

Reflection on the Popularization of Inverted Classroom in the Era of Mass Higher Education

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ABSTRACT

In recent years, colleges and universities in China generally call on teachers to adopt the teaching mode of inverted classroom in course teaching. Starting with the teaching concept and characteristics of inverted classroom, this paper analyzes the requirements of high-quality inverted classroom on classroom participants — teachers and students. Given that China has entered the era of mass higher education with mixed quality of students, such top-down teaching practice reform makes teachers lack initiative. So even if the teaching mode of inverted classroom is adopted, its teaching effect may not be better than the traditional lecture teaching mode. Therefore, the paper finally puts forward that, under the current management system of China's colleges and universities, the large-scale implementation of inverted classroom teaching mode will not be fully conducive to the realization of the purpose of China's higher education without distinguishing the nature of disciplines and differences in the level of colleges and universities.

Keywords: inverted classroom, higher education, popularization

I. INTRODUCTION

The concept of "inverted classroom" was first proposed by Lage, M. J. and Platt, G. J., professors of economics at the University of Miami and Treglia, M. in their published paper "Inverting the classroom: A gateway to creating an inclusive learning environment".

¹ The inverted classroom teaching concept originated from the case teaching method of economics and law courses, which was gradually adopted by other disciplines in classroom teaching in the early 21st century. Different from the traditional lecturing style of classroom teachers, inverted classroom emphasizes that classroom teaching content should be watched and learned by students after class through pre-recorded videos, while in class time students should internalize learning with the direct help of peers and mentors. ² In other words, during the class time, the teacher will not teach the content of the class, but answer the questions that students do not understand after learning the video. Besides, the teacher can also provide other guidance.

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¹ Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *Journal of Economic Education*, 31(1), 30-43.

² Talbert, Robert (2012) "Inverted Classroom," *Colleagues*: Vol. 9: Iss. 1, Article 7.

Over the past decade, teachers of many courses in American universities have participated in inverted classroom teaching activities, among which science and engineering disciplines see the highest participation of teachers. From some courses that have adopted inverted classroom teaching at present, it can be seen that the learning effect obtained by students is better than that obtained by traditional teaching. ³ In recent years, inverted classroom teaching mode has gradually become popular in Chinese colleges and universities. However, under the current teaching management system of China's colleges and universities, the time is not yet ripe for the large-scale promotion of inverted classroom in various colleges and universities.

II. THE TEACHING CONCEPT AND CHARACTERISTICS OF INVERTED CLASSROOM

In the last century, the emergence of television also promoted education to get rid of the traditional classroom teaching method, enabling more non-school students who could not go to the classroom to get the opportunity to receive higher education by watching the live broadcast of radio and television courses. Different from live TV courses, inverted classroom relies on Internet technology. Although inverted classroom also requires students to watch the course videos after class, this is only one of the contents of the course. Radio and television education has not changed the lecture

³ Ditto.

teaching mode of traditional classroom teaching, it has merely changed the on-site teaching into television teaching. Due to the fact that students and teachers are not in the same space, the interaction between teachers and students cannot be carried out in the live TV course, and students can only watch it at the designated time. Therefore, the effect of the live TV course is not as good as the on-site classroom teaching. Inverted classroom differs from traditional classroom teaching in both teaching concept and teaching characteristics.

A. The teaching philosophy of inverted classroom coincides with the college talent training objectives in the 21st century

Based on the different positions of idealism and utilitarianism, there are always different views on the target field of talent training in colleges and universities. Each university sets different goals for the cultivation of talents. In the 21st century, the cultivation of college students' ability of knowledge transfer and construction, or innovative spirit and ability, is the aim of higher education on the level of critical reasoning. Around this goal, it is necessary to reform the curriculum content and teaching system, promote inquiry-based learning, strengthen the spirit of research-based exploration, and stimulate students' intrinsic learning motivation.⁴ In terms of philosophy, the teaching method of inverted classroom is undoubtedly very consistent with the goal of cultivating innovative talents.

The concept of inverted classroom originates from practical teaching, where the pioneers hope to transform the traditional teacher-centered teaching into student-centered teaching by changing the form of teaching. Inverted classroom focuses on the word "invert", that is, the teacher no longer becomes the protagonist of the classroom, but the student takes the role of the protagonist. In the traditional education mode, the teacher is assumed to be the master and the impostor of knowledge, while the student is regarded as the one who receive and are indoctrinated knowledge, the two of which are in the relationship of giving and receiving. Students accept what the teacher outputs. But in inverted classroom, the relationship of giving and receiving, indoctrinating and being indoctrinated has been overturned. The learning time of inverted classroom is divided into in-class time and after-class time. Students watch short teaching videos before class, and the time in class is left for students to communicate with teachers and other students about what they don't

understand.⁵ In short, classroom learning is no longer a passive acceptance of knowledge information, but a process of internalizing knowledge, a process in which students construct and transfer knowledge by themselves. The whole learning process requires students to find problems by themselves, think actively about problems, and learn to find solutions through interaction with teachers and classmates.

B. The characteristics of inverted classroom

Inverted classroom is different from classroom teaching and ordinary video teaching. These differences are reflected in the following aspects:

1) The video time of inverted classroom is shorter:

A normal teaching class lasts about 45 minutes, while the videos recorded by inverted classroom are generally only about 10 minutes, and the longest is no more than 15 minutes.⁶ This length of time is to ensure that students can stay focused while studying the video. The video is also interspersed with questions and exercises, so that students can check whether they have mastered the class content. If students do not understand, they can also choose a certain time to watch the video again and again according to their own situation.

2) Inverted classroom is closely linked to online teaching: The online teaching referred to by inverted classroom is not a live video streaming, but an online course based on the course video. If students have any questions after watching the video online, they can ask directly on the course message board. The teacher or assistant will answer the students' questions online, check the knowledge of the course from the students' questions, and give one-to-one answers to the students in class.

3) There may be differences in the contents of inverted classroom classes in the same course: Under the traditional teaching, the teacher who has the right of speech can directly control the progress and content of the class. But in inverted classrooms, students become the dominant players in classroom content. This is because teachers can neither predict nor control the problems of their students. Therefore, even if the same course is taught by students with different questions, students in different classes will discuss different contents in class.

⁴ Zhang Yingqiang, Wang Pingxiang. "Thinking on the Training Goal of Undergraduate Education Talents Against the Background of "Double First-class" Construction [J]. Journal of Hunan University of Science & Technology (Social Science Edition), 2019 06, pp. 148-154.

⁵ Xu Na. A Study on College English Flipped Classroom Teaching Model in the Era of "Internet +" [J]. 2017 Annual Academic Conference of Liaoning Higher Education Association, 2017.

⁶ Li Guian, Zhang Ning, Zheng Hairong, Wang Jingyan. Exploration and Research of University Flipped Classroom Teaching Practice based on Information-based Teaching, China University Teaching, 11th issue, 2016, pp. 61-65.

III. THE REQUIREMENT OF HIGH QUALITY INVERTED CLASSROOM ON CLASSROOM PARTICIPANTS

"The final criterion for testing and measuring teaching effectiveness lies in whether it can truly influence and promote students' growth, whether it can promote students' transition from passive learning to active learning, and whether it can effectively improve students' critical thinking, innovative ability and comprehensive quality."⁷ Since inverted classroom is only one of many teaching methods and modes, the criterion to judge the high quality of inverted classroom is ultimately still the teaching effect. Only by truly stimulating students' enthusiasm for active learning and effectively improving their critical thinking, innovation ability and comprehensive quality, can inverted classroom meet high quality standards. In a sense, inverted classroom is about helping students and teachers build a equipotent interaction platform.

No matter how the teaching form changes, the main body of teaching is always teachers and students. In order to realize high-quality inverted classroom, a high-quality interactive mechanism must be established. This actually puts forward higher request to both students and teachers.

A. Requirements for teachers

During the construction of inverted classroom, teachers need to complete the following tasks: recording short videos, organizing and managing teaching groups, and classroom tutoring. In these jobs, many teachers pay special attention to how to record good course videos, but pay little attention to the later work. However, the completion of course video is only the first step. It is more important to make good use of video and Internet teaching tools to guide students to be good at thinking and ask high-level questions.

Inverted classroom requires high professional level and teaching ability of teachers. First of all, a good teaching video must be able to attract students to watch and arouse their enthusiasm for active thinking or learning. This means that teachers must grasp the key points of knowledge and the rhythm of teaching when recording teaching videos. To guide students to think deeply, teachers must have a deep teaching content. Secondly, after watching the course videos, students may ask a variety of questions, some of which will be difficult. It is difficult for teachers to answer students' tricky questions if their own professional level is not enough. Finally, teachers must spend many times the

time required for a traditional classroom to create a high-quality inverted classroom.

B. Requirements for students

To achieve good teaching results in the inverted classroom, students should first meet the teaching requirements by actively watching the course videos, thinking about problems and completing exercises according to the video requirements. Secondly, after watching videos and reading the assigned materials, students should learn to think and be good at asking questions, and effectively interact with teachers and other students in class with questions, especially high-quality questions. A good question can improve the interactive quality of the whole class. But usually the questioner can only ask good questions under the premise of having certain knowledge reserve and critical independent thinking.

IV. REFLECTIONS ON THE LARGE-SCALE PROMOTION OF INVERTED CLASSROOM TEACHING MODE IN CHINA

On November 3, 2011, the Ministry of Education issued the "Ten-year Development Plan for Educational Informatization", proposing to "promote the integration of information technology and teaching. ... and to explore the establishment of a new learner-centered teaching model ". Since then, the inverted classroom model, which originated from the teaching practice in the United States, has been introduced into China's basic education and higher education. In recent years, more and more courses of inverted classroom teaching have been carried out in colleges and universities, involving a wide variety of disciplines. At present, the researches of Chinese educational practitioners on inverted classroom mainly focus on implementation mode construction, teaching program design and other specific contents. However, there are few studies on the effect of inverted classroom and students' actual feedback, which may be related to the late introduction of inverted classroom mode in Chinese universities and the short curriculum time.

Inverted classroom teaching mode tends to be promoted on a large scale. College administrators of different types and levels are encouraging their teachers to adopt inverted classroom mode widely, for which the author have some reservations. Is the teaching mode of inverted classroom lectures in the guise of high technology⁸, or a teaching mode innovation by means of information technology? This is actually related to the curriculum design of teachers and the characteristics of the curriculum itself. In traditional teaching, the teacher asks students to read the material in advance

⁷ Gao Jianguo. The Occurrence of High Quality Undergraduate Teaching — Why It Is Needed and How to Achieve Interactive Teaching [J]. Journal of Higher Education, 01, 2020, pp. 84-90.

⁸ L Nielsen, Five reasons I'm not flipping over the flipped classroom [J]. Technology & Learning, 2012.

before class and explain their views in class on the subject and content of the course. This is the most common mode of probing teaching. If inverted classroom only turns the textbooks read in advance into videos narrated by teachers, it is not much different from inquiry-based teaching in essence. It takes more time for teachers to record videos. If the course involves not basic theoretical knowledge but some cutting-edge and rapidly changing applied technical knowledge, the recorded videos should be updated frequently to cope with these changes, which will undoubtedly increase the burden on teachers. Inverted classroom teaching in the United States is a spontaneous teaching reform practice by teachers, while inverted classroom teaching demand in China is a top-down teaching reform practice, and the spontaneity and initiative of teachers is inherently insufficient. Conversely, in terms of students, the percentage of Chinese students who had access to higher education was less than 15% of the working-age population before 1999, when higher education in China was generally considered an elite education. Since 1999, China's higher education has been continuously expanding its enrollment scale. By 2019, the gross enrollment rate of China's higher education has reached 51.6%.⁹ This shows that China's higher education has changed from elite education to mass education. Against the background of public education, the quality of college students is uneven. Inverted classroom requires students to take the initiative to learn, but for Chinese students who have been accustomed to passive learning for a long time, their laziness will still hinder students' enthusiasm for learning and affect the actual effect of inverted classroom, even if they are externally required to watch videos and ask questions. At the same time, inverted classroom take up students' extracurricular time, and the fact that the entire teaching period is not increased is equivalent to the fact that students' actual teaching time is increased. If all the courses selected by students adopt inverted classroom, it means that the weekly classroom learning time of students will increase, which will definitely affect the students' investment and enthusiasm in learning each course. In addition, long-term video watching means that students will spend more time in front of their computers or phones. As students spend more time sitting still, it will be more difficult for them to get up and leave their computers, phones and iPads.¹⁰ Under the current relatively strict teaching management system in China, inverted classroom can be piloted in a few colleges and universities, but the time is not yet ripe for large-scale promotion.

⁹ Ministry of Education, "Statistical Bulletin of the National Education Development in 2019".

¹⁰ Shi-Chun Du. Ze-Tian Fu. Yi Wan. The Flipped Classroom—Advantages and Challenges. International Conference on Economic Management and Trade Cooperation (EMTC 2014)

V. CONCLUSION

Inverted classroom, as an innovation in teaching mode by American educators using information technology, has attracted global attention in education. In recent years, China's higher education administrative departments have also encouraged college teachers to actively adopt the teaching mode of inverted classroom in class, leaving time in class for teachers and students to jointly discuss and solve problems, so as to help students internalize knowledge. Both in vocational colleges and research universities, more and more courses adopt the inverted classroom teaching mode. Inverted classroom is the teaching exploration result of integrating modern scientific and technological means into student-centered teaching philosophy. However, high-quality inverted classroom is highly demanding for the teachers and students involved. Therefore, in the era of mass higher education, the large-scale implementation of this teaching mode regardless of the nature of disciplines and the differences in the level of colleges and universities may not be entirely conducive to the realization of the purpose of higher education.

References

- [1] Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *Journal of Economic Education*, 31(1),30-43.
- [2] Talbert, Robert (2012) "Inverted Classroom," *Colleagues: Vol. 9: Iss. 1, Article 7.*
- [3] Zhang Yingqiang, Wang Pingxiang. "Thinking on the Training Goal of Undergraduate Education Talents Under the Background of "Double First-class" Construction [J]. *Journal of Hunan University of Science & Technology (Social Science Edition)*, 2019 06, pp. 148-154. (in Chinese)
- [4] Xu Na. A Study on College English Flipped Classroom Teaching Model in the Era of "Internet +" [J]. *2017 Annual Academic Conference of Liaoning Higher Education Association*, 2017. (in Chinese)
- [5] Li Guian. Zhang Ning. Zheng Hairong. Wang Jingyan. Exploration and Research of University Flipped Classroom Teaching Practice based on Information-based Teaching. *China University Teaching*, 11th issue, 2016, pp. 61-65.(in Chinese)
- [6] Gao Jiangyong. The Occurrence of High Quality Undergraduate Teaching — Why It Is Needed and How to Achieve Interactive Teaching [J]. *Journal of Higher Education*, 01, 2020, pp. 84-90. (in Chinese)
- [7] L Nielsen. Five reasons I'm not flipping over the flipped classroom [J]. *Technology & Learning*, 2012. (in Chinese)
- [8] Ministry of Education, "Statistical Bulletin of the National Education Development in 2019". (in Chinese)
- [9] Shi-Chun Du. Ze-Tian Fu. Yi Wan. The Flipped Classroom—Advantages and Challenges. *International Conference on Economic Management and Trade Cooperation (EMTC 2014)*