Effectiveness of Flipped Classroom on Students’ Achievement and Attitudes towards English Language in Secondary School

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ABSTRACT
This research was carried out to investigate the effectiveness of flipped classroom on students’ achievement and attitudes towards English Language in secondary school. A quantitative research design was used and the dependent were students’ achievement and attitudes while the independent variables were traditional and flipped classroom. The sample consisted of 66 form two students. An independent samples t-test was conducted. The mean students who learn in a traditional classroom reported significantly different attitudes (M = 4.71, SD = .39) than students who learn in a flipped classroom (M = 4.93, SD = .36). In other words, students in the flipped classroom appear to have a better achievement and attitudes on method of delivery than the traditional classroom.

Keywords: achievement, attitudes, flipped classroom

INTRODUCTION
Education curriculum is a process that needs to be done to ensure that changes over time produce generations that are competitive internationally. Thus, the study of a country’s education curriculum should be an ongoing and consistent (Flumerfelt and Green, 2013). According to Mukherjee, (2013) educating the next generation is a challenge that needs to be implemented starting from the school level. Learning approach of students at the university level is influenced by teaching approach in schools. As the curriculum requirement grows, teachers need to make more efficient use of class time. So, teachers also play an important role to ensure that their teaching methods fit to the current needs of students’ learning.

The rapid growth of technology has sparked a revolution in the world of education. Flumerfelt and Green, (2013) stated that nowadays the use of technology plays an important role in teaching and learning. The use of technology without pedagogy will not have a big impact. According to Rahman, Aris, and Abdullah (2008), flipped classroom is the 21st century education pattern. They described that flipped classroom is also a student- centred method which use of technology in teaching and learning process. It was supported by Mukherjee, (2013) in her research. According to Mukherjee, (2013) flipped classroom provides students with self-paced learning environment where students can learn according to their learning ability using technology.

Learning in the classroom also emphasizes active learning activities in which the opportunity for interaction and collaboration is high. Flipped classroom through the use of technology has been proven empirically in improving student’s achievement. Mukherjee, (2013) stated that there are six steps in flipped classroom. First step, teacher should define content scope, learning objectives and instructional strategies. Second step, student’s gain familiarity with new material before class and at step three teacher need prepare activities that motivate students before class. At step four, teacher should prepare class activities that provide students opportunities to deepen understanding. At step five, teacher also need post class activities that extend student learning and at final step teacher can do ongoing evaluation and assessment.

PROBLEM STATEMENT
Davies, Dean, and Ball (2013) stated that the process of changing from a traditional classroom to a flipped classroom can be challenging because of a lack of facilities, internet accessibility and effective models. However, it is important to help students learn and develop their learning skills using innovative methods of instruction (Tsai, Lee & Shen, 2013). A lecturer can enrich lecture presentations through the incorporation of multi-media content as an innovative method of instruction, for example, the use of PowerPoint (Leicht, Zappe, Messner, & Litzinger, 2012); students still must memorize the material that will not increase classroom engagement (Ahlfeldt, Mehta, & Sellnow, 2005). Engagement may not exist because of environmental factors, lack of understanding or satisfaction, accessibility of local education services (Kettlewell, Southcott, Stevens, & McCrone, 2012) or innovative instruction. Therefore, the implementation of the flipped classroom will increase student engagement, resulting in positive educational outcomes and improving their learning style. This research seeks to understand the difference between with students’ achievement towards English Language in the flipped classroom and traditional classroom learning culture, and how do students’ attitudes differ in a traditional and flipped classroom towards English Language in secondary school. The study aimed to investigate the effectiveness of flipped classroom on the students’ achievement and attitudes towards English Language in secondary school.
**LITERATURE REVIEW**

“Flipping the classroom” has become something of a buzzword in the last several years. According to Overmeyer, (2012), flipping the classroom means that students gain first exposure to new material outside of class via reading or lecture videos and then use class time to do the work of assimilating that knowledge, perhaps through problem-solving, discussion, or debates.

Based on Bloom’s revised taxonomy (2001), students are doing the lower levels of cognitive work such as gaining knowledge and comprehension outside of class and focusing on the higher forms of cognitive work like application, analysis, synthesis and evaluation in class, where they have the support of their peers and instructor. This model contrasts from the traditional model in which first exposure occurs via lecture in class.

Baker (2000) stated that flipped classroom also known as inverted classroom meanwhile (Lage et al., 2000), stated that flipped classroom is one of the student-centred learning approach. According to Baker (2000), flipped classroom was introduced in 2000 to university students. From previous research, originally flipped classroom methods was implemented at the university level in the fields of technology before it has been used widely in schools in the field of Science, Technology, Engineering and Mathematics or STEM (Herreid and Schiller, 2012; Hamdan et al., 2013). However, Flumerfelt and Green (2013) considered that the implementation of the latest pedagogical methods such as the flipped classroom is one of the pedagogical changes that is need to be injected into the school curriculum.

According to Cohen & Brugar (2013), flipped classroom offers many benefits. The flipped classroom will save the time of students’ listening to lecture in the classroom because they can watch the lecture on video at home which replaces live instruction in the classroom. Classroom activity will be used to solve problems and hold discussions. It was supported by Milman (2012), the flipped classroom will save the students’ and teachers’ time and the time can be used in the classroom for discussing rather than listening to the lectures. Milman (2012) also stated that the flipped classroom will make for more efficient instruction during classroom hours because students have already prepared learning materials before coming to the class. So, the students have to be responsible for their own learning and the teacher will act as a facilitator to guide more in learning rather than teaching.

According to Fulton (2012), advantages of flipped classroom are students will move at their own pace, teacher will be able to know students’ difficulties in doing the homework in the class, the teacher can easily update the curriculum and provide it depending on learner needs, the activity in the classroom is more effective and active, teacher can easily observe students’ interest and they will use the technology tools as the appropriate learning media in the 21st century.

Driscoll and Petty (2013) also indicated that the guidance of technology media the students will be more autonomous in learning activity and the lecturer will act as a facilitator and motivator which was similar statement with Milman (2012). Besides that, Millard (2012) documented that flipped classroom focuses on classroom interactive discussion, provide teacher freedom, teacher can establish personal communication with students regarding the subject, homework and any other progress, establish a strong team work and increase student engagement.

Based on Cohen and Brugar (2013) flipped classroom will help student’s to take responsibility for their own learning, they can watch and repeat the online video lecture as necessary, students and teacher establish personal interaction whether inside or outside the classroom. The flipped classroom is one model that makes students more active and interactive both in the classroom and outside it. When teachers apply flipped learning, it means that they applied active learning.

According to Nichols (2012) the flipped classroom help the students to review the subject for the students who cannot attend class will obtain the materials of learning. Morgan (2014) stated that the main goal of a flipped classroom is to enhance student learning and achievement by reversing the traditional model of a classroom and focusing class time on student understanding rather than on lecture. The flipped model is a blending of direct instruction for the development of 21st century skills such critical thinking, collaboration and self-direction (Framework for 21st Century Learning, 2010).

Achievement gaps occur among the students because factors outside school control, such as parents’ level of income and education are strongly correlated with the academic success of students. However, many factors such as school control had also affected student’s achievement. Based on Snowden’s (2012) findings showed that, teachers who had flipped their classrooms reported higher student achievement, increased student engagement and better attitudes toward learning and school. Besides that, teachers reported that their job satisfaction has improved. Based on Snowden’s (2012) findings show that no significant difference between student perception and achievement in the traditional and flipped learning experience.

Study has been done by Long, Logan and Waugh (2014), Mason et al. (2013), Johnson and Renner (2012) and Snowden (2012) on flipped classrooms to look at perception, engagement, motivation, active learning and achievement among students. According Long et al. (2014) the pre-class learning experience gives
motivation for students’ learning interest and improves their understanding of learning context to increase the student’s achievement.

A study of flipped classroom using screen cast video technology that was conducted by Flumerfelt and Green (2013) showed that impressive academic achievement and behavioural improvement that could increase interaction between teachers and students which help to create opportunities for active learning (Leicht, Zappe, Messner, & Litzinger, 2012). Overall the findings showed that flipped classroom effect the student’s achievement.

According to Herried (2013), research conducted to indicate that students have a positive association with the flipped instruction. Based on Zappe (2009) findings flipped a college architecture class and Ruddick (2012) flipped a college prep chemistry class, both found that students perceived the flipped instruction as a better or more efficient method of teaching. Besides that, Chester (2011) in his research proved that a flipped classroom improved student behavior.

Research done by Gaughan (2014), with an undergraduate world history course. Research proved that a total of 72% of respondents replied that the videos helped to prepare them before enter the class. A total of 22% responded that the videos helped little to prepare for the following class. Gaughan (2014) in the research documented that flipped classroom was a success and helped the students for the class discussion with enthusiasm and comprehension.

**METHODOLOGY**

**RESEARCH DESIGN**

A quantitative research design was used to carry out this study. The purpose of this study is to identify the students’ achievement and attitude towards English Language in secondary school through flipped classroom. The sample surveyed consists of 66 students in secondary schools in Penang.

**PARTICIPANTS**

The sample consisted of 66 students from form 2. They voluntarily completed the questionnaires. All of the samples were from secondary school located in the Gelugor.

**INSTRUMENT**

In this study two instruments were used. Instrument for achievement tests of the English Language that were pre-post-administered to measure the students’ achievement of the experimental and control groups and the scale of students’ attitudes towards flipped classroom which was pre-post-administered to the students of the experimental group.

The achievement tests were designed by the researcher and each of them included 50 multiple-choice items to measure the students’ achievement. Each question had one correct answer and three ‘distracters’. The tests have been based on the table of specification which were organized for 3 chapters from form two English Language textbook. The scale of students’ attitudes towards learning and studying courses was designed by the researcher and included 30 items. This instrument used a 5-point Likert scale that ranges from 1=strongly disagree, 2=disagree, 3=not agree or disagree, 4=agree, to 5=strongly agree.

These instruments were tested and re-tested extensively on multiple aspects concerning their validity and reliability by Johnson and Renner (2012) within flipped and traditional classroom. This study has similarity in design of the study with Johnson and Renner (2012). Therefore, the reliability of measurement of the instrument used was assessed using the inter-item consistency reliability value.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of items</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students attitudes</td>
<td>30</td>
<td>0.924</td>
</tr>
</tbody>
</table>

**PROCEDURES**

Data collection occurred via random distribution. The researchers distributed the survey questionnaire to 66 secondary school students. The distribution was handled by the researchers. The researches selected form two students for English lesson from two classes. In this study teaching syllabus were the same between the two classes. For the flipped classroom, before each class start, the students were required to watch a video provided by teacher at Frog VLE platform. During the class time, the students were required to participate in various active learning activities such as problem solving and discussion on tutorial questions.

In the case of the traditional classroom teacher will teach the same topic with another class. During the next class they will give a presentation on their answer and which is discussed in class. For assessment on this topic there are a quiz and a test that require students to do in their book. Thus, both classes are doing the quiz and test at the same time in class.
DATA ANALYSIS
The Statistical Package for the Social Sciences (SPSS) version 22.0, basic descriptive statistics, cross tab, independent samples t-tests and so forth were utilized to analyze data from the survey questionnaire.

RESULT
An independent samples t-test was conducted to compare students’ attitudes in a traditional and flipped classroom setting. The results are presented in Table 2 and Table 3. A t-test for independent samples revealed a significant difference in attitudes between students that learn from a different learning culture (t (67) = -3.51, p < .05). The mean students who learn in a traditional classroom reported significantly different perceptions (M = 4.71, SD = .36) than students who learn in a flipped classroom (M = 4.93, SD = .39). In other words, students in the flipped classroom appear to have better attitudes on method of delivery than the traditional classroom.

Some of the students’ comments were that they do not have problem in watching the video, but they experience problems understanding the video on their own. However they feel that flipped class gives them the opportunity and lots of time for discussing their problems with teacher and peers in class. Students from traditional classroom have no problem in understanding the lecture but they do not have much time for discussion and problem solving with teacher.

<table>
<thead>
<tr>
<th>Class</th>
<th>N</th>
<th>Mean (M)</th>
<th>Std Deviation (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitudes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flipped</td>
<td>33</td>
<td>4.93</td>
<td>0.36</td>
</tr>
<tr>
<td>Traditional</td>
<td>33</td>
<td>4.71</td>
<td>0.39</td>
</tr>
</tbody>
</table>

Table 3. Independent sample test

<table>
<thead>
<tr>
<th>Attitudes</th>
<th>t-test for equality of means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t</td>
</tr>
<tr>
<td></td>
<td>-3.51</td>
</tr>
</tbody>
</table>

Table 4. Formative and summative assessment

<table>
<thead>
<tr>
<th>Assessment</th>
<th>N</th>
<th>Passed (%)</th>
<th>Failed (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flipped</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formative</td>
<td>33</td>
<td>76</td>
<td>24</td>
</tr>
<tr>
<td>Summative</td>
<td>33</td>
<td>63</td>
<td>37</td>
</tr>
<tr>
<td>Traditional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formative</td>
<td>33</td>
<td>52</td>
<td>48</td>
</tr>
<tr>
<td>Summative</td>
<td>33</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

The result found that the percentage of students that passed for both assessments was higher for the flipped classroom than the traditional classroom. In the interview, the students commented that the achievements in flipped classroom are better than the traditional classroom, stating that students can assess the video at any time and refer to their module before their assessment. However for the traditional classroom, the passing percentage is lower than that of the flipped classroom.

DISCUSSION
The flipped classroom is more engaging than traditional classroom instruction. The results proved that student-centred instruction and active learning made possible in a flipped classroom represents what should already be occurring in classrooms (Stumpenhorst, 2012).

They also contend that flipped learning is not a defined model but is, instead, the result of teachers using different tools to meet individual students’ needs. This is a valid observation. The flipped classroom model does not eliminate the lecture or other means of direct instruction. Instead, it removes lectures from the group learning space to maximize the amount of time teachers have to spend with individual students and students have to spend working with one another.
Besides that, flipped Classroom gives greater opportunities to communicate with other students. Flipping the classroom provides more time to address the needs of individual students and enables more active and engaged learning, without sacrificing the amount of material that can be covered. It is true that the Flipped Learning model is not the only way to facilitate good teaching. However, effective teaching may be better enabled and flourish more readily in flipped classrooms. This is will support the 21st century education where students will be active learner.

Study also proved that students more motivated to learn English in the flipped classroom. These teachers believe that a flipped classroom sacrifices actual instruction in order to increase opportunities for student collaboration and activities generated and led by students. However, as Marshall (2013) points out in her model of Flipped Learning, one key role for teachers is to “lead from behind.” In other words, the teacher engages in “observation, feedback, and assessment” during class and, in the process, guides the learners’ thinking, in the best spirit of the Socratic Method. Furthermore, the learners themselves can fill these same three roles as they observe and provide feedback to each other during class and as they assess their own learning. These support the 21st century collaboration skills among students. Students will share their knowledge and experience with their friends and teachers.

Gary Stager, an educator, speaker and journalist expressed three concerns about the model during a radio debate with Aaron Sams on Southern California Public Radio (2013). First, he argued that the Flipped Learning model places too much emphasis on lectures and homework. Next, Stager said that the need to flip the classroom is symptomatic of a bloated curriculum. Because schools are trying to cover too much content, some of it has to be taught outside of class. He also contended that, rather than opening up classroom time for student-centred instruction, the flipped learning model requires standardizing the learning experience and will further the privatization of education and the elimination of most teachers. He predicts that mediocre teachers will be hired to create videos of lectures that are not customized for the specific needs of a class.

As is true of all models, flipped learning can be done poorly. This literature review has stressed that flipping the classroom creates the potential for active, engaged, student-centred learning, peer interactions and personalized instruction. But none of these result automatically from moving direct instruction outside of the group learning space. Stager is concerned that flipping the classroom is a way to replace teachers with videos. But, as has been amply illustrated, skilled, professional teachers are critical to success in a flipped classroom. Teachers have to know how to facilitate learning and not just be able to proficiently communicate content.

Sams and Bergmann (2012) share Stager’s concern about generic videos substituting for teachers delivering instruction adapted to the needs of the students in their own classroom. Ideally, teachers will make their own videos and, as the model spreads, it will be important for teachers to have opportunities to gain the skills required. However, it should also be acknowledged that videos produced by other teachers who have a different style may better serve the needs of some students. In addition, teachers are not necessarily experts in all facets of their field. They can supplement their own knowledge by selecting videos of other teachers who may be more knowledgeable in some areas.

Concerns also have been raised about students having unequal access to technology. While this is a legitimate concern, it is important to note that home use of computers and the internet is increasing rapidly. It also stated in a survey conducted in 2010 by Child Trends, 57% of children aged 3 through 17 had used the internet at home, nearly three times the percentage in 1997 (22%). Almost 85% of students had access to a computer at home (compared to 15% in 1984). It is true, however, that Hispanic and African American children, children whose families who have lower incomes and children whose parents are less educated have less access to computers and the internet. More than 90% of White and Asian/Pacific Islander children have computers they can use at home, compared to about three-quarters of Hispanic and African-American children. About two-thirds of White and Asian/Pacific Islander children can access the internet at home, compared to just under half of Hispanic and African-American children (Child Trends, 2012). So, if we have digital gap among with students it’s very hard to support the 21st century education skill which is digital literacy.

CONCLUSION

The flipped classroom model came about from a confluence of video lecture first seen in distance education, inquiry-based learning principles, learning management systems and learning technologies that enabled teachers to create their own online videos. Most of the study showed that the flipped learning model is showing success, including success in school and higher institution students’ achievement.

Flipped educators adopting the flipped classroom model without prudently considering the needs of their students (Bergmann & Sams, 2012c; Hamden, et al., 2013; Bennett, et al., 2012). According Bishop & Verleger (2013), the flipped classroom are face-to-face, inquiry based learning combined with direct instruction through online video. Based on Herreid and Schiller, (2013) findings showed that flipped classroom is generally seen as capable of improving students’ achievement, improve communication and promote teamwork. Previous studies also showed that there are several challenges that need to be overcome to ensure that the objectives of
flipped classroom are achieved. Moreover, flipped classroom is also suitable to be applied in schools and tertiary institutions levels.

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