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การเรียนรู้กลับด้าน: โอกาสและความท้าทายในการสอนของครูมัธยมศึกษาในประเทศไทย

Flipped Learning: Opportunities and Challenges of Instruction for Secondary School Teachers in Thailand

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บทคัดย่อ

การวิจัยนี้เป็นการวิจัยเชิงสำรวจโดยมีวัตถุประสงค์เพื่อศึกษาความคิดเห็นจากผู้เชี่ยวชาญและครูผู้สอนระดับมัธยมศึกษาจากทั่วทุกภาคของประเทศไทยเกี่ยวกับการออกแบบการจัดการเรียนการสอนแบบการเรียนรู้กลับด้าน และเสนอแนะแนวทางในการจัดการเรียนการสอนแบบการเรียนรู้กลับด้านในระดับมัธยมศึกษา โดยมีการดำเนินงาน 3 ขั้นตอนคือ 1) สัมภาษณ์ความคิดเห็นของผู้เชี่ยวชาญ 2) สอบถามความคิดเห็นของครูมัธยมศึกษา และ 3) นำเสนอแนวทางการจัดการเรียนการสอนแบบการเรียนรู้กลับด้าน กลุ่มตัวอย่างเป็นผู้เชี่ยวชาญจำนวน 6 คนและครูผู้สอนระดับมัธยมศึกษาจำนวน 370 คนโดยวิธีการสุ่มแบบแบ่งชั้น เครื่องมือที่ใช้คือ แบบสัมภาษณ์และแบบสอบถามความคิดเห็น ผลการวิจัยพบว่า ครูส่วนมากเห็นว่าการจัดการเรียนการสอนแบบการเรียนรู้กลับด้านมีความสำคัญ แต่ครูยังขาดความรู้ความเข้าใจและวิธีการที่เหมาะสมที่จะนำไปใช้ในการออกแบบการเรียนการสอน และแนวทางที่เหมาะสมในการพัฒนาการจัดการเรียนการสอนแบบการเรียนรู้กลับด้านมีองค์ประกอบที่สำคัญได้แก่ 1) บริบทและสภาพแวดล้อม 2) เนื้อหา 3) กลยุทธ์การเรียนการสอน 4) สื่อและเทคโนโลยีในการเรียนการสอน 5) การประเมินการเรียนการสอน 6) บทบาทของครูผู้สอน และ 7) บทบาทของผู้เรียน

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Abstract

The purposes of this survey research were to study the opinions of experts and secondary school teachers in Thailand of Flipped Learning, and to propose a guideline for Flipped Learning instructional design for secondary schools in the country. The study was conducted using a mixed-method research divided into 3 phases: 1) interviewing the experts for their opinions, 2) surveying secondary school teachers' opinions, and 3) proposing a Flipped Learning instructional design guideline. The sample group included 6 experts and 370 secondary school teachers in Thailand. They were selected by using the multi-stage sampling method. Interview forms and questionnaires were used to collect the data. The research findings indicated that the majority of teachers strongly agreed that Flipped Learning was crucial but teachers in Thailand still lacked knowledge and understanding to design such instruction due to the inadequacy of proper guidelines. The study proposed a guideline for Flipped Learning instructional design including: 1) learning context and environment, 2) contents, 3) Instructional strategies, 4) instructional media and technology, 5) evaluation, 6) teachers' roles, and 7) students' roles.

KEYWORDS: FLIPPED LEARNING / FLIPPED CLASSROOM / INSTRUCTIONAL DESIGN / ACTIVE LEARNING

Introduction

In recent years, statistic indicators of education in Thailand have revealed that it has not been as satisfactory as expected in comparison to its neighboring ASEAN countries. Based on an international testing system, namely, The Programme for International Student Assessment (PISA) 2012 (OECD, 2014), it was found that Thai learners have scored relatively low both on knowledge and problem-solving skills. It was therefore an urgent issue to solve the problem by improving teaching and learning in the country to increase the quality of

Thai students. At present, most teachers were still largely dependent on lecture method in class (Shibley et al., 2011), since explaining the contents to learners took shorter time than letting them inquire, analyze, summarize main ideas, and assigning tasks for them to complete. Instead of learning, students' roles in the lecture method of instruction have been restricted to merely sitting and listening to teachers' lectures or explanation in the classroom. Although, occasionally, they might not understand a lecture, or were unable to catch the words, they could not ask the teachers to repeat the whole

lecture. As a consequence, once they were at home doing their homework, they could neither do it due to the lack of clear understanding, nor could they ask their peers for clarification (Bergmann & Sams, 2012; Enfield, 2013). Such situation deprived learners of their opportunity to attain in-depth or higher order thinking skills. Their learning process and skills have not been appropriately trained nor supervised by the teacher during class because nearly all the time allocated was spent on content explanation. This contributed to in-class learning that **“lacks of quality”** (Ash, 2012; Wong & Chu, 2014). It was thus necessary to improve the quality of in-class instruction. Rather than merely listening to teachers’ lectures, students should spend more time on developing hands-on knowledge, ensuring genuinely quality instruction in the classroom.

In 2015, the government of Thailand had entrusted the Ministry of Education to implement the “Teach Less, Learn More” policy in order to improve the quality of in-class instruction. The concept was meant to reduce academic study time, namely, to reduce the period of time allocated to knowledge-based activities such as lectures, demonstrations, or worksheets. Instead, there would be more time and opportunities for learners’ hands-on experiences to construct their own knowledge. In order not to affect the main, compulsory contents students were

required learn, teachers had to design comprehensive and efficient learning strategies. Flipped Learning was, possibly, a pedagogic method that answered to such concerns.

Enhancing quality classroom instruction with Flipped Learning

“Flipped Learning” was an approach of instruction which replaced traditional in-class content lecturing with activities that helped enhance learners’ knowledge and skills. It focused on learners’ participation in learning activities in the classroom (Flipped Learning Network, 2014). In general, videos were used to present contents for learners to study prior to classroom activities (Bergmann & Aaron, 2012). The method was initiated in 2007 by Jonathan Bergmann and Aaron Sams, secondary school teachers at Woodland Park, Colorado, USA. They started to use a program to record voices into PowerPoint slides in order to present the contents and record live lectures online so that students who had missed classes were able to study. Later, the method was widely deployed and expanded worldwide. It was primarily referred to as Flipped Classroom, using video clips to present contents to students before class and using Mastery learning activities in class. In 2012, the term was changed into Flipped Learning, highlighting learning-by-doing activities in class. Existing journals and research articles

regarding Flipped Learning in Thailand and overseas have indicated that pre-class activities carried out in Flipped Learning included studying lectures from video clips, online materials, or Learning Management System (LMS). Afterwards, learners noted the contents they have studied, did some further research, as well as prepared and asked questions to the teachers online.

In-class activities varied. During class, these might feature explanation, revision, and demonstration. For the practice stage, there might be discussions, hands-on practices, exercises, projects, problem-solving activities, brainstorming tasks, reports, presentation, mind-mapping, and application of the knowledge, etc. The evaluation stage included observation, questions, interviews, tests, and checking students' work. Moreover, the online network was used for communication between teachers and learners, online

evaluation, as well as searching for and present information (Clark, 2013; Kim et al., 2014; Wiginton, 2013). In terms of teaching strategies employed in Flipped Learning, Bishop's study (2013) has found that 8 out of 22 journal articles on Flipped Learning published in 2012-2013 have applied active learning strategies.

Active learning strategies put more emphasis on child-centered activities, developing a variety of styles and techniques for learners at various levels. Not only did each method provide more chances for learner participation in classroom activities, but it also improved their learning in and out of class. In turn, it also developed instructors' competence in terms of instructional technology. Flipped Learning was thus beneficial to instructors and learners alike (Table 1).

Table 1: Benefits of Flipped Learning

| Out of the Classroom | In the Classroom |
|---|--|
| <input type="checkbox"/> Learners were skilled in learning from media | <input type="checkbox"/> Learners developed higher order thinking skills |
| <input type="checkbox"/> Learners were skilled in communication technology | <input type="checkbox"/> Learners were skilled in collaborative learning |
| <input type="checkbox"/> Learners were responsible for their own learning | <input type="checkbox"/> Learners supervised and monitored their own learning and improved themselves according to there learning potentials |
| <input type="checkbox"/> Teachers were skilled in developing instructional instructional media and technology | <input type="checkbox"/> Teachers had more time to assist learners |
| <input type="checkbox"/> Teachers were skilled in content analysis and instructional design | <input type="checkbox"/> Teachers were able to assist learners as individuals/groups |

Based on the literature review, the aims of his research were to investigate the feasibility and to seek an appropriate guideline to adopt Flipped Learning to improve students in the Basic Education level, in particular those in the secondary school level which were expected to be more ready for the practice than students in the other levels. Applying survey research, the data collecting procedures began with interviews with the experts on their opinions and the possibility of utilizing Flipped Learning in Thailand. The data were then used to create a questionnaire to survey opinions of secondary school teachers from all regions of Thailand. The purpose of the questionnaire was to gather information to use as a guideline to the use of Flipped Learning suitable for the contexts of secondary school education in Thailand.

Research Design

This survey research applied a mixed-method approach, combining qualitative and quantitative methods (Figure 1). It has adopted an exploratory design, instrument development model, following Creswell & Clark (2007).

Research Objectives

1. To explore opinions of experts and secondary school teachers regarding Flipped Learning design
2. To propose a guideline to develop Flipped Learning in secondary school level

Research Methodology

The qualitative approach was conducted by interviews with the experts in the field, and the quantitative part concerned a survey of secondary school teachers. The

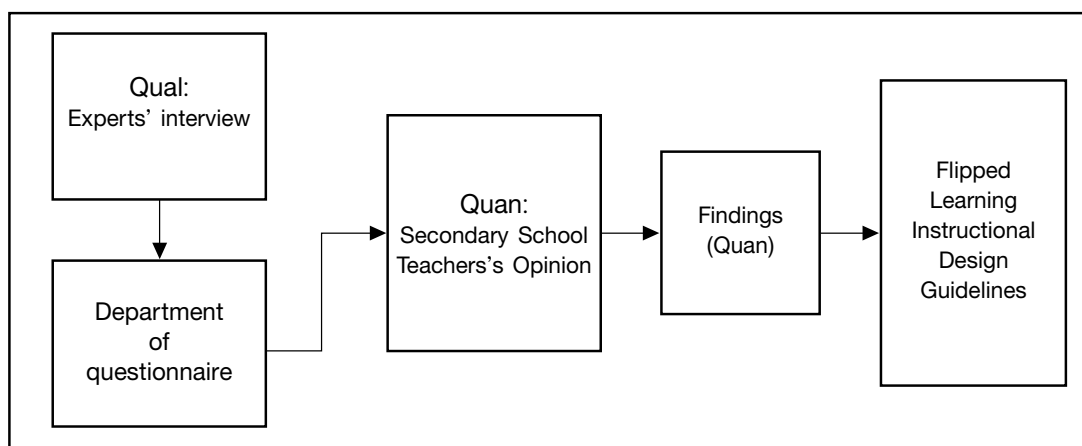


Figure 1: Mixed-method research design

scope of the research was in three phases as follows.

Phase 1:

1. The sample group comprised 6 experts in instructional design, curriculum and instruction, educational technology, and educational administration selected by purposive sampling. In-depth interview was used to obtain qualitative data.

2. Tools employed were record forms for structured interviews. Five main topics were covered in the interviews; namely, instruction, contents, media and technology, teacher development, and learner preparation. Interview results were used to develop a questionnaire to collect quantitative data on opinions of secondary school teachers from all regions of Thailand concerning the issue.

3. Appointments for individual interviews were made via e-mails and telephone calls. Each interview took approximately 75-100 minutes.

Phase 2:

1. The target group of this study was 136,600 secondary school teachers in Thailand affiliated with the Office of the Basic Education Commission (OBEC) and the Office of the Private Education Commission (OPEC). The sample group was chosen by multi-stage sampling, including 400 participants, based on Yamane's (1973) sample size formula. The data were collected from

50 schools in 5 regions of Thailand, 10 schools from each region. Of these 10 regional schools, 5 were public ones (OBEC) and 5 were private ones (OPEC). 8 copies of questionnaires were distributed to each school targeting the heads of 8 learning areas.

2. Tools employed to collect data from the teachers were questionnaires on opinions about Flipped Learning instruction. There were 6 topics including learner analysis, task analysis, content analysis, technology analysis, media analysis, and situational analysis. The questionnaire was comprised of checklists, rating scales, and open-ended questions; 24 items in total. It had been validated with Index of Item-Objective Congruence (IOC) from 3 experts, tried-out, and adjusted prior to actual data collection. Based on Cronbach's Alpha, the reliability of the questionnaire was 0.95. The data were collected during February to April 2015 and analyzed using descriptive statistics. Findings were presented in percentage, mean, and standard deviations.

3. In terms of data collecting procedures; 400 questionnaires, each with a cover letter addressing a school director, were distributed by post to 50 schools in 5 regions of Thailand. 370 questionnaires (92.5%) were returned.

Phase 3:

1. The data collected from the questionnaires on secondary school teachers' opinions were analyzed and summarized on key issues.

2. Key elements on Flipped Learning were presented as a guideline for secondary school teachers in their Instructional design.

3. The guideline was validated by 5 experts who specialize in instructional design, curriculum and instruction, and educational technology and communications.

Research Findings

Results from experts' interviews

1. Instruction: Flipped Learning was an appropriate instructional approach to schools in which teachers were ready. Appropriate levels were upper primary school and higher. However, the most appropriate level was high school. Overall, it was deemed feasible to apply Flipped Learning into an instructional design. Regardless, its practical application might not have been clear. Concerns were raised regarding learners' self-study. Unless they were responsible students, the designed learning process might not work out as expected. Learners might not understand instructional media provided for them to study before class. This might result in them not being able to perform well or develop their skills in class since they did not have adequate knowledge on the contents, or they simply lacked clear understanding. Parents might not understand the approach. There was also a concern regarding the quality of the lectures given by teachers since they might not be

knowledgeable enough. In brief, teachers were urgently required to improve their knowledge and teaching capability.

2. Contents: The most appropriate subjects for Flipped Learning were those with quite substantial contents for learners to study both in and out of class. Contents suitable for Flipped Learning were declarative and procedural knowledge. On the other hand, contents that were less suitable were conditional knowledge. However, the approach could be applied to all contents and all subjects. It merely needed learning activity designed to suit the characteristics of each learning content, objectives, as well as learning contexts and environments. Teachers should choose the contents they considered the most appropriate to experiment first. This may help them to see the opportunities to further expand its use to a wider range of contents. Above all, cooperating and exchanging thoughts among peer teachers would make Flipped Learning more feasible with higher quality.

3. Media and Technology: Media and technology utilized in Flipped Learning might feature regular instructional items such as worksheets, or multimedia ones such as video clips, computer-assisted instruction, and e-books. They should be suitable, interesting, engaging, as well as motivating. Each school should set up a working team to support and assist teachers in designing

and producing these materials, as well as encourage the concept of social learning into its pedagogical practice.

4. Teacher Development: This should begin with teachers' paradigm shift on the current instructional practices. They ought to be aware of the significance of transitioning instructional approach to Flipped Learning by attempting to push forward learners' responsibility to learn by themselves instead of remaining passive learners. Also, teachers should be assisted in designing and developing the media which would help prepare learners for in-class instruction. This would in turn equip teachers with higher technology skills. Successful examples could be illustrated to them in the form of video contents to stimulate, motivate, and convince them that paradigm shift was truly vital to their instruction.

5. Learner Preparation: Teachers needed to clarify Flipped Learning instruction to learners prior to its actual use in the classroom. Learners, as well as parents, had to be aware of their roles in this particular learning approach. Then, teachers needed to check learners' knowledge to see whether they have studied the contents assigned to them before class, and to find out the extent to which what they have studied contributed to in-class learning. In the classroom, teachers needed to encourage students' responsibility in learning, stimulate or motivate them; as well as apply any regulatory measures. This

might be carried out through preliminary agreement with learners considering learning psychology and learning styles. In addition, instructive media might be created to introduce Flipped Learning to students as well as to inform any issues that learners needed to know. It could be infographic materials or short video clips to be used as students' manuals. Moreover, engaging learners into the planning process might incite their enthusiasm to participate in learning activities, and in choosing channels for interactions and communications out of class.

A questionnaire was constructed based on a summary of the interviews on experts' opinions. It covered 5 main issues, aiming to gather quantitative data from secondary school teachers. The survey results were as follows.

5.2 Results from the Survey on Teachers' Opinions

Data analysis found that 370 of the questionnaire respondents had 2-36 years of teaching experience. 16.8% of the teachers stated that they had carried out Flipped Learning instruction while 65.3% had never been trained for nor introduced to it. At any rate, survey findings pointed out that the majority of OBEC and OPEC teachers shared congruent opinions, although with some variations. For example, OBEC teachers adopted a lecture method the most (84.7%), whereas OPEC teachers practiced the

method (76.3%) less than group activities (78.1%). 42.0% of OPEC teachers have been trained for or introduced to Flipped Learning and 18.3% of them have implemented Flipped Learning instruction while only 27.5% of OBEC teachers have been trained for or introduced to the approach and 15.3% of the latter group has applied it. Survey results can be summarized as follows.

(1) 78.8% of the sample group believed that Flipped Learning was significant and concurring to child-centered learning.

(2) 63.7% of the sample group stated that an appropriate level for Flipped Learning was high school.

(3) The most significant element in learning was learners (36.0%), followed by the goals of instruction (27.7%), instructors (9.1%), and contents (8.6%).

(4) Appropriate subjects for Flipped Learning instruction were declarative or explanatory contents (55.1%), relational contents (51.7%), and procedural contents (45.7%).

(5) Students' key roles were learning responsibility (74.6%), and learning autonomy with self-direction (73.7%).

(6) Significant capabilities of teachers were designing instructional process (80.9%), developing learning objects and using instructional technology (71.1%), as well as analyzing and creating content structure (68.9%).

(7) Teachers' instructional roles included designing learning activities and monitoring students' participation during class (77.1%); raising questions that stimulate and develop students' higher order thinking skills (69.4%); preparing instructional media, equipment, technology, and environment (68.3%); advising, supervising, and assisting learners who needed assistance in and out of class (63.14%); synthesizing and presenting the contents (59.4%).

(8) Learning styles to be encouraged were autonomous learning (69.4%), cooperative learning (65.4%), problem-solving learning (60.0%), and e-learning (58.0%).

(9) A recommended instructional method before class was to ask learners to study or search for specific contents from the media or learning resources assigned by the teachers and summarize them (67.7%).

(10) A procedure to check whether learners had studied the contents before class was to ask them questions (66.6%), or to ask them for a summary of the contents (56.6%), or complete a short test (54.0%).

(11) If learners had not studied before coming to class, teachers would ask them to learn from their peers (64.0%), or revise the contents for the whole class (57.7%).

(12) In-class activities were discussion, knowledge sharing (54.6%), learning-by-

doing based on knowledge from contents studied before class assigned by the teacher (52.9%), giving presentation, presenting their opinions or discovery (50.6%), doing exercises (48.6%), and taking a test at the end of class (48.0%).

(13) After class activities recommended for learners were summarizing the knowledge and taking notes (66.6%), doing additional exercise (55.1%), creating a product (47.4%), and doing research for the next class (41.4%).

(14) Instructional media that teachers assigned students to study before class were Internet-based learning resources (78.0%), and documents and materials produced by the teacher (53.7%).

(15) The means by which teachers delivered contents to learners were to upload them onto the Internet (70.6%), or to have learners log in to the system set by the teachers (53.4%).

(16) Technology that teachers could utilize in Flipped Learning were information search (60.0%), production of media for content presentation (60.0%), communication (58.9%), presentation (56.3%), and development of online resources (52.6%).

(17) Assessments used in Flipped Learning were testing (69.4%), task evaluation (67.7%), performance evaluation (66.6%), and observation (61.7%).

(18) Teachers should prepare the students before Flipped Learning by clarifying on how to learn and eliciting acknowledgment on their agreement (69.4%), preparing learners' access to media and technology (69.4%), and reviewing their existing knowledge (59.4%).

(19) Learners' technological readiness was prepared by teachers selecting technology that corresponded to learners' competence and readiness by adjusting fundamental knowledge (74.9%), and reinforcing necessary skills (69.1%).

(20) In order to ensure learners' understanding and to engage their participation in Flipped Learning instruction; novel, interesting, and efficient activities should be deployed (78.3%). Learners needed to be well-informed about the significance and method of learning (73.4%). Efficient learning objects and technology were also mandatory (70.3%).

Conclusion

This research was carried out in order to survey opinions of experts and secondary school teachers across Thailand on Flipped Learning, and to propose a guideline for designing Flipped Learning practice in the secondary school level. The results from the survey indicated that the experts and teachers agreed that Flipped Learning would help develop "a quality classroom" and respond

to 21st Century Learning Framework. Teachers' determining potential relied on their competence in designing the instruction and supervising learners in classroom activities. They had to ensure productive learning environment which would encourage more learning responsibility from the learners. In addition, introducing instructional technology into the classroom would reinforce learners' knowledge and skills, in particular when selecting simple, convenient, and easy-to-access forms with which learners were familiar. Nonetheless, teachers needed to inform learners, as well as their parents, about teaching and learning procedures to be carried out in Flipped Learning instruction prior to its actual use. Learners would then be able to shift their learning paradigm from passive to active learning, focusing more on their own responsibilities and self-direction in the learning process, resulting in the ultimate efficiency of Flipped Learning in developing its learners.

Proposing a Flipped Learning Instructional Development Guideline

The data drawn from the survey on opinions of both the experts in the field and the secondary school teachers were analyzed to identify 7 crucial elements of a guideline to develop Flipped Learning appropriate to and concurring with the teaching and learning contexts of Thailand.

This guideline was validated by 5 experts. The validation result was at excellent level ($\bar{X} = 4.6$, $SD = .67$). The detail of the Flipped Learning Instructional Development Guideline was as follows.

1. Learning Context and Environment

Learning environments significant to Flipped Learning are concerned with instructional media, materials, devices, technology, school premises, classrooms, labs, learning centers, learning resources, curriculum, instruction, and the personnel involved. Teachers need to prepare learning environments and resources, and to make sure they are ready, appropriate, adequate, and flexible. These contribute to learners' success in learning according to the set objectives. The contexts of Flipped Learning vary from common learning in that it requires 2 learning spaces: in-class and out-of-class. The learning period is divided into 2 phases which are before class (at home) and during class (in class). Before class, learners are obligated to study contents from the media prepared by the teacher prior to attending class. In class, this issue is concerned with preparing resources which will help support teaching and learning. These include audio visual aids and classroom preparation, namely desk and chair arrangements to facilitate group learning or to be adjustable to accommodate any learning activities designed by the teacher.

Additionally, learning context and environment also involve teaching and learning materials and equipment, as well as the accessibility of learning resources outside the classroom in case of a fieldtrip, or learning resources which learners can search for information in and out of school, as well as via the Internet.

2. Contents

“Contents” are information to be taught, including facts, concepts, principles, rules, procedures, interpersonal matters, and attitudes (Morrison et al., 2011, pp. 125-127). In Flipped Learning, teachers have to divide the contents: one for learners to study before class (at home), and the other to study during class (in class). Based on the survey conducted, the features of the before-class contents are: 1) explanatory contents, facts or opinions, 2) concepts, theories, rules, or principles, 3) stories, events, phenomena, or situations, 4) procedural contents, and 5) relational contents. These contents students could study by themselves, and they would form the foundation of the contents to be taught in class.

3. Instructional Strategies

Flipped Learning instruction is divided into 2 stages (before class-in class), involving 4 main steps as follows.

- **Presentation** (before class-at home) involves teachers delivering the contents to learners before class using

media. Learners hence are equipped with basic knowledge and understanding of the contents. They may be asked to write brief notes from the contents they have studied. This reduces the amount of time spent on giving lectures in class.

- **Warm up** (in class) concerns teachers’ checking learners’ background knowledge, evaluating whether they have studied the contents before class, checking the extent to which they understand the contents, and revising key issues.

- **Practice** (in class) allows learners to have hands-on participation in the activities set up by the teacher, in groups or as individuals. They may give a presentation while the teacher assists, gives advice, and observes their learning processes and behaviors.

- **Wrap up** (in class) is concerned with summarizing the contents covered in class in order that learners get clearer knowledge and sustainable understanding. Also, it can be spent on assessment and evaluation, providing feedback, and assigning forthcoming activities.

Active learning is a key instructional strategy, yet it can also be incorporated with other ones. In designing Flipped Learning instruction, a strategy chosen in each step has to be suitable for each learning context and environment. Learners need to be introduced to the approach, be aware of,

and understand the method used; so that they are willing to cooperate in the learning process (Bonwell, 2000; Eison, 2010; Paulson & Faust, 2010).

4. Instructional Media and Technology

The use of media and technology in Flipped Learning needs to consider learners' opportunity to access and use them before and after class. The learning technology employed should be the ones learners are familiar with, and are easy to access (Kim et al., 2014). The most popular media for learners to study before class are video clips because they are easy to produce at the moment (Rath, 2013). Teachers only need a high quality mobile phone to record their lectures. Bergmann & Sams (2012) suggested 4 steps to produce simple video clips which were: (1) planning the lesson, (2) recording the video, (3) editing the video, and (4) publishing the video. In comparison to other instructional media formats presented by the teachers, learners are usually more interested in video presentation.

Apart from producing instructional media, teachers need to prepare channels of communication to deliver the media to learners. At present, the most efficient means is via the Internet, including: 1) teachers send it directly to learners by VCD or via e-mail with attachments, 2) video files can be uploaded onto the school's website, 3) social network such as Facebook can be

utilized, and 4) files can be shared in a Cloud storage which offers huge free space.

Flipped Learning places more emphasis on quality of in-class instruction, rather than being dependent on technology such as computers or the Internet. It focuses on interactions between teachers and learners more than anything else (Bergman & Sams, 2014). However, to increase learner's learning opportunity, external interactions and communications are also significant. Teachers need appropriate channels to access updated information technology and communications.

5. Evaluation

Flipped Learning can be thoroughly assessed according to Bloom's (2001) cognitive domains. Before class, learners can evaluate their own knowledge and understanding on the contents that they have studied beforehand. During class, learners can be evaluated based on their capability to apply their knowledge and skills to analyze the contents and create learning products. Alternatively, these can as well be completed after class. Evaluative tools used in Flipped Learning are observation, questionnaires, attitude tests, performance tests, and interviews (Kim et al., 2014), as well as online tests (Bishop, 2013).

Teachers' roles in class are (1) evaluating learners' products and tasks, (2) providing feedback, giving advice, and suggesting or

initially checking with the learners via online communication, and (3) keeping records after class as they can be used to improve their teaching. Teachers can evaluate their learners before class, during class, and after class. After class, they are advised to keep records of their teaching which clearly and thoroughly indicate learners' learning achievements, significant factors affecting their learning, strengths, weaknesses, problems, obstacles, and recommendations.

6. Teachers' Roles

Teachers' main missions in Flipped Learning are to (1) analyze learning goals and environments, (2) analyze, synthesize, and create structures of contents by integrating the use of technology into each context of instruction, (3) design learning activities corresponding to contents and learning objectives, adopting active learning strategy, (4) prepare instructional media, materials, devices, technology, and environment to facilitate the instruction, (5) inform learners about the instruction and deliver the contents of various forms to them in advance, (6) supervise students to ensure that all participates in the activities during class, and assist the learners who need help, (7) raise questions and lead activities that stimulate and develop learners' higher order thinking skills, (8) check correctness and give immediate feedback to learners, (9) provide authentic assessments and evaluations, and

(10) maintain interactions and communications with students both in and out of class (Flipped Learning Network, 2014). Moreover, teachers need to inform learners that they are required to study the contents and complete the tasks assigned to them before class. The significance of the tasks needs to be reiterated to the learners, they are compulsory "homework" (Butt, 2014).

During class, the roles of teachers are no longer ones of a teacher-centered instruction, but a student-centered one. They merely prescribe appropriate learning methods, and let learners carry on the activities while they supervise, assist, give advice, check, and evaluate learners' activities. Moreover, regulatory measures such as to motivate, stimulate, reinforce, advise, control, warn, etc., may also be applied as seen appropriate.

7. Learners' Roles

Flipped learning "focuses on learners' responsibility for their own learning". They need to study some of the contents from instructional media and learning objects provided by the teacher in advance. In class, they have to participate in activities so that they extend the knowledge and understanding they have previously gained in order to plan, design, and perform their assigned tasks (Bristol, 2014). In order to achieve these goals, learners need to be instructed, advised, and prepared in various aspects;

so that they can participate in the Flipped Learning with understanding, willingness, and awareness of its benefits. In addition, required characteristics of learners in Flipped Learning are: 1) learning autonomy and self-directing, 2) the ability to learn from information technology and instructional media, 3) the ability to learn with other learners and to have good interaction with the teachers 4) to be responsible for their own learning, and 5) to be attentive, motivated, and enthusiastic to learn.

8. Further Research

The majority of previous research has emphasized on examining learners' participation, the comparison between traditional instruction and Flipped Learning, and the

impacts of Flipped Learning. There remains a lack of research on other aspects of it; for example, those aiming to analyze-synthesize appropriate contents, supportive activities, developing media, assessment, learning environment, etc., which requires in-depth investigation that allows scholars and teachers better understanding about Flipped Learning as well as to apply it to other instructional approach appropriately so that learners can reach their maximum learning efficiency.

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