

CHAPTER 2

LITERATURE REVIEW

2.1 History of Flipped Classroom

A flipped classroom releases up class time for teachers and offers students learning choices instead of just enlightening them in a sit-and-listen format (Ahmet BASAL, 2015). The flipped classroom is a new pedagogical method that uses asynchronous video lectures and exercises problems as homework and active, group-based problem-solving activities (Awidi, Paynter, Tekin, Ilgaz, Adanır, Yıldırım, Gülbahar, Santos, Serpa, Abu-Shanab, Umlor, Zou, Gómez-Carrasco, Monteagudo-Fernández, Moreno-Vera, Sainz-Gómez, DeLozier, Rhodes, Brooks, 2018). Another researcher said that flipped classrooms could be observed as a pedagogical approach to blended learning. The usual classroom lectures followed by homework in traditional teaching procedures are reversed and often complemented or combined with instructional videos (Hung, 2015). The flipped classroom model refers to a teaching and learning process, in which students attend not only for in-class activities but also for managing their online self-learning or out-class learning (Afrilyasanti, 2017). Tan, C., Yue, W., & Fu, Y. (2017) examine that the flipped classroom is an instructional approach that offers a new methodology and modality for teaching and learning. It contains a role change for instructors to minimize the total amount of direct instruction in their teaching practice while maximizing one-to-one interaction and more cooperative and collaborative involvement in the teaching process, which can develop and encourage social interaction, teamwork, and cultural diversity among students.

On the other hand, the Physics course taught by Professor Erik Mazur at Harvard University in 1991 can be traced back to the beginning of the concept of the flipped classroom. He let his students select the topic and pace of their learning, which then supported an interactive learning classroom environment (Nguyen, 2017). The term “flipped classroom” was renamed by Baker (2000) after the idea

of “inverted classroom” stated by Lage, Platt, and Treglia (2000) as they opposed that learning would be more interesting for students when it occurred not only inside but also outside the classroom building (Nguyen, 2017). In 2007, Jonathan Bergmann and Aaron Sam from Colorado high-school helped the students who were missing the class by using live video recordings and screencasting software to record lectures, demonstrations, and slide presentations with annotations posted to watch and read. Then, they wrote a book, “Flip your classroom: Reach every student in every class every day,” which educates many other instructors and teachers to flip their classrooms successfully (Phillips & Trainor, 2014).

2.2 Related Theories of the Flipped Classroom

There are three learning theories that connect to the concept of flipped classroom such as Bloom’s Taxonomy, Constructivism, and Mastery Learning. Moreover, this revised edition of Bloom's Taxonomy is applicable to flipped learning in that the transfer of knowledge, which is the basis for learning, happens independently and outside of class, while the assimilation of information, which involves more reflective thinking, occurs during class under the supervision of a teacher or tutor. The higher tier depicted on the pyramid, the more assimilation is required; while, the lower the stage, the more knowledge is transmitted partially independently, though not entirely, of assimilation. The areas in the middle which necessitate a more balanced or less distorted mix of the two.

Beside, another theory that relates with flipped classroom is constructivist learning theory. Constructivist learning theory belief that individuals learn by developing their own knowledge, linking new concepts and insights to established knowledge to shape new or improved understanding (Bransford, J., Bransford, J. D., Brown, A. L., & Cocking, R. R., 1999). According to the Piagetian cognitive constructivist theory, learners may either assimilate new knowledge into an established framework or change the framework to accommodate new information that contradicts prior understanding, and in order to achieve a higher level of learning, students must communicate with peers, with “cognitive conflict” being the key mechanism driving progress. Moreover, Vygotsky (1978) describes the

zone of proximal development (ZDP) as “the difference between the actual developmental level as determined by independent problem solving and the level of potential development as determined by problem-solving under adult supervision or in collaboration with more competent peers”. It means that learning occurs when they are learning with peers or group discussion to solve the problem beyond their present developmental stage with the support of their teacher or peers. However, based on the above explanation from Piaget and Vygotsky, active learning activities can occur as a key element of flipped classroom. Moreover, active learning methods depend on group work based on this sociocultural branch of constructivist learning theory, which influences peer-peer interaction to facilitate students' creation of expanded and accurate conceptual models.

On the other hand, mastery learning was popularized by Benjamin Bloom's in the 1960s. Mastery learning belief can support flipped classroom teaching methods because according to Bergman and Sams (2012), Mastery Learning promotes flipped learning by providing differentiated, asynchronous, and student-centered teaching, as well as a basis for remediation and efficient input. This is related to flipped classroom, in which students have the opportunity to study on their own time with some latitude in terms of time control. In mastery learning, the students are given a stimulus, such as getting a good grade or gaining knowledge, and they will continue to study until they have mastered the concept to an acceptable degree.

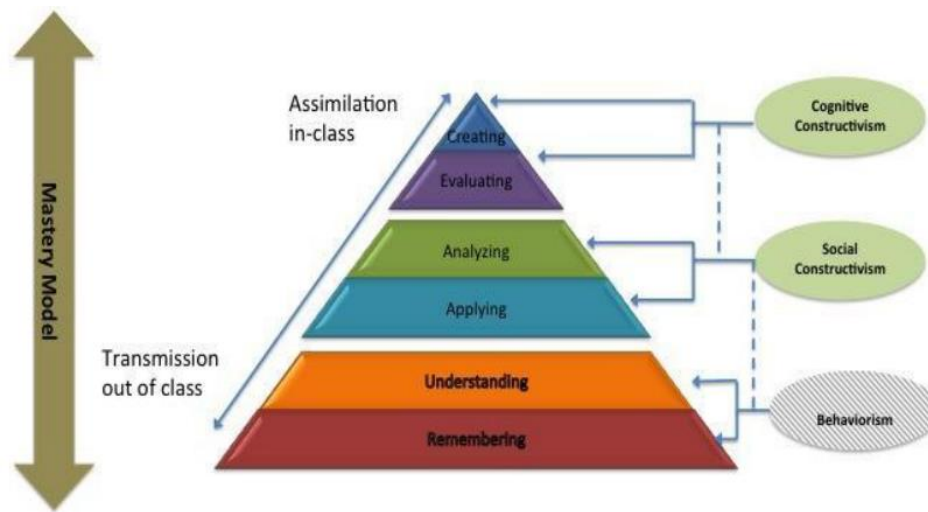


Figure 1. The theories that associated with the flipped classroom

To conclude, Based on *Figure 1.* the visualization about the theory and framework connects to the flipped classroom . In the middle of *Figure 1.* there are the pyramid associated with Bloom's revised taxonomy of the cognitive field and provides six main types of cognitive processes starting from the bottom to the highest level such as:

1. Remembering: in this stage, the students try to recognize and recall the information they receive; they also try to understand the basic concepts and principles of the content they have learned from long-term memory.
2. Understanding: the students try to demonstrate their understanding, interpret the information, and summarize what they have learned.
3. Applying: the students practice what they have learned or apply knowledge to the actual situation.
4. Analysing: the students use their critical thinking in solving the problem, debate with friends, compare the answer with peers, and produce a summary. The students obtain new knowledge and ideas after implementing critical thinking or a debate in group activities. In this level of learning, the students also produce creative thinking.

5. Evaluating: assessment or established peer-review knowledge, a judge in relational terms; in this stage, students evaluate the whole learning concepts, and they could evaluate or make a judgment on how far they successfully learned.
6. Creating: the students can design, construct, and produce something new from what they have learned (Bloom, 1956).

When looking at flipped learning through the lens of Bloom's taxonomy, the skills highlighted at the bottom of the triangle (remembering and understanding) take place outside of class without teacher supervision. Bergmann & Sams (2012) said that in pre-class or before class students have to practice remembering and understanding at home by watching videos, visiting course-related websites, listening to audios, or reading the lesson. Then, in the middle of the stages of the pyramid there are analyzing and applying. These stages are taking place in class with the assistance of a teacher or peers and more collaborative than the lower levels. After that, in the top levels there are evaluating and creating. In this stage, they can still be collaborative and they are moving in the direction of student autonomy. They would still happen in class, but as students master a concept, they should theoretically be able to complete tasks independently and correctly. Theoretically, at least students can re-watch presentations as many times as they need in order to master the first two levels. The top four stages can be learned under the guidance of the teacher, with peer influence possible at different periods. In this context, the flipped classroom is regarded as a flexible concept in which ideas can be used in a variety of ways (Eppard & Rochdi, 2017).

2.3 The Benefits and Challenges of Flipped Classroom

Based on Bergmann & Alexandria (2014), there are several benefits of flipped classrooms, such as flipped classrooms enhancing student-teacher interaction and allowing the teacher to know their students better. It means that the teacher teaches the material in the class and inspires or motivates the students. Then, the flipped classroom allows us to build better relationships with our students. Next, the flipped classroom enhances students-students interaction because indirectly flipped classrooms make the students more active with their friends to ask about the

topic or something that they do not understand. After that, the flipped classroom allows for natural differentiation. Then, the flipped classroom changes classroom management because the flipped classroom concept is delivering material to the students. Then, flipped classrooms change the way we talk to parents. Next, the flipped classroom can educate the parents. After that, the flipped classroom makes your class transparent because the video is published for the public. Then, the flipped classroom is an excellent technique for an absent teacher, meaning that if the teacher cannot attend the meeting, he can record the learning videos for the students to measure that the learning activity runs well. Moreover, Murillo-zamorano et al. (2019) said that the flipped classroom's advantages are increasing students' learning performance such as satisfaction, engagement, and motivation.

On the other hand, Akçay & Akçay (2018) stated that several challenges would be faced during implementing flipped classrooms:

1. The quality of videos (found to be a top technical challenge) because videos can influence students' interest and motivation.
2. After the students watched the videos, the teacher should discuss the material to measure them.
3. The teachers need to examine the technology availability and competency of students before implementing the flipped model.

Another researcher said about the flipped classroom method's challenges that Phillips & Trainor (2014) stated that students might not watch the video before class. The teacher and peers do not exist to answer questions during video viewing.

2.4 Study of the Relevant Research

In 2016, Roth & Suppasetseree reviewed a flipped classroom method by testing 30 Cambodian students, and their age range was between 17 to 20 years old. They found that flipped classrooms can guide the teaching of EFL teachers and improve their listening comprehension. However, they did not test in another course.

Besides, a recent study said that flipped classroom could develop language learners' skills. Nguyen (2017) researched and found a significant improvement in student's language learner skills by testing 28 first-year students in college. However, the participants are only 28 first-year students who have responded to the preliminary survey about the efficiency of content-based English language teaching at TNUT.

The recent study about the flipped classroom is from Brewer & Movahedazarhouligh (2018), talking about flipped classrooms' effectiveness in higher education. The study results are that the learners are responsible for exploring the materials outside of class in a self-directed manner, trying to find the knowledge before the class, and then implementing the material or knowledge in the classroom. So, for future research from Brewer & Movahedazarhouligh (2018), another researcher wants another researcher to research the flipped classroom to focus on in-depth interpretations and descriptions of students' and educators' lived experiences of flipped learning.

On the other hand, the context of this research is focused on the flipped classroom in university. This present research describes how the lecturer implements the flipped classroom. Hopefully, this research can inspire the other teacher to use the flipped classroom method for teaching another course.

