

Flipped Classroom

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Flipped Classroom: An Inventive Learning Approach in Engaging 21st Century Learners in Digital Age

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Abstract—Nowadays, in digital era, traditional classroom which mostly provide face-to-face instruction in classroom and doing assignment at home is not relevant anymore with learners' learning style as "digital natives". Teacher as "digital immigrant" must be able to make some adaptation to learning approach in order that the learners can attend meaningful learning for their daily life and future career. The present paper aims to review flipped classroom as an inventive learning approach which could accommodate 21st century learners to have better learning engagement through digital technology in instructional practices. The elaboration will include some related sub-topics, namely (1) concept and definition of flipped classroom, (2) theoretical background of flipped classroom, (3) benefits and obstacles of flipped classroom implementation and (4) cycles of flipped classroom implementation.

Keywords—*flipped learning, flipped classroom, blended learning, 21st century skills, digital age*

INTRODUCTION

The occurrence of various changes in the civilization of human life has an impact on various aspects of life. For example, the industrial revolution has an impact on human creativity in realizing their daily needs and future careers. Humans become very dependent on technology. The education sector is one of the areas affected by technological progress. Today's young generation known as millennial or the digital generation have their way of getting and processing information. Unquestionably this has become a capital in creating a golden generation for Indonesia's own future. Associated with educational field, a saying from China that says "if music changes, dance must also change" seems very relevant. That is, the education sector must be adaptable to the changes that are happening now in the digital age.

Moreover, the continuous and rapid changing in human lives caused by economic growth and technological expansion to almost aspects of our lives give much influence to education practices including the teaching methods. Traditional classroom is not relevant with situation or environment where today teenager learners stay. Presky (2001) names new generation today with "millennial generation" or "digital natives" whose are very adaptable with modern digital technology. Çevikbaş & Argün (2017) emphasize that like, industrial revolution, digital revolution is regarded as the most remarkable adjustment that gives thoughtful impact on civilization in numerous fields including education, sociology, psychology, economy and cultures.

Radical changing of technology in 21st century generates innovative prospect and trials in humanity or civilization all over the world. As a result, pupils in this era need to be well-furnished with the subject matter and all important competencies for their lives and prospective occupation (Sakulprasertsri, 2017). There is a corny idea about the changing of teacher's role from "teacher-centered" into "student-centered" teaching models (Morrison, 2014).

Higher education utilizes blended learning as recent teaching model. Blended learning refers to the amalgamation of face-to-face learning and online activities outside of class by incorporating technology in learning process (O'Flaherty & Philips, 2015). One sort of blended learning which is more proper with learners as "digital natives" is flipped classroom approach since it facilitates

learners to preserve digital technology to facilitate learners with online activities inside and outside of classroom.

This paper aims to elaborate flipped classroom as an resourceful instructional approach to encourage 21st century learners to learning engagement in the digital era. The discussion will concern on several subtopics, namely (1) concept and definitions of flipped classroom, (2) theoretical background of flipped classroom, (3) advantages of flipped classroom, (4) challenges of using flipped classroom and (5) stages of implementing flipped classroom.

What is flipped classroom?

Flipped Classroom has been very popular nowadays and identified by scholars with various terms, such as “flipped learning,” “flipped pedagogy,” “reversed classroom,” “inverted classroom,” “24/7 classroom”, (Bergmann and Sams, 2012; Threnkel, 2017, Lage, et al., 2000). Not all of scholars agree that flipped learning is synonymous with flipped classroom. Flipped classroom means any approach where the teacher instructs the students to accomplish practices outside class, everything from reading, watching supplemental videos, or similar; whereas, flipped learning has more extensive scope, (Yarbro, et al., 2014). In general, flipped classroom can be defined as an pedagogical approach “ that is conventionally carried out inside classroom time currently is completed outside of classroom , and that which is traditionally carried out as assignment or home-tasks is nowadays executed in the class (Bergmann and Sams, 2012). In other words, homeworks are rearranged and rescheduled to take place during in face-to-face instruction in the classroom (Mehring, et al., 2018).

In addition, a reversed classroom refers to an instructional model merging pedagogical technology and vigorous learning strategies (Brook, 2014). Inverted classroom involves pedagogical digital tools to create pre-recorded lectures and in-class activities include student-centered learning activities, (Wolf & Chan, 2016). The micro-lecture made by the teacher which is used in before-class activity is a vital element to practice flipped classroom successfully (Sweet, 2012).

Flipped Learning Network (2016) defines flipped classroom as the inversion of traditional class where activities that are utilized in-class time now are conducted outside class before entering face-to-face instruction in the class. Consequently, the students have already comprehended the content of the course previously. In the classroom, the student will have discussion in small group, do tasks, present the project and discuss further the implication of issues of what they have been studied recently.

Mary (2016) claims that flipped classroom is a pedagogical approach that is one of blended learning. As a reversed classroom, it is the inversion of conventional learning situation by presenting subject matter online to comprehend it previously in the form of outside-tasks. What it is considered as assignment in traditional instruction, now it is done in the classroom. In a reversed classroom, learners will scrutinize online video, working in partner in online debate or conduct investigation at home and occupy in the content of knowledge with teacher’s guidance.

(Staker & Horn, 2012). Driscoll cited in Çevikbaş & Argün (2017) defines blended learning as “the instruction comes out from the amalgamation of face-to-face (F2F) and online Instructions. Stake and Horn (2012) site flipped classroom as one of rotation model as a part of blended learning. Rotation model refers to an instructional program which combines two kinds of learning modalities—online learning and other controlled learning actions like small-group or full-class learning, group project, personal coaching and pencil-and paper assignment. In this kind of course, learners revolve on a rigid timetable or at teachers’ responsibility. The position of flipped learning as a sort of blended learning can be viewed in the Figure 1.

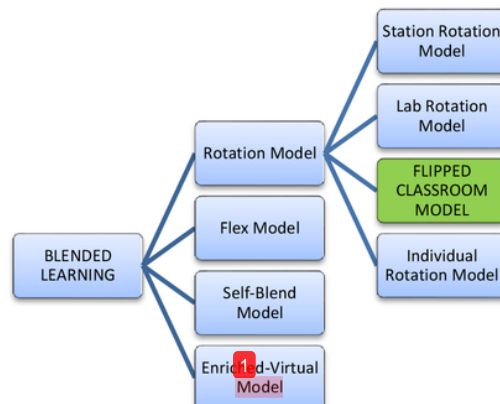


Figure 1. Flipped Classroom Approach as a Blended Learning Model

In the Figure 1, it can be seen that flipped classroom is a part of rotation model in which assigned course alternated class inflexible timetable between in-class teacher-handled activity on online transferring of subject matter and learning of the same course from distant place (e.g. home) after school activity. The essential mode of subject matter and learning is online which differentiate between flipped classroom and traditional class where the student conducts homework online outside of classroom at night. In this case, flipped classroom approach can give benefit to the learners because they can control over the moment, area, pathway and/or rate since the approach permits students to select the place where they can obtain subject matter and online learning based on features in the instrument.

In-class time in flipped classroom approach used to attract the learners in vigorous learning in order to intensify higher-order thinking, as well as an extensive display of other learning aims and objectives. Classroom actions include many kinds of activities like group discussion, peer-collaboration, debates and comprehension quizzes. As a result, classroom time does not use to deliver content using online mode. Whereas, activities in the classroom is much better used to engage students with active learning in student-centered learning model (Roehling, 2018). In addition, video of teaching material can be produced by using screen-cast technology since it is simple to practice. The main feature of flipped classroom is facilitating learning with short and teacher-made videos and communicative instruction so that content of knowledge can be received by the students previously joining the classroom activities (Marks, 2015).

In flipped classroom approach, teacher can record his/her own video or use another teacher's video by adding some interactive elements. Students are asked to watch the video before entering the class so that they can take active participation in classroom activities. Using internet access nowadays become extensive and this condition will give many benefits for students, such as easier access of learning sources. Therefore, the class will be more engaging, motivating and attractive to the students. (Bergmann & Sams, 2012) notify that practicing flipped classroom can replace face-to-face learning so that the students can access instructional content when and where they need to do it.

In reversed classroom, the students can access instructional video at any compatible interactive tools, like smart-phone, tablet, computer or other types of multimedia player that they have at any occasion. The students will do their assignment in the classroom so that they can get involved in the learning process actively. It does not mean that flipped classroom will eradicate classroom instruction a straight line in a straight line. In contrast, this learning model will exploit the time or opportunity spending for each learner rather than expending time for all students at a moment (Hamdan, *et al.*, 2013).

To make clear concept of flipped classroom, figure 2 displays the comparison between traditional and flipped classroom, as follows:

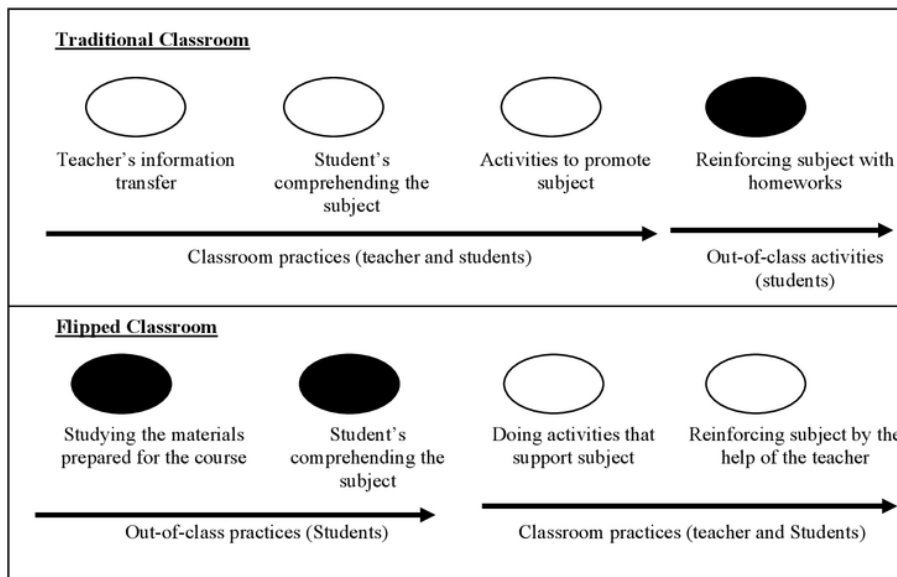


Figure 2. Contrast of Traditional Classroom Model and Flipped Classroom Model (Moravet *et al.*, 2010, cited in Hamdan *et al.*, 2013)

From the figure 2, it can be seen that there are some changes of classroom practices if flipped classroom is implemented. Teachers do not practice direct instruction for each person, but she/he employs digital technologies and offers more adaptable instruction for each learner or group of learners. If the students face difficulties in comprehending subject matter, the teacher will discuss it with the students and try to find an alternative strategy to make the student understand easily. An essential element to make blended learning applied successfully is “micro-lesson” which refers to the activity outside of classroom is as important as activities done in the classroom (Sweet, 2012). If the teacher implement “micro-instruction” for the students prior to entering the classroom, the activities in the class will be varied such as responding to teacher’s questions, comprehensive learning or giving remedial treatment to the student’s progress both in group and individually (Bergmann & Sam, 2012).

Theoretical Background of Flipped Classroom

According to Baker (2000), flipped classroom model gives significances to the learners to get more engagement in their own learning while the teacher functions as facilitator so that the students can learn effectively when they construct their own learning instead of being explained about the content. The role of educator changes from teacher-centered into “guide on the side” (Hatherly, 2014). In the traditional method, teacher perceives that teaching like someone is delivering content from someone who masters everything to those who do not understand at all. It means the role of the students are very passive, they just take a note from teacher’s explanation without any understanding. This belongs to the problem when the teacher functions as “sage-on-the age” format (Morrison, 2014).

The “guide-on-the side” associates to the function of students in inverted classroom, that is learner-centered which focuses consideration on learners’ learning: the content and strategies used by learners. Besides, it emphasizes on the implication of learning process to the future implementation contextually. Student-centered changes the obligation of learning to learners and tries to miss responsibility away from teachers. Moreover, in learner-centered approach, the instructional focus is

what the learners are doing, not teachers, so that it will build students' ultimate responsibility in their own learning (Saunier, 2008).

Flipped Classroom and 21st Century Skills

In accordance with P21 or Partnership for 21st Century Learning (2015), the mutual joint among edification, commerce, society, and administration principal in the USA to accentuate the importance of 21st century skills for all learners regarding the constant change throughout the world, they recognize there are three main skills that 21st learners must have, namely: critical thinking and problem-solving, information and communication and interpersonal and self-directional skills in order to be ready for the challenges in the 21st century and beyond

Each of the three main skills sets as mentioned above, each contains sub-categories in order to assist educators and teachers in designing lessons and learning activities in their classrooms. First, on ICT skill, learners are expected to develop three sub-skills, such as information, media literacy and communication skills. Second, regarding with critical thinking and problem-solving skills, learners are supposed to be able to think critically and systematically, identify problems and solutions, be creative, and have intellectual curiosity. Lastly, with regard to interpersonal and self-directional skills, learners are expected to develop their interpersonal and collaborative skills, self-direction, accountability and adaptability, and social responsibility.

One possible way to help 21st century learners to develop 21st century skills suggested by the partnership for 21st century learning (2011) is to use 21st century tools. It is undeniable that ICT such as social networking, computers, video, audio, , media and multimedia and other technology tools play an essential role in 21st century learning context. These 21st century tools are enables for learners to perform what they have gained from the classroom more effectively. By using these tools, the traditional classroom will be transformed from where teachers are the center of the classroom to the 21st century classroom where learners are the most important part.

Hence, the flipped learning approach has stood out as an alternative pedagogical and practical approach that has been recently introduced in teaching not only core subjects like Mathematics and Sciences, but also English language across the globe to help learners develop 21st century skills. For instance, learners gain content knowledge and develop their information, media literacy, and self-directional skills via the use of technology outside classroom. On the one hand, the learners develop interpersonal and collaborative skills with their peers through the tasks inside classroom (Baker, 2013; Bergmann & Sams, 2012; Cockrum, 2014). In addition, it has been proven that learners engage more in the lessons and become more active learners after participating and experiencing flipped instruction (Sakulprasertsri, 2017).

Flipped Classroom and Higher-Order Thinking Skills (HOTS)

In reversed classroom approach, learners are asked to use their true-life knowledge in the class where peers as well as teachers can give instantaneous comments. Instant criticism is very important in rectifying fallacies and affording gallows for learners to dwell on their emergent comprehensions of the subject matter. According to Bransford *et al.* (2000), metacognitive approach supplied in flipped classroom is effectual since the students identify learning objective and control their own development in obtaining the aims. A metacognitive approach can help students to take responsibility to their own knowledge by designing learning objective and control over their improvement in accomplishing them. Eventhough learners' thinking about their own learning is not in-built component of the flipped classroom, the advanced reasoning utility integrated with in-class activities, go together with peer/teacher interaction that habitually goes along with them, can willingly guide to the metacognition correlated with profound learning. The idea of "thinking about their learning" is developed when students engage in higher-level thinking activities accompanied by meaningful peer/instructor interactions.

Flipped classroom has two essential stages. Firstly, outside of classroom which is sovereign learning conducted with online mode. Secondly, inside of classroom activities which generate inquiry-based learning. In this case, prior activities done before entering the class are used as basis for activities which are going to be played in the classroom (Çevikbaş & Argün, 2017). Thinking tasks portray a crucial function in learning in the flipped classroom context. The most newest thinking levels taxonomy is very essential to have an discernment in the flipped classroom implementation. In general, low-level thinking (i.e. *remember* and *understand*) are conducted before joining face-to-face lesson in the classroom; whereas higher-level cognitive tasks (e.g. *apply*, *analyze*, *evaluate* and *create*) are enacted in the classroom. Therefore, the activities of flipped classroom begins outside of classroom and continue with deeper learning in the class with complex thinking levels (Brame, 2013).

The position of activities both inside and outside of class of flipped classroom implementation based on Bloom's revised cognitive domain levels can be viewed in Figure 3

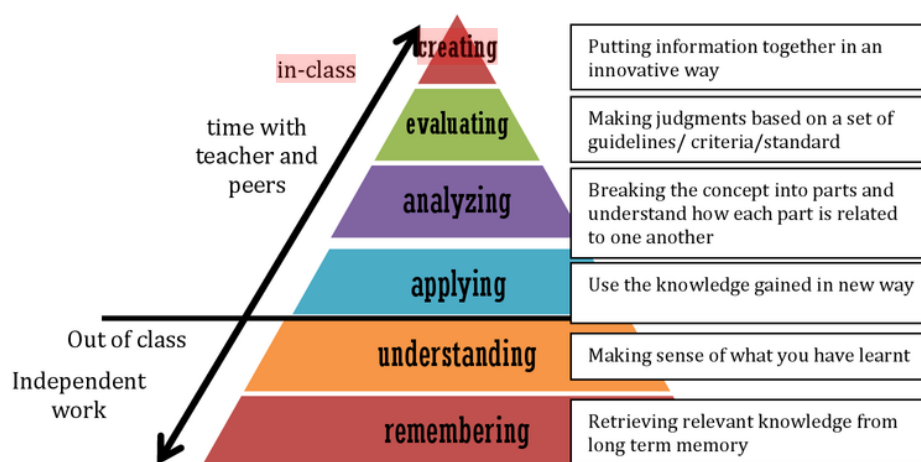


Figure 3. Flipped Classroom and Cognitive Domain of Revised Bloom's Taxonomy

The flipped classroom is a learning model to organize the process of learning and the content of learning, (Kvashnina&Martyanko, 2016). Based on Bloom's revised taxonomy levels, first learners work independently to watch digital media like recorded video lecture or talk created by the teacher in order to the learners comprehend basic level of knowledge with the first and second levels of cognitive work (recalling related background information, acquire new knowledge and test their comprehension through quizzes or tests) before joining the class and ask the students' learning responsibility. The process of learning development of the students will continuously happen forcefully inside the classroom. The learning process enable the students make interaction with friends and teacher. In addition, the students get involved in active learning activities contextually through engaging in the collaborative works done in the class. In this situation, the students learn how to reveal the learning responsibility. The application phase of inside classroom activities need higher order level of cognitive capabilities (Çevikbaş & Argün, 2017).

The Pillars of Flipped Learning

Flipped Classroom model has four pillar which is known as acronym FLIP—Flexibel Environment, Learning Culture, Intentional Content and Professional Educator, (Hamdan *et al.* 2013; Subramaniam, & Muniandy, 2016; Sakulprasertsri, 2017; Roehling, 2018;) which will be described item by item as follows:

Flexibel Environment refers to learning modes being informed in the classroom. The physical classroom position must adapt distinct types of classroom experiences and tasks. Student evaluation must also be adaptable to reveal the more vigorous types of learning occurred during the flipped class period. The learning environment in a flipped classroom is characterized by an array of learning methods being introduced in the class like group work, independent study, research, performance and project work that optimize learners' learning capacity. By participating in different learning environments, learners themselves have flexibility to choose when and where to learn which can gradually and constantly increase their autonomy level.

Learning Culture refers to a switch of role of teacher in learning from teacher-centered model to students-centered active learning model since we entered 21st century. Learners in flipped classrooms must participate in forming meaning and using the concepts included in the course, receive a great learning opportunity and explore the topics in greater depth. They can also pace and evaluate their own learning. Meanwhile, the instructors can emphasize the practice of classroom communication to make sure their understanding of each learning theme to explore substance of the topic in better extent and producing a more affluent learning condition.

Intentional Content refers to the responsibility of teachers to design intentionally the flipped learning experience. The teachers need to consider carefully appropriate material which to be learnt by learners outside classroom on their own pace and the actions that the learners will appoint during class period. These verdicts must be conceived to assist higher-order thinking and uphold course ends. Therefore, the content chosen by the teachers is specific content to amplify time allocation spending in the classroom, allowing learners to experience a variety of instructional methods such as active learning, peer-instruction, inquiry-based learning, project-based learning or problem-based learning depending on the subject matters and grade level of the learners.

Professional educators means the criteria that must be owned by the teachers in flipped classroom. They need to be experienced, skillful, and prudent enough to change a speech-based class becomes a -action-based class which involves more designing and inventiveness. Professional teachers are required more than ever. The teacher are essentially responsible to create and orchestrate classroom experiences in flipped learning. They have to decide whether when and how to shift away from direct instruction towards individually directed learning. They also have to decide how to provide the interaction between learners or even teachers and learners. In this way, F2F meeting between teacher and students can be exploited. In addition, the teachers in flipped classroom usually reflect on their teaching and share with others in order to improve their instruction as well as to gain mutual understanding of the particular concept instructed in the flipped classroom.

The four pillar of flipped classroom approach can be drawn in Figure 4, as follows.

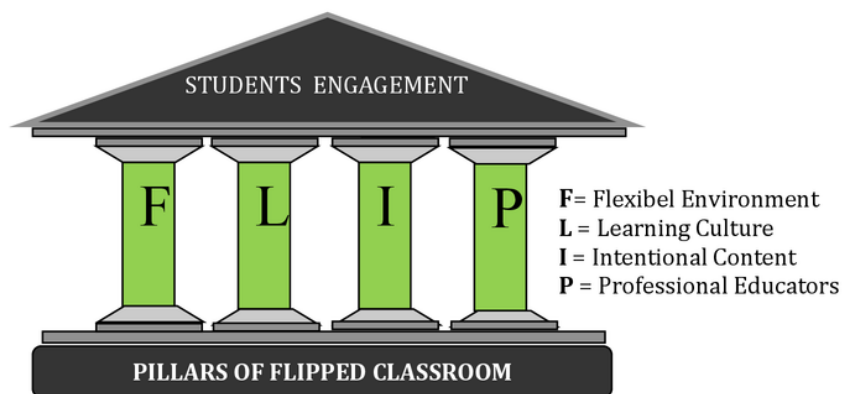


Figure 4. Pillars of Flipped Classroom (Yarbro *et al.*, 2014)

Taylor & Statler cited in Çevikbaş & Argün (2017) states that there is a relation between student commitment and instructional. Throughout flipped classroom actions, students enable to get involved keenly in the process of problem-solving and evaluate their own learning, communicate more with their friends, collaborate and recognize their learning obstacles, build their skills of critical thinking repeatedly during discussion activities, and to start constructing more links between accessible knowledge and recent knowledge. Consequently, as it can be obviously observed in Figure 5 flipped classroom approach increases the degree of student involvement significantly. Therefore it is potential to carry out active and consequential learning.

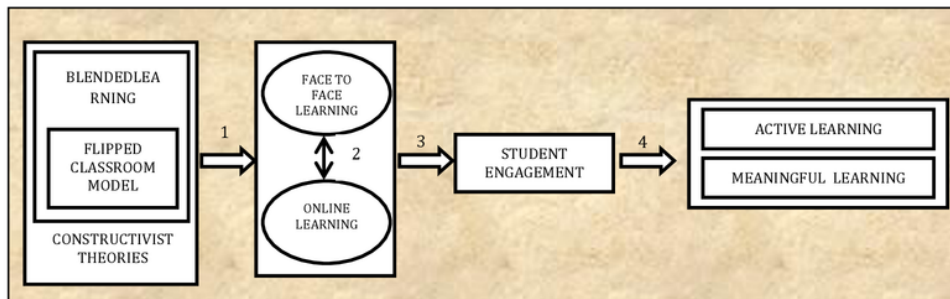


Figure 5. Conjectural Skeleton of Flipped Classroom Model Adapted from Reeve cited in Çevikbaş & Argün (2017)

In the Figure 5, the four main features which are highlighted in the conjectural skeleton in flipped classroom approach is described one by one in the following

1. Flipped classroom approach is a sort of blended learning and sustained by constructivist theories, includes both online and face-to-face learning
2. Learning is conducted of the school situation through sending videos to online network. In this condition, more time is needed to apply more effectual learning in the classroom. In other words, online instruction provides occasion to intensify the quality of F2F learning
3. In practices of flipped classroom model both online and F2F learning climates are used and a prosperous learning situation is built. Thus, the degree of learners' engagement enhances. .
4. Flipped classroom approach build 21st century skills, lift the frontiers of the class, and guarantees that learning activities are evaluated in real life situation. The result is vigorous and significant learning.

Why should Flipped Classroom?

Concerning to learning principles, flipped classroom applies both constructivist (in-class) and behaviourist (outside the class) learning. The students figure out initial certified subject matter that is needed in behaviorist learning theory. In the classroom, the students will use the existing knowledge and take their own liability for their own learning. This will change teacher's role from teacher-centered into student-centered (Mary, 2016). Consequently, flipped classroom can be promoted as constructive learning approach. It is very advantageous for both students and teachers with enhanced learning engagement inside and outside the classroom. Each benefit will be given in detail in the following.

Firstly, flipped classroom is an effectual learning climates since it can eradicate ineffectiveness of face-to-face lesson and support teachers using technology so that the learners have more preparation before attending the class. Besides, it is more preferred by the students to the traditional lectures (Lage *et al.*, 2000) because the teacher has opportunity to spend more time on classroom activities (Yildirim & Kiray, 2016) not to deliver information but to help learners (Bergmann and Sams (2012).

Secondly, for before-class activities of flipped classroom, it permits students to access content during 24 hours which is allowing them to learn recent knowledge on their own opportunity (Mary, 2016). In

other words, the learners can learn at own pace (Marks, 2015). Comprehending the content is under the students' control —i.e. watch, rewind and fast-forward the video asneeded , so that the course can be viewed more than once (Pinelli & Firoucci, 2015). All the learners have different level of ability and competences. Some students comprehend the substance hastily while some may take more extensive period to understand the same subject matter. The students who comprehend the topic quicker can fast-forward the video while others who need more duration can reverse or pause if necessary. Moreover, if a student, for one important reason, cannot attend the class, he/she will effortlessly comprehend the content from the videos because the course contents are sent to learners prior to class and they look through at length at home (Neupane, 2017). Consequently, the students will be more well-preparation.

Thirdly, in flipped classroom, the time of in-class activities will be spent to engage the students to come to deeper learning. The students will be engaged in implementing the knowledge they learned through digital material obtained outside the classroom (Mary, 2016). Moreover, flipped classroom enables students to participate actively in the class to provide fruitfulness of interaction in the learning process (Çevikbaş & Argün, 2017). The students are obliged to be more active to communicate their opinion and reveal knowledge through collaborative and cooperative tasks with their peers accompanied by teacher's guidance. Flipped classroom approach will increase interaction both student-student and student-teacher interaction (Pinelli & Firoucci, 2015; Çevikbaş & Argün, 2017). Therefore, healthy communication network between students and teacher can be built up (Lage *et al.*, 2000).

Fourthly, flipped classroom approach can promotes some softskills needed by 21st century's learners. Outside class activities in flipped classroom focusses on comprehending learning content based on students' time and pace. At the same time, it promote students' self-efficacy in their ability to learn autonomously (Enfield, 2013). In-class activities of flipped classroom approach emphasizes to encourage students to implement the previous knowledge acquired from outside classroom activities into deeper and morecontextual learning through colaborative and cooperative activities, such as discussion, debate, peer-work and other group projects. Simultaneously, those activities can encourage social interactions, team-based skills and cultural diversity among students. Besides, flipped classroom allows students to working with peers on the project during school hours to enhance students' mutual understanding and trust (Du, Fu & Wang, 2014). The participation of the students in the classroom activities builds cooperative skills which are set among 21st century skills (Hamdan *et al.*, 2013).

Next, according to Bretzmann (2013)flipped classroom promotes students' higher order thinking skills by creating more student-centered instruction. Moreover, flipped classroom implementation involves metacognitive tasks to enhances students' performance and academic achievement since students comprehend concepts, attain critical thinking skills and control their progress in terms of learning result (Hamdan *et al.*, 2013). Therefore , the students become in charge for both individual and group learning processes within the skeleton of flipped classroom implementation (Baker, 2000; Bergmann & Sams, 2012).

Finally, teachers, like students, play an energetic role in applying flipped classroom approach and keenly provide support and assistance to their students. They also restore themselves by revealing students' learning tasks. In this sense, flipped classroom approach develop positively teachers' professional development (Alvarez as cited in Çevikbaş & Argün, 2017).

Challenges of Flipped Classroom

Besides the benefits of flipped classroom, it also includes some obstacles for both the students and teacher when implementing flipped classroom approach. Each of them will be explained one by one in the following.

Firstly, flipped learning can be lively andadaptable . However, if not apply in a good manner, it can escalate student overload work and anxiety without getting much value to a student's education, so that the fabulous time liability needed to change a class into a flipped learning occurrence (Roehling,

2018). Among many obstacles of flipped classroom, the activities are prominently criticized are preparing lesson video, and visual and written material because they are challenging and time consuming tasks (Hamdan *et al.*, 2013). However, those challenges will occur only for the first time offering the course since the video and documents prepared used at the previous year with necessary modification can be used again in the next year (Çevikbaş & Argün 2017). In other words, teachers can assume the time used in creating video of teaching material for the flipped classroom can be decreased after practicing in the first class, because reuse and adjustment will lessen time investment in future classrooms.

Next, the problem faced by the teachers come from necessary skill that should be owned by the teachers to make video. In order to create those videos teachers are obliged to have specific skills. If teachers do not have ability to make videos themselves it would be very tricky to implement flipped classroom. If the teachers ask other professionals to create the videos it might be very expensive (Neupane, 2017). However, this problem can be solved by collaborating with other teachers who has necessary skills to make the video. This sort of problem is not unique from flipped classroom approach, actually all innovative approaches will face the same sort of difficulties.

Thirdly, another possible weakness of flipped classroom implementation are restricted access to internet connection and proper technology both from practical and economical point of view (Roach, 2014; Tucker, 2012). Inequality in learners' residence can also instigate an impediment for the flipped classroom implementation. Technology required for watching or interacting with teaching material may not be obtainable in every student's house (Nielsen, 2012). To face this problem, the teachers should use the compatible application to many devices such computers, tablet PCs, smartphones, etc. Nevertheless, this is not a big problem because nowadays almost everyone owns smartphone including kids (Çevikbaş & Argün, 2017) since the learners of 21st century can be regarded as "digital natives."

Finally, the most difficult and challenging problem in applying flipped classroom is students' mind set of learning theories and approaches. They are more comfortable with their passive role in learning process because they are familiar with the traditional classroom. The students perceive constructivist approaches will be wasting time.

How to implement flipped classroom?

Before implementing flipped classroom approach, teachers need to be aware of some principles of designing flipped classroom. The first essential element that makes sure the success of the flipped classroom is the progress of teaching plan in a well-organized way, which stipulates the activities that will be done, as well as the resources and course content that will be discussed with (Flores & Silva, 2016). According to Kim *et al.* (2014) and Miller as cited in Yildirim & Kiray (2016), there are some principles should be considered by the teachers when they want to apply flipped classroom as follows.

Firstly, the course content should be meaningful. The teacher should set up course content that will be supplied in the flipped classroom by considering relevancy of the content with students' need. In this sense, content should be creative, increase students' involvement in learning and significantly relevant with students' need in real life context.

Secondly, technology is important part in the application of flipped classroom. Teachers need to consider which technology might be more effectual for students' learning process such as tools could be needed to play the video, the quality and the size of video. Teachers should select technology which is appropriate with students' condition and situation. In other words, the teachers should provide the use of technologies that can be easily accessed by students.

Thirdly, students' flexibility to arrange time and place to watch lesson video becomes main consideration in flipped classroom. Teachers should provide an appropriate time and place if the students want to access the course content to gain preliminary information before class activities. Therefore, teachers should encourage them to watch video lecture by designing meaningful pre-class activities.

Fourthly, teachers' preferences in using strategy to apply knowledge in-class activities should facilitate the students acquire content into experience contextually. Student-centered approach with constructivist and behaviorist learning models, like project-based learning, inquiry-based learning, group interactive model and project-based learning will be beneficial.

Finally, teachers should have good assumption for each video created for students. Teacher should optimize that the students will be attentive of what they have learned, transmit and make adaptation to their knowledge based on the video they gazed at. After considering some principles of designing flipped classroom approach, then teachers can organize some stages or steps should be followed by the teachers when they want to implement flipped classroom. Flores & Silva (2016) state the cooperative work inside and outside the classroom is an essential components on the application of the flipped classroom. Gunyou (nd) and Kvashnina & Martynko (2016) propose some stages in applying flipped classroom. Each stage with modification will be elaborated one by one as follows.

First is **video lesson**. Students study the material from *short video lesson* which is about 8-10 minutes long. The lessons are not lecture-videotaped, but it must contain multimedia content to notify students with certain *kernel of information*. To ensure whether students comprehend the contents, teachers should provide two or more questions to make the students more prepared before attending the class. Preferably, more stimulating, open-ended question and spreadsheet calculations would permit students to more totally exhibit remarkable mastery. The students must answer all questions correctly and send them to link provided by the teacher.

Second is **in-class short oral quiz**. In-class, teacher checks students' overall comprehension by a *short oral quiz* (e.g. by demonstrating any material and asking students to identify its main properties). There can also be a teacher-led discussion of the supplementary resources that the student have studied prior to the class.

Third is **active learning session**. Classroom activities are mostly bestowed to encourage students to apply knowledge into experience contextually. Students get to apply their knowledge from all the previous stages and demonstrate what they have learned individually or via collaborative group work. Therefore, discussion, creative projects or presentations are encouraged to extend learners' knowledge beyond the lesson which can be related to their everyday lives. For example, learners are managed into small group-works and are assigned a case study exercise with the teacher's instruction. Students argue their way out in the groups, then, show their response to the class.

Four is **follow-up task**. The teacher asks the students to review their peers' work according to the rubrics designed by the teacher. Based on the result of peer's review, the students must create new proposal individually or in small team in innovative way. In this stage, the students must perform higher level cognitive task with deeper analysis.

Finally, **mastery and competency** are confirmation of students' mastery by providing test and exams. In accordance to the process of assessment, teachers' goal is to develop a type of ongoing assessment throughout the academic year. The purpose is to get a type of assessment that advances in combination with the learning process, which increases related questions among students while also motivating them to learn from the errors they made. Characteristics of evaluation must be integral, responsible, thoughtful, shared, and competence-related.

The cycle of flipped classroom implementation can be drawn in the Figure 6 as follows



Figure 6. Cycle of Flipped Classroom Approach Implementation with modification

CONCLUSION

Flipped classroom is an instructional approach that inverse the process of learning in traditional classrooms—what is done outside the classroom is now done in the class. Learners are expected to master course content outside the classroom through watching digital videos that have been designed by the teacher based on students' need. Therefore, students can master the content according to students' learning style, time available, and pace. Besides, the teacher should consider type of technology used in accordance with students' abilities and capabilities. When learning material is difficult, the video can be played repeatedly. If the material is understood easily, it can immediately speed up the video by pressing the fast-forward button. In this way, students will be better prepared to take part in the learning phase in the classroom, which of course uses more challenging learning activities. Face-to-face interaction in class is used more effectively to guide students to apply the knowledge they have mastered before entering the class. Learning activities in the classroom are designed to master higher cognitive levels, namely apply, analyze, evaluate and create innovatively . These are the advantages of flipped classroom. Implementing a flipped classroom approach is not without constraints. One of them is the availability of an internet connection in students' houses. However, we can be sure all students and even children as millennial generation known as "digital natives" already have smartphones. This can be used as capital to apply a flipped classroom. Actually, the biggest obstacle is changing the mind-set of students, they feel comfortable with their passive role in traditional classrooms. The sequence of flipped classroom implementation are: video lesson, oral quizzes, active learning session, follow up tasks and mastery and competency.

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