

Application of the Flipped Classroom in Colleges and Universities: Definitions, Possibilities and Preconditions

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Abstract:

The flipped classroom is a new teaching model and a type of blended learning. It inverted the traditional educational procedures by delivering instruction online before class and putting the homework and various activities in class. It is one of the most popular trends in the educational circle in recent years. Based on its popularity, this paper aims to introduce the flipped classroom by discussing its definitions, possibilities and preconditions for applying the new model to classes in Colleges and Universities. It states that the new instructional strategy reveals the modern teaching beliefs and it is practical in higher education with such preconditions as the support of educational technology, changes of teachers' roles, and learners' autonomous learning abilities.

Key words: The flipped classroom; definitions; possibilities; preconditions

1. Introduction

According to Wikipedia, the flipped classroom is an instructional strategy and a type of blended learning that reverses the traditional educational arrangement by delivering instructional contents, often online, outside of the classroom and moves activities, including those that may have traditionally been considered homework, into the classroom. Gerstein (2012) in his book states that the flipped classroom is about viewing and/ or listening to lectures during one's own time which frees up face-to-face class time for experiential excises, group discussions, and question and answer sessions. Generally, these definitions emphasize the inverted teaching approaches and learners' stronger sense of autonomy. In fact, the rise of the flipped classroom is not a coincidence. The following issues are big influential factors in the development of the flipped classroom model.

Harvard professor Eric Mazur has played a significant role in the development of concepts influencing flipped teaching through the development of an instructional strategy he called peer instruction. He found that his approach which moved information transfer out of the classroom and information assimilation into the classroom allowed him to coach students in their learning instead of lecture (Mazur, 1997; Crouch & Mazur, 2001). Salman Khan is another person who has made the most recognizable contribution to the flipped classroom. In 2004, Khan began recording videos at the request of a younger cousin he was tutoring because she felt that recorded lessons would let her skip segments she had mastered and replay parts that were troubling her (Thompson, 2011). Khan founded the Khan Academy based on the new model. Salman Khan becomes an important leader in the popularity of the flipped classroom.

The breaking through event appeared in the year of 2007, when Woodland Park High School chemistry teachers Jonathan Bergmann and Aaron Sams stumbled onto an idea. Struggling to find the time to teach lessons for absent students, they bought software that allow them to record and annotate lessons, and posted them online. Absent students appreciate the opportunity to see what they missed. But, surprisingly, so did the students who hadn't miss class. They used the online material, mostly to review and reinforce classroom lessons. Once the two chemistry teachers' lessons were posted online, it wasn't long before other students and teachers across the country were using the lessons, and making their own (Tucker, 2012). Since then, the flipped classroom is rapidly becoming the buzzword and moving into teaching practices in many countries and different areas.

In North America, the flipped classroom gets the nod from teachers and students due to its innovational teaching procedures and its effectiveness. Besides the Woodland Park High School, schools in another twenty states and more than thirty cities put the flipped classroom into practice (Zhang Jinlei, Wang Yin & Zhang Baohui, 2012). For example, educators in Michigan's Clintondale High flipped every classroom in 2011. Principal Greg Green led the effort to help teachers develop plans for flipped classrooms, which has many students who had already failed the class, some multiple times. After twenty weeks, students in the flipped classroom were outperforming students in the traditional classrooms. Further, no students in the flipped classrooms scored lower than a C+, while the previous semester 13% had failed (Rosenberg, 2013). Students favored the changes, and teachers also felt the benefits from the new teaching model.

In China, the flipped classroom is very popular in such big cities as Beijing, Shanghai, Guangzhou and Chongqing. A growing number of middle schools and high schools in these cities are implementing the flipped classroom model in order to provide students more time for in-class activities and less lecturing. Chinese schools make some reforms on the new teaching model which can better suit the characteristics of Chinese learners. Chongqing Jukui Middle School is taking the leading role in the practice of the flipped classroom model. It makes best use of the educational technology to reform the traditional classroom. The flipped classroom in Jukui Middle School has its own features, one of which is to make the school-based reform called "three-four-five-six model" (Wang Hong et. al, 2013). As a result, the new teaching model better fit for their students and teachers in the school.

Undoubtedly, the flipped classroom model is practical in North America as well as in China. It achieves great success and wins warm praise from teachers and students, especially in middle schools and in high schools. In fact, the higher education institutions could try this new model too. Wang Xiaodong (2013)

made a research of flipped classroom in his college class, and he found that the new teaching model can strengthen students' motivation and improve their achievements. Therefore, it is significant to discuss the possibilities and preconditions for the application of the flipped classroom model in colleges and universities.

2. Possibilities and preconditions for the flipped classroom in higher education

Steed (2012) says the beauty of the flipped classroom is that it allows the teacher to move away from the traditional role of instructor and become more of a “coach” moving from student to student providing support or guidance where it is needed. The other great thing about flipping your classroom is that students have permanent access to these resources and so can go back to review them after the lesson or as part of their revision. Meanwhile, there must be possibilities and some preconditions for the application of the new teaching model in colleges and universities.

2.1. Possibilities of the flipped classroom in colleges and universities

Most colleges and universities are equipped with modern educational technology, and the Computer-Assisted Instruction (CAI) is common in most classes. Major parts of the College teachers are highly educated and they have modern educational beliefs. These with the following preconditions make it possible to apply the flipped classroom model to the college classes.

Firstly, college students have flexible learning time in which they can arrange their study by themselves. Curriculum Provision is more diversified in higher education than that of middle schools and high schools. College students are not fully scheduled, and they have more than four hours of spare time everyday. Big part of the time is left for students to develop their interests or to improve their overall talent. Usually, college students are encouraged to do more extensive hands-on activities which are really important for them. College students can make use of their spare time to finish the teaching content before class, and leave more time in team work or lab activities. Just take the time in the classroom for example. The traditional classes attribute big part of time to teacher lecturing, while flipped classes attach higher importance to learners' independent practice and their problem-solving abilities. The class-time allotment is showed in the following chart.

Traditional Classroom		Flipped Classroom	
Activity	Time	Activity	Time
Warm-up activity	5 min.	Warm-up activity	5 min.
Go over homework	20 min.	Q&A time on video	10 min.
Lecture new content	30-45 min.	Guided and independent practice and/or lab activity	75 min.
Guided and independent practice and/or lab activity	20-35 min.		

Chart 1: Comparison of Class Time in Traditional vs. Flipped Classrooms (from Bergman & Sams, Flip Your Classroom, 2012)

It is very clear from the table that more independence is given to students with long time of practice and activities. This coincides with college students' characteristics, because they need to develop their manipulative abilities through learning. The change of the time allotment is based on the belief that college students can individually study the new content before class and they have enough time to deal with obstacles in learning.

What's more, college teachers and students master the basic information-technology knowledge and they are skilled at computer manipulating, which greatly supports the implementation of the flipped classroom. Information technology makes it faster and easier to communicate with others, and it also benefits higher education. In China, for instance, most colleges and universities are equipped with multi-media classrooms, and many courses are conducted online. The flipped classroom shifts instruction ahead of the class in which content is learnt by students via teaching videos or online courses. Students not only study the online lectures but also interact with teachers or peer students by means of model or other online communication tools. Just as the following chart shows, it is the basic requirement that teachers and students master computer skills in the flipped classroom. Teacher-students communication and interaction can not be better carried out without the aid of computer and internet.

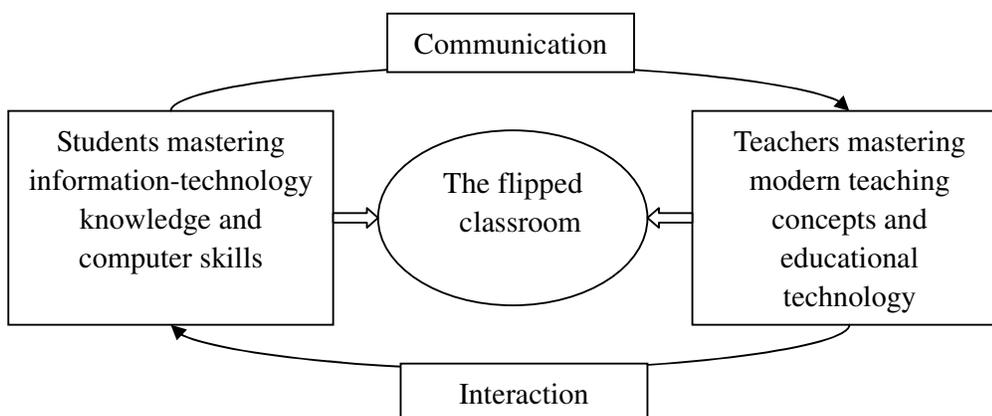


Chart 2: Educational technology supporting the flipped classroom

Last but not the least, college students have stronger self-control and better learner autonomy than middle school and high school students in study. Flipped classrooms redefine in-class activities which vary but may include using math manipulative and emerging mathematical technologies, in-depth laboratory experiments, original document analysis, debate or speech presentation, current event discussions, peer reviewing, project-based learning, and skill development or concept practice (Bergman & Sams, 2012). College students know how to take charge of their own learning, and become more reliable on their own to study independently. They make plans for their study, and arrange suitable time for the teaching video and exercises before class. College students have strong sense of autonomous learning and they master these learning strategies like metacognitive strategies, cognitive strategies and social strategies.

2.2. Preconditions for the flipped classroom in colleges and universities

Teachers are typically the central focus of a lesson in the traditional teaching model, and they play the role of the primary disseminator of information during the class period. Students often rely on the

teacher in the class, deferring directly to the instructor for guidance and feedback. The flipped classroom model is a big challenge for both teachers and students, because the traditional teaching steps are inverted and redefined by the new model. Therefore, the successful application of the flipped classroom in colleges and universities is determined by the following preconditions.

To begin with, new teaching model ask for new teaching beliefs, so teachers must change their traditionally deep-rooted roles in order to fit for the flipped classroom. In traditional classes, teachers make the teaching plans before the class, and carry out the plans in the class, and then leave some homework to students. Teachers control the whole teaching process, and even the class discussions are typically centered on the teacher who controls the flow of the conversation (Ryback & Sanders, 1980). Slow learners often meet many obstacles in learning just because they need more time to digest the new knowledge. However, time is limited in the class, and the teachers do not have so much time to care every student in the classroom. Learners' personalities have to be ignored. Comparatively, the new teaching model means the advanced teaching beliefs, the innovative teaching methods, the substantial teaching materials, and the diversified teaching evaluations. Teachers' roles are greatly changed and strengthened by the flipped classrooms, so they should take more charge of cultivating learners' thinking models, learning methods and learners' creativities. The flipped classroom requires teachers become the organizers of teaching procedures, the counselor of learner autonomy, and the facilitator of learning process. Teachers should bear in mind the modern teaching theories and aware the responsibilities to foster every students' learning abilities and their communicative skills.

Teachers are course designers before class. Compared with the traditional model, new model sets higher standards for teachers. They must collect various teaching materials, including printed books and online resources. Besides, teachers need master proper modern educational technologies like transcribing videos, web publishing and online instruction. One of the most important tasks for teachers before class is to make and upload instructional videos, which are employed to deliver content outside of the classroom. These teaching videos are provided for students' autonomous learning in advance. Oftentimes video lessons are prepared by the teacher, but the third parties can also be used as a content delivery mechanism, through online collaborative discussions, digital research, or text readings may be utilized as well (Abeysekera et al, 2015). Content of courses is learnt by students beforehand, therefore, teachers have new tasks during class. For example, they must design and monitor different activities to help students internalize the new knowledge. Instructions and exercises are no longer the major part. On the contrary, cooperative learning, team work, debating, presentation and discussion replace the traditional instructions in class. Teachers become the organizer and promoter of these activities during class.

On the other hand, the application of the flipped classroom is also influenced by learners' roles. Learners must change their way of learning and become more autonomous and foster their problem-solving abilities. Traditionally, students are used to teacher-centeredness and students do in-class activities with the direction of the teacher. While in the flipped classroom, students internalize and reconstruct the new knowledge by means of the in-class activities. Because of the inverted teaching procedures, more time is left to class activities for instructors and students together to explore topics in greater depth and to create meaningful opportunities for high-thinking skill practice. This set higher standards for college students who need to become independent on themselves. Learners' change of roles is vital important to the success of the

flipped classroom, because they must change their old learning ideas and habits and be responsible for their study. Renewal of the ideas can accelerate their autonomous actions as well as successful application of the flipped classroom.

3. Conclusion

As a new teaching model, the flipped classroom is an instructional strategy and a type of blended learning. It is successfully applied in many middle schools and high schools at home and abroad whose essence lies in learner-centeredness and learner autonomy. Due to its innovation and flexibility, the flipped classroom needs to be introduced to the classes of higher education with the possibilities of learners' mastering of computer skills and the diversified curriculum in colleges and universities. Certainly, it is necessary to take into consideration such preconditions as the support of modern educational technology and the changes of teacher-students roles.

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