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Flipped Classroom and Traditional Classroom: Lecturer and Student Perceptions between Two Learning Cultures, a Case Study at Malaysian Polytechnic

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Abstract

Malaysian Polytechnic is moving towards the use of Information, Communication and Technology (ICT) to meet the needs of the Outcome Based Education (OBE) system that has been implemented since 2010. However, the lack of resources, internet access and lecturer skills in developing their instruction has caused the "chalk and talk" learning culture to remain unchanged, especially in accounting courses. The purpose of this study is to determine the lecturer and students' perception and their achievement between two learning cultures, the traditional classroom and flipped classroom. This study has been conducted between two classes; 61 final diploma accountancy students and a lecturer. Questionnaires and interview was conducted and analyze using independent sample t test. The findings show that there is a significant difference in perception ($t(59) = -3.71$, $p < .05$), mean students in a traditional classroom significantly different ($M = 4.42$, $SD = .38$) than in a flipped classroom ($M = 4.07$, $SD = .37$). The mean also shows, students from both classes had similar perceptions on their learning culture. The percentage of students pass their assessments for the flipped classroom, quiz=26%, test=52%, higher than traditional classroom, quiz=17%, test=50%. It was found that the lecturer had more time to spend on problem solving in the flipped class compared with the traditional class, and although it suffers from a lack of facilities, the flipped class can still be implemented. Therefore, Malaysian Polytechnic institutions could think more globally by teaching locals to meet students' needs of learning with appropriate learning approaches.

Keywords: flipped classroom, traditional classroom, lecturer and student perception, Malaysian Polytechnic institution

Abbreviations: Communication and Technology (ICT), Outcome Based Education (OBE), Department of Polytechnic Education (DPE), Student Perception of Instruction Questionnaire (SPIQ)

1. Introducation

1.1 Background of the Study

Since its inception in 1969, the learning systems at the Polytechnic have adopted the traditional education system (Wahab, Zakaria, & Jasmi, 2010). This is because the original purpose of the

establishment of the Polytechnic was to produce a semi-skilled workforce to meet the needs of the industry at the time (Kementerian Pengajian Tinggi, 2009). According to Masek and Yamin (2010a), Polytechnic students are taught based on teacher centered learning, entirely through lecturing method, tutorial sessions, and laboratory work with the 'chalk and talk' approach in a traditional classroom. Mason, Shuman, and Cook (2013) stated that, apart from the quiz and mid-term test, most of the lecturer's time in the traditional classroom was spent in lectures and solving textbook-type problems, with the answers copied by the student from the board. Since 2000 the Polytechnic lecturers have been producing modules for the subjects offered to students in order to change the way of teaching and learning, from lecturer centered to student centered learning (Masek & Yamin, 2010b) that allows for a clear way to deliver the course schedule and engage students in class (Papadopoulos & Roman, 2010).

According to Shoon (2013, p.711), "learning for innovation in the 21st Century will eventually be crucial for any education system to survive in the age of rapid technology". Therefore the Department of Polytechnic Education (DPE) is moving towards the use of Information, Communication and Technology (ICT) through the Outcome Based Education (OBE) system that has been implemented since 2010. Based on the OBE system, lecturers at Polytechnic are applying active learning in teaching and learning such as case studies, problem based learning, and collaborative learning that provides multidisciplinary curriculum to fulfill the market demand (Masek & Yamin, 2010a, b; Wahab *et al*., 2010).

1.2 Problem Statement

According to official portal of the Department of National Unity and Integration until Jun 2013 there are 27 polytechnics (Department of National Unity and Integration, 2014) that have been managed by one agency, DPE. Therefore, there is little difference between one polytechnic and another in terms of teaching and learning culture, educational resources and teaching (Alias & Hafir, 2009). Thus, there is lack of resources, internet access and lecturer skills in developing their instruction (Rassiah, Chidambaram, & Sihombing, 2011) which has caused the "chalk and talk" learning culture to remain unchanged, especially in accounting courses.

Rassiah *et al*. (2011) have stated in their study that students who enter the polytechnic are the students that have been exposed to the basics of ICT in schools. According to Jamaludin and Lee (2008), polytechnic students' attitudes and motivation are positively affected by teaching and learning strategies, learning material, the role of instructor, course content and support. However there needs to be an improvement in learning material in the future. Although polytechnics have provided a suitable network for improvement on teaching and learning materials so that active learning might occur, students are not exposed to the use of ICT because of a poor network (Ujang, Hassan, & Shariff, 2011). Therefore this study has been implemented in the flipped classroom, so that students can use ICT anytime outside the learning time and anywhere, through watching video lectures before coming to class.

1.3 Research Objective

One of the national higher education action plans phase 2 (2011-2015), is focusing on using ICT in teaching and learning (Ministry of Higher Education of Malaysia, 2012). Therefore, the flipped classroom had been practiced by the lecturer in the department on one of her PA601 Financial Accounting 4 classes. This study was undertaken to:

1) Determine lecturer perceptions of the difference between a traditional and flipped classroom learning culture.
2) Determine students' perceptions of the difference between a traditional and flipped classroom learning culture.

3) To determine percentage of students' achievements in flipped classrooms and traditional classrooms learning culture.

1.4 Research Question

1) How do lecturer perceptions differ in a traditional and flipped classroom learning culture?
2) How do students' perceptions differ in a traditional and flipped classroom learning culture?
3) What is the percentage of students' achievement in the flipped classroom and traditional classroom learning culture?

1.5 Research Hypothesis

H0 = Student perception is equal between flipped classroom learning culture and traditional classroom learning environment.

H1 = Student perception is not equal between flipped classroom learning culture and traditional classroom learning environment.

1.6 Theoretical Framework

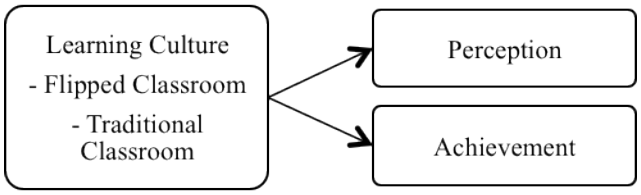

Figure 1. Theoretical framework

Figure 1 shows the theoretical framework of this study, which is based on Johnson and Renner (2012). The learning environment of this study is a flipped classroom and traditional classroom that has been implemented to determine student and lecturer perspectives and achievements. Classroom instruction was the independent variable with two levels, traditional and flipped. Student and lecturer perception and student academic achievement is a dependent variable.

2. Literature Review

2.1 Traditional Classroom

Since the existence of polytechnics, the education system had been growing rapidly. Although the use of technology is a requirement for students to complete assignments using laptops or computers (Rassiah *et al*., 2011) and lecturer use power point slides in class (Jamaludin & Osman, 2014), it may not yet expose students to the used of ICT in their teaching and learning (McMahon & Proposil, 2005). With existence of student ICT knowledge practiced in the traditional setting, ICT literacy could be enhanced with the use of learning instructions that engage students in interactivity, collaboration, ownerships, authority, and malleability of texts (Clark, 2010).

However, according to Mason *et al*. (2013) there is no difference in perception between the flipped classroom and traditional classroom. A study by Ramlogan, Raman and Sweet (2014) and Wilson and Sipe (2014) found out that live lectures are more effective compared to video instruction alone. Yet studies by Alias and Hafir (2009) and Rassiah *et al*. (2011) found that lack of facilities,

poor network and instructional development skills, meant that the traditional environment still needs to be practiced, although students need changes in the learning environment.

Studies conducted by Mason *et al*. (2013), and Johnson and Renner (2012) also found that there is no significant difference in student achievement in either learning environment. According to Ramlogan *et al*. (2014), Johnson and Renner (2012), and Snowden (2012) the lecturers argue that traditional methods still need to be adopted because not all topics can be practiced in the flipped classroom environment.

2.2 Flipped Classroom

A flipped classroom or inverted classroom is a learning environment that is currently practiced by the educators all around the world. Lage, Platt, and Treglia (2000, p.32) stated "Inverting the classroom means that events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa". According to Bergmann and Sams (2012), by implementing a flipped classroom, the lecturer no longer must lecture for two hours while students take notes, they can fully utilize in class time for discussion and problem solving with students. Research 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.

According to Bishop and Verleger (2013), flipped classroom is the restructuring of the classroom environment and activities at home. Therefore, by flipping the classroom the lecturer is able to reduce the amount of time spent in class on lecturing, opening up class time for the use of active learning strategies such as problem solving and discussion between students in the presence of lecturer Jamaludin and Osman (2014); Johnson and Renner (2012).

Snowden's (2012) findings show no significant difference between student perception and achievement in the traditional and flipped learning experience. However results from McManus, Subramaniam and James (2012) find that those instructed through the web-based module have higher ethical judgments compared with students who were instructed through the traditional in-class textbook. Long *et al*. (2014) findings show that student perceptions on pre-class learning material that rank highest are the video lecture, follow by movie lecture and webinar. The study also finds that the pre-class learning experience gives motivation for students' learning interest and improves their understanding of learning context.

3. Methodology

A questionnaire-based survey was conducted on final semester Diploma Accountancy student from the Commerce Department, Politeknik Tuanku Sultanah Bahiyah that had taken PA601 Financial Accounting 4 courses for the January 2014 session, consisted of one lecturer that teaches two classes with 31 students in a flipped classroom and 30 students in a traditional classroom by convenience sampling. In this study two instruments were used. Lecturer perception interview questions were based on Snowden (2012) and a structured questionnaire to determine student perceptions between two different learning environments, flipped classroom and traditional classroom, was adapted from the Student Perception of Instruction Questionnaire (SPIQ) by Johnson and Renner (2012). The original questionnaire was to determine student perceptions in the areas of content and course delivery, assessment and evaluation, as well as communication and learning experiences. 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. Data from the respondents was analyzed using the Statistical Package for the Social Sciences version 20 and the analysis method used was independent samples t tests. This instrument also included an open-ended question which invited comments for improvement to flipped and traditional classrooms.

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). However different in courses taken by the sample and methodology used by the researcher. Therefore, the reliability of measurement of the instrument used was assessed using the inter-item consistency reliability value. As shown in Table 1, the Cronbach alpha values were above the criteria suggested by Nunnally (1978) (as cited in Ogunkola & Archer-Bradshaw, 2013), who indicated that a cut off value of 0.7 is acceptable. Thus, it can be concluded that the instrument used in this survey was reliable.

Table 1. Reliability value

Variable	Number of items	Cronbach's alpha
Student Perception	12	0.844

The course selected for this study addressed the topic of "Changes in Capital Structure and Restructuring". In this study the week of teaching and the syllabus were the same between the two classes. There were three classes per week, and each class lasted for two hours with two hours of student learning time after class.

For the flipped classroom, before each class meeting the students were required to watch a lecturer provided video lecture on blendspace.com platform. Based on Mason *et al*. (2013) these pre-class study videos lasted for about 15-20 minutes, but the length of some others varied within 30 minutes, including audio of the instructor explaining the material and a live screen capture of the instructor preparing journal entries, accounts and balance sheet on a tablet computer.

Videos are based on a module that has been used by the two classes at the beginning of semester. Instructional video will show students how to solve the problem of the question from the module example on this topic. During the class time, the students were required to participate in various active learning activities, such as problem solving and discussion on tutorial questions from the module, assignments and presentations, all in the presence of lecturer. There was no post-class homework assignment for each class activity (Long *et al*., 2014).

In the case of the traditional classroom lecturer will give a lecture on how to solve the problem of the question from the module example. For post class homework, students will do tutorial questions from the module after class activity without the presence of lecturer or peers. 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 journal entries, capital reduction account and balance sheet. Thus, both classes are doing the quiz and test at the same time in class.

4. Result

An independent samples t-test was conducted to compare student perception 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 perception between students that learn from a different learning culture ($t(59) = -3.71$, $p < .05$). The mean students who learn in a traditional classroom reported significantly different perceptions ($M = 4.42$, $SD = .38$) than students who learn in a flipped classroom ($M = 4.07$, $SD = .37$). In other words, students in the traditional classroom appear to have a better perception on method of delivery than the flipped classroom. However based on the mean, students from both classes had similar perceptions on their learning culture.

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 lecturer 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 lecturer and peers.

Table 2. Group statistics

	Class	N	Mean (M)	Std Deviation (SD)
Perception	Flipped	31	4.07	0.37
	Traditional	30	4.42	0.38

Table 3. Independent sample test

		t-test for equality of means		
		t	df	sig.(2-tailed)
Perception	Equal variances assumed	-3.71	59	0.00

The lecturer in this study offered perspectives on the flipped method through a series of interviews. These revealed that although the flipped method may sound very interesting it still needed time to implement it as new teaching and learning for polytechnic environment. She especially found that the video on lectures give the same kind of teaching as in the traditional class. The video particularly helped the students who were slow learners, because they no longer needed to rely solely on the module or their friend's notes for skilled instruction, they could stop, pause or rewind the lecture on the solutions to the accounting problem.

Moreover there were some students that had been using the video for a not only as a reference before class but also as a revision tool before their assessment. She also added that the flipped classroom had enhanced student engagement with their lecturer and peers, as well as their understanding and preparation of the topic before class. However, student did not fully use the discussion board on Blendspace. The lecturer had more time to spend on problem solving in the flipped class compared with the traditional class, and felt that although there are lack of facilities, the flipped class can still be implemented.

Increase in content knowledge and problem solving skills are also seen as beneficial to the formative assessment (quiz) and summative assessment (test). For both assessments the percentage pass mark is 40%. The results are presented in table 4.

Table 4. Formative and summative assessment.

	Assessment	N	Passed (%)	Failed (%)
Flipped	Formative	31	26	74
	Summative		52	48
Traditional	Formative	30	17	83
	Summative		50	50

The result found that the percentage of students that passed for both assessments was higher for the flipped classroom than the traditional classroom. In one interview, the lecturer 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. This is because if a student was absent or can not take notes in class, they might otherwise be left behind with only the module and their friend's notes as their reference.

5. Discussion

This study determined student and lecturer perceptions and student achievements in the flipped classroom and traditional classroom. Results rejected the hypothesis null, showing that student perception is not equal between the flipped classroom and traditional classroom learning environments. Classes in the traditional classroom showed higher perception in students of their learning environment. However the student achievements shows that flipped classroom students have a higher percentage than the traditional classroom. This study supports the contention of Mason *et al*. (2013) that the flipped classroom students gave significantly higher ratings than traditional classroom students.

Moreover lecturer perceptions towards the flipped classroom show that it was interesting approach but still needs time to be implemented as a new teaching and learning environment. According to Baran (2013), the use of open source and social media tools has provide extensive opportunities for teachers and students as producers of learning material by developing an innovative instructional tool to create a new pedagogically practice The way of teaching between both classes and the video helped the slow learner and students also could use this as reference to solve the accounting problem before their assessment.

Implications of the study at the polytechnic level are that flipped classroom could be implemented as innovative learning instruction. Although there is a lack of facilities and financial support, flipped classrooms still can be implemented. Lecturers could use free tools as the starting point in developing learning instruction and implementing the flipped classroom which should align with learning outcomes for the course. Finally, this study can be a benchmark for polytechnics lecturers to enhance their learning material and a guide on how to change the learning environment from traditional to flipped classroom.

6. Conclusions and Suggestions

A flipped classroom was implemented for one final semester accountancy class, financial accounting 4 courses. The theoretical framework was used to determine the perceptions of new environments as a platform for using ICT in teaching and learning environments that helps students with up to date learning material (Barker *et al*., 2013). Reasons that the flipped classroom may be better than the traditional classroom relate to student class time and structure, student engagement, communication and achievement. Students in traditional classroom are just using textbooks or modules in solving accounting problems outside classroom and less time with the lecturer. However, in flipped classroom students seem to have lots of time spend on the lecturer and peers on problem solving and discussion.

The flipped classroom allows students to pace themselves through the subject material before attending the class and spend more time on solving the misunderstanding that they had before class and complete the assignment and exercise with lecturer and peers without worries about the due date of assignments. Thus, the use of video lectures could help those with good accounting

backgrounds, which they can move more quickly through the materials than those with lack of accounting problems solving skills. Therefore, this learning culture will help to create a cooperative learning among students themselves with the presence of the lecturer to facilitate them, and had an effective communication because of prior knowledge that they had from video lecturer before class. Moreover, the ability of good lecturers to communicate will lead to student engagement and active learning environment that could effectively motivate students about the subject matter as the lecturer play their role in class efficiently.

In summary, our findings show that changing from traditional classroom to flipped classroom had given the positive impact on student perception and achievement. The cost to achieve this, however, would require greater effort and time in the development of the video resources, planning and implementation in class activities. Therefore, this study can be used as a benchmark to change from the traditional classroom to the flipped classroom. This environment could be implemented in other courses or followed by other lecturers at the Malaysian polytechnic or other tertiary institutions. Jamaludin and Osman (2014) stated that this new learning environment helped lecturers to achieve their learning outcomes and make teaching and learning more engaging, active and student-centered. Therefore by choosing appropriate learning approaches, Malaysian Polytechnic institutions lecturer and student could think globally by teaching locally to meet students' needs of learning.

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