroom

4.1 Learning from the teaching mode of flipped classroom

The application of flipped classroom in economics teaching requires elaborate courses (micro-video production and offline course design). The classroom model is divided into pre-class (knowledge transfer and structure framework through micro-video), in-class (rich classroom activities, case and practical teaching according to the characteristics of the subject), and after-class process (the supplement and application of in-class knowledge, and the latest economic trends).

(1) Before Class: Transmission Knowledge through Micro-video

Before class, teachers need to take simplified micro-videos based on the course content for students to learn basic theoretical knowledge. Videos should be refined, focusing on framing the knowledge that will be learned in class so that students can have the overall picture of knowledge before class. Besides, micro-video should highlight the key and difficult points of teaching content. The design of flipped classroom needs to combine the characteristics of subject and teaching requirements. For example, industrial economics has strong applicability. However, the current teaching methods are relatively single, generally with the use of the spoon-feeding method. Industrial economics requires case teaching, practical teaching, media teaching and participatory teaching to enrich the teaching mode of this subject [5], and develop students' software application skills. Students are required to finish the online course within the specified time, make learning records, and give effective feedback to teachers.

(2) In Class: Discussion and Knowledge Internalization

In class, the teacher organizes a variety of classroom activities such as asking questions, independently thinking by students, group cooperation, problems discussion, results presentation, and feedback, etc., which can help them internalize the knowledge and have a deep understanding. Teachers should refine the knowledge points so that students can make up the knowledge framework they have mastered before class to form a complete network of knowledge. Besides, when organizing classroom activities, teachers have to adopt the inducing-mode teaching, focusing on developing students' abilities of innovative thinking and teamwork.

(3) After Class: Knowledge Review and Application

After class, students should complete relevant exercises. To learn economics, it is necessary to know the latest economic developments and the frontier ideas. Economics can be applied only if it is based on reality. Therefore, teachers also need to provide students with approaches to latest economic trends. Through the website and resources given by teachers, students can further learn economic knowledge. After-class learning is complementary to in-class learning.

4.2 Differentiation of flipped classroom in economics teaching

Not all disciplines are suitable for flipping classroom teaching mode, and different courses require different designs. Different courses differ in micro-video design, classroom teaching and after-class consolidation.

Economics contains two first-level disciplines: theoretical economics and applied economics. Theoretical economics mainly includes six second-level disciplines such as Political Economics, History of Economic Thought, Economic History, and Western Economics and so on; applied economics mainly includes ten second-level disciplines such as Regional Economics, Finance, Industrial Economics, Statistics, and Quantitative Economics, etc. Theoretical economics concerns

the basic concept, the principle of economics, and the general laws of economic operation and development. It provides the theoretical basis for other economic disciplines. It is theoretical and logical, which requires students to have an overall mastery of theoretical system to form a knowledge network. According to the characteristics of theoretical economics, it is possible to focus on the combing of knowledge networks when making micro-videos, to relatively completely present theoretical knowledge, and then to detail and enrich the knowledge network in class. Applied economics mainly uses the basic principles of theoretical economics to study the regularity of economic activities and economic relations in various sectors and fields of national economy, or to analyze the economic and social benefits in non-economic activities. Applied economics has to adapt to the development of social economy, which needs continuous improvement. Therefore, in classroom design, the analysis of actual economic problems and case teaching should be strengthened. The micro-video can be used to better present the case to students, so as to make an organic integration of theoretical and practical teaching.

5. Further Reflection on Flipped Classroom Teaching Mode

Under the traditional teaching mode, Chinese students have long been in passive learning and have been accustomed to the past “spoon-feeding” teaching. Faced with a new teaching mode, can students actively accept the flipped classroom? The flipped classroom is facing the challenges of the reliability of the application of information technology in teaching, teachers’ cooperation and the online and offline integration.

5.1 Can pre-class learning be effectively realized?

For a long time, teachers and parents have over-emphasized students’ test scores. In teaching, teachers often blindly instill knowledge and neglect the training of high-quality talents. Most students have mastered various test-taking skills, but lack the ability of independent thinking and teamwork and the autonomy in learning. Will students accept the flipped classroom? Can students consciously finish the pre-class study? E-learning is a new way of learning that will arouse students’ interest in learning. However, the internet has a deep attraction for students, resulting in the reduction of self-control. It is likely that students will do something unrelated to the study online. Therefore, the effective completion of the “learning first” of flipped classroom cannot be guaranteed.

5.2 Can teachers be brave for greater challenges?

Not only are students accustomed to traditional teaching, but teachers also adapt to the spoon-feeding teaching. Teachers will face new challenges as the micro-video developer, designer, organizer and participant of learning activities, and tutors after class [6]. Flipped classroom requires teachers to change their role from the knowledge provider to the guider of students to innovate their thinking. Teachers are required to adopt various methods to mobilize the enthusiasm and initiative of students in learning, provide multi-faceted guidance for students with different learning abilities and put more energy to improve their thinking quality. Flipped classroom poses a higher challenge to teachers’ teaching skills.

5.3 Can online and offline teaching be organically integrated?

The use of micro-video in teaching does not mean the practice of flipped classroom. Only the advance of knowledge transfer and the real realization of knowledge internalization can implement flipped classroom teaching [1]. Flipped classroom requires an organic integration of online teaching and offline teaching. Online teaching helps students learn individually, and offline courses require students to explore questions after self-study. According to the characteristics of disciplines, online and offline integration with a variety of teaching methods can solve the drawbacks of traditional teaching, promote high-level teaching, and achieve the true cultivation of innovative talents. It is worth thinking about whether online and offline teaching can truly realize knowledge transfer and internalization.

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