An Overview of Flipped Learning Studies in Malaysia

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Abstract
Flipped learning has become a strategic approach for educators to implement a technological-based learning environment. In line with the Malaysia Education Blueprint, more and more educational institutions adopt flipped learning into their establishment in a vision to achieve students' maximum potential. With a focus on technology, flipped learning is often linked with strategic management, excellent performance as well as the positive impact on instructors and students' skill. The implementation of flipped learning is a way to introduce different teaching and learning ideas that can develop an active classroom. The concept is to have a balance between education and advanced technology. This paper aims to review the three research elements, which are the level of participants involved in this study, the instruments, and disciplines done by 19 researchers on the flipped learning approach. Findings show that most of the studies have significant results in the implementation of the flipped learning approach. Conclusively, flipped learning is a well-rounded approach where it can be applied in any level of education regardless of the discipline. However, longitudinal studies can be performed in order to see the long-term effects of the flipped learning approach.

Keywords: Active learning, educational technology, flipped learning, information technology, technology-integrated learning, technological pedagogical content knowledge

Introduction

For several decades, online learning has been implemented in Malaysia, typically through the internet. It has widened the accessibility in education as well as improving the teaching and learning using technologies. In line with this development, the Ministry of Education Malaysia has strategically taken a step ahead by introducing the Malaysia Education Blueprint (2013) that contains 11 operational shifts in achieving the vision of the Malaysian education system. The 7th shift is highlighting the importance of Information and Communication Technology (ICT). Meanwhile, the ICT based-learning, which is called Globalised Online Learning (GOL), is highlighted in the Malaysia Education Blueprint for Higher Education 2015-2025 in the 9th Shift section. By having the GOL, it could enable Malaysia in achieving access, quality and efficiency of higher education. Therefore, in order to tackle the necessities of 21st-century education, technology must be incorporated into the instructions, concept, content, and approach of teaching and learning (Yeop, 2019). In addition, blended learning is also incorporated in this shift or initiative to increase the quality of teaching and learning. Communication between local and international students can be initiated and provides a meaningful learning environment.

In fulfilling the needs of 21st-century education, Massive Online Open Courses (MOOCs), blended learning and digital technology have been integrated into Malaysia higher education system. In September 2014, the first-year undergraduate students from four universities had taken compulsory courses, Universiti Malaysia Sarawak (UNIMAS), Universiti Kebangsaan Malaysia (UKM), Universiti Teknologi MARA (UiTM) and Universiti Putra Malaysia (UPM), and exploiting the MOOCs concept. It is very significant to our country as it brings all of the students from all over universities in Malaysia together in just a single platform (MEB, 2015).

What and Where

Ever since blended learning has become a phenomenon all over the world, various type of blended learning has been implemented in teaching and learning. Flipped learning is one of the teaching ways that has been implemented in teaching practices (Zainuddin & Attaran, 2016). In 2007, high school educators Jonathan Bergmann and Aaron Sams introduced a new learning model called flipped learning. They offered lectures in PowerPoint versions online to athlete students who could not make to their classes (Hamdan, McKnight, McKnight, & Arfstrom, 2013). Within a year, this new model has changed the world perspective of online education when their non-profit organization has multiple its members from 2,500 people to 11,000 people (Overmyer, 2012). Different from blended learning where it is a mixture of two elements of online teaching and learning and face-to-face, flipped learning focuses on before and during class activities. Students prepare for the class beforehand by listening to instructions or videos uploaded by educators. And then they do some readings or tasks to understand the topic. Meanwhile, in class, educators will dedicate most of the time for more meaningful learning such as workshops or discussions regarding the given topic they did before coming to the class. It is the stage where students engage in interactive activities for better comprehending (Hughes, Inzko, Oberdick, Small, & Young, 2011).

Flipped learning is a reverse method of traditional teaching and learning styles (Kaur, Singh, Mei, & Abdullah, 2017). Jonathan and Aaron Sams have introduced flipped learning in 2007. As educators, they had one particular problem. Their students missed too many classes for basketball

games and speech tournaments. When they skipped classes, they missed the crucial contents or educators had to repeat the essential lessons for them again. During spring 2007, they began to record their lectures using screen-casting software. At some point, they started to prerecord instructions and use class time for meaningful activities and also to use the time for questioning and answering session. Flipped learning has been growing in popularity throughout the world ever since. By using flipped learning, lecturers no longer have to lecture for two hours straight, classes are meant for meaningful events and project based-learning activities (Acton & Knorr, 2013; Roach, 2013; Tucker, 2012). A pilot study conducted by Flumerfelt and Green (2013) shows students' outstanding achievement and effective communication between students and educators. It also found that that flipped learning could generate chances for active learning (Leicht, Zappe, Messner, & Litzinger, 2012). Flipped learning also enhances engagement and provides better performance (Wilson, 2013).

There are many reasons to apply flipped learning conferring to Bergmann and Sams (2012). Flipped learning can benefit busy students as it is flexible, and students can enjoy learning anytime anywhere. Flipped learning supports students with different abilities, from beginner to advanced students as they can play the video hundreds of times if they have trouble understanding the instructions. As for advanced students, they can watch as little time as they needed. Flipped learning allows students to pause or rewind their educators (in video form). It also boosts interaction between students and educators. Educators could be absent without worrying about giving lectures. Flipped learning tackles better engagement compared to traditional lectures. There are also some misconceptions about flipped learning have formed throughout the years of implementing it (Bergmann, Overmyer, & Willie, 2011). Flipped learning is not about substituting teaching with recorded videos or let students learn on their own. Flipped learning is intended and created to provide personalized learning space and encourage students in autonomous learning. It is also providing engagement while in the classroom, and it can be accomplished through activities done in the classroom (Bergmann et al., 2011).

Current Stage and Concern

Online learning has increased enormously in recent years in both public and private universities. It is to support both general and long-distance studies (Aris, Ali, Harun, Tasir, Atan, & Noor, 2006; Embi, 2011; Goi & Ng, 2009; Hussain, 2004; Salleh, 2008). The implementation of technology in higher education in Malaysia institutions is growing, particularly in teaching and learning practices even though it has been used widely since 2000. Research and practice of inline learning should be done more in order to increase and encourage the implementation of technology in higher education classrooms as well as to engage the digital populaces (Embi, 2011). Hussain (2004) mentions that the expansion and introduction of technology-enhanced education in Malaysian universities have begun throughout the technology-integrated education period to offer online learning to students. It has become a significant problem in sustaining online teaching and learning; thus, the second phase arises. Steered by the Ministry of Education, the incorporation of technology in the classroom to stimulate the use of technology in online learning, few strategies have been listed. The strategies are the preparation for more up-to-date infrastructure to all institutions, evaluation and curriculum that integrates technology in the classroom, the upgrading of ICT skills for both learners and educators, the growing of technology in management and lastly, the improvement of ICT equipment in all educational institutions. In a study of flipped learning

readiness among UKM undergraduate and postgraduate learners, results show a satisfactory level of readiness in flipped learning. The online practice of flipped learning is also satisfactory. However, appropriate training is crucial in the adoption of flipped learning among lecturers. Lecturers should be trained well in real classroom practice; meanwhile, students should be familiarized and confident to comprise this whole new approach (Embi, 2014).

Table 1. *Flipped Learning Studies in Malaysia*

No	Author/year	Level of Participants	Instrument(s)	Discipline(s)
1	Arumugam Raman, Raamani Thanimalai & Mohan Rathakrishnan (2019)	Undergraduate students	Pre and Post Test	Information Technology (IT)
2	Siti Fatimah Abd Rahman, Melor Md Yunus, Harwati Hashim (2019)	Lecturers	Survey	English as A Second Language (ESL)
3	Mohammad Musab Azmat Ali, Melor Md Yunus, Harwati Hashim, Wahyu Hidayat, Mohd Shafeirul Zaman (2019)	Undergraduate students	Design and Develop	English as A Second Language (ESL)
4	Mohammad Musab Azmat Ali, Melor Md Yunus, Harwati Hashim, Azwin Arif Abdul Rahim, Nor Yazi Khamis (2019)	Undergraduate students	Design and Develop	English as A Second Language (ESL)
5	Teo Woon Chun & Ramesh Sathappan (2018)	Elementary School Students	Pre and Post Test	English as A Second Language (ESL)
6	Mohd Faisal Farish Ishak & Abdul Ghani Abu (2018)	School Teachers	Pre and Post Test	English as A Second Language (ESL)
7	Hardev Singh, Sokhal Jaswant Singh, Charanjit Kaur Swaran Singh, Tunku Mohani Tunku Mohtar & Nor Azmi Mostafa (2017)	Undergraduate Trainees	Meta-Analysis	Food and Beverage (Technical and Vocational Education and Training-TVET)
8	Michelle Jones (2016)	Lecturers	Meta-Analysis	Varied
9	Amutha Sambandamurthi (2015)	Malaysian and Indian Undergraduate students	Survey	Varied
10	Umawathy Techanamurthy, Norlidah Alias & Dorothy DeWitt (2015)	Undergraduate students	Survey	Culinary Arts
11	Chelster Sherralyn Jeoffrey Pudin (2017)	Undergraduate students	Survey	Engineering/Psychology & Teach English as A Second Language (TESL)
12	Brenda Danker (2015)	Undergraduate students	Qualitative & Quantitative	Performing Arts
13	Farina Tazijan, Agelyia Murugan, Suzana Abd.Rahim, Rosmaliza Mohamed, Emily Jothee Mathai & Rushita Ismail (2016)	Undergraduate students	Qualitative & Quantitative	English as A Second Language (ESL)
14	Azlina A.Rahman, Baharuddin Aris, Mohd Shafie Rosli, Hasnah Mohamed, Zaleha Abdullah & Norasykin Mohd Zaid (2015)	Varied	Meta-Analysis	Varied
15	Kumar, Shobha Vijaya, Shoup, Diana Lea Baranovich (2018)	Elementary School Students	Pre and Post Test	English as A Second Language (ESL)
16	Esyin Chew (2018)	Undergraduate students	Qualitative	Engineering
17	Siti Hajar Halili & Rafiza Abdul Razak (2018)	Preschool students	Literature Review	English as A Second Language (ESL)
18	Jowati Juhary & Ahmad Fahimi Amir (2017)	Undergraduate students	Survey	Management, Engineering, Science and Technology, Medical.
19	Bawadi Abdullah & Muhammad Tazli Azizan (2017)	Undergraduate students	Qualitative & Quantitative	Chemical Engineering

Brief Explanation of Each Study

Table 1 shows a few recent studies in Malaysia from 2015 until 2019. Ali, Yunus, Hashim & Khamis (2019) in their early research focused on the strategic improvement of the flipped learning framework on educators and learning constructs for ESL environment. Later, Ali, Yunus, Hashim, Hidayat & Zaman (2019), in the same principle, conducted another research to determine students' engagement constructs in establishing a framework for flipped learning in an ESL background. With the second study, Ali et al. (2019) found a more refined item for a strategic flipped learning in an ESL environment. A study of flipped learning approach in order to explore deep learning in large classrooms done by Danker (2015). The participants are the students of Performing Arts at Sunway University. They were given a video to watch as homework. During the class, the lecturer was present to facilitate the students. The results show that flipped learning is able to remodel a large classroom into one active-learning class. Students also get the opportunity to get personal feedback during class time. Jones (2016) also found that there are significant profits to learners in Malaysian Higher Education institutions in applying flipped learning approaches.

A case study done by Zainuddin and Attaran (2016) found the significant results when applying flipped learning in classrooms as flipped learning generates positive impacts especially for shy and quiet students as well as for the international students who have a lower proficiency level of English language. The study was done at University Malaya. Studies of flipped learning in teaching communication skills in ESL had been reviewed by Singh, Jaswant, Singh, Mohtar, and Mostafa (2017) in the higher education setting. They focused on the Technical and Vocational Education and Training (TVET) students. The study hopes to see a positive enrichment and learning environment with well-planned flipped learning lesson plans. They found out that flipped learning gives positive impacts to second language learners, and it is not just a model or a medium in delivering the instructions (Singh et al., 2017). Chun and Sathappan (2018) conducted a study on Chinese ESL learners to see the effectiveness of the flipped learning approach. They conducted their study with two groups of students, the control and intervention groups, with pre and post-tests. Based on their findings, there is a significant distinction between intervention and control groups. Flipped learning approach scores higher results than the traditional teaching approach. Abdullah and Azizan (2017) also studied the flipped learning technique in improving students' grades. They concluded that flipped learning is useful in refining the students' achievement, especially to their comprehending and overall performances.

In exploring educators' Technological Pedagogical and Content Knowledge (TPACK) areas in developing activities, Ishak and Abu (2018) have researched two non-option ESL educators. The results show that both educators are motivated to integrate flipped learning into their classroom activities (Ishak & Abu 2018). Last but not least, a case study was done by two University Utara Malaysia (UUM) lecturers and a teacher from secondary school in Kedah (Raman, Rathakrishnan, & Thannimalai, 2019). Their objective is to see the implementation of flipped learning for undergraduate students. The students were divided into two different groups which are the intervention group and the control group. The results show that the intervention group has higher self-efficacy than the control group. Meanwhile, gender has no significant difference in self-efficacy (Raman et al., 2019).

Instruments

A total of 19 studies were found, and various instruments were used, which include survey, pre, and post-test, qualitative and quantitative, design and develop research, meta-analysis, and literature review. The instruments are chosen based on the appropriateness in answering the research questions. Furthermore, it has also chosen to adapt to the targeted respondents. Four of the studies above used surveys as the instrument as it is applicable for descriptive, explanatory, and explanatory purposes (Babbie, 2012). The usage of a questionnaire is the best way for a social researcher who is fascinated by assembling raw data to describe a large population. Rahman, Yunus & Hashim (2019) used a survey to investigate whether computer self-efficacy and computer anxiety have any significant relationship towards Malaysian ESL educators' attitudes in implementing the flipped learning approach. A survey is also suitable in exploring perception, experiences and challenges. Sambandamurthi (2015) surveyed to analyze the experiences and challenges faced by postgraduate students as well as to match the resemblances and dissimilarities of exploiting flipped learnings. Meanwhile, Juhary and Amir (2017) used a survey to assess the students' insights into the latest model of teaching and activities.

Moreover, Pudin (2017), used a survey to explore the flipped learning significant. Another instrument that is widely used by the researchers above is pre and post-test. Pre and post-test design is a chosen instrument to compare participant groups and evaluate the degree of alteration resulting from investigational actions (Dimitrov & Rumrill, 2003). Chun and Sathappan (2018) used the pre and post-test instruments along with a questionnaire to observe the dissimilarities between the control and experimental groups in grasping adjectives. Ishak et al. (2018) have also design pre and post-test digital learning for their research. Vijaya and Baranovich (2018) in their research to explore the effectiveness of flipped learning have also used pre and post-test methods. With pre and post-test method, the researcher can see the difference on both groups, after the pre and post-tests, whether one of the groups has changed over time and any significant change can give the researcher an idea of the general efficiency of the interference or treatment (Dimitrov & Rumrill, 2003).

Meta-analysis is one of the approaches chosen by the researchers in observing the benefits of flipped learning (Jones, 2016; Rahman, Aris, Rosli, Mohamed, Abdullah, & Zaid, 2015). Through meta-analysis, researchers can evaluate critically and chain the results of equivalent studies (Fagard, 1996). The meta-analytic approach used here has enabled the researchers to maximize their observation in investigating the benefits of flipped learning in various group samples. Various instruments can be used to help the researchers in completing their studies. One may use more than an approach to their studies. It depends on the objective of the study and the selected respondents. Nevertheless, the approach selected must be suitable for the intended objective.

Disciplines

Flipped learning is a promising teaching approach that can motivate students. Researchers have shown the efficiency of flipped learning through an assortment of disciplines such as in information technology, Raman et al. (2019) and also engineering (Abdullah & Azizan, 2017; Chew, Jones, & Wordley, 2018; Juhary & Amir, 2017; Pudin, 2017). Furthermore, ESL discipline is also appreciating the flipped learning by using the method to expand the learning experience for the students (Chun & Sathappan, 2018; Pudin, 2017; Rahman et al., 2019; Vijaya & Baranovich,

2018). Hence, demonstrating that flipped learning is a very flexible approach, and any discipline can apply it as a medium to enhance their learning.

Future Research

Flipped learning has been shown to have a constructive influence on education based on the studies above; most of the researchers focused on the effect of flipped learning toward students. It can also be observed that flipped learning is appropriate for any level of education. However, relatively little has been reported on the long-term effect of the employment of flipped learning. More studies can be done in understanding how flipped learning can shape the student's way of thinking and to ensure effective execution of flipped learning.

Conclusion

Generally, flipped learning has shown an encouraging influence on student's behavior and achievement. It can be implemented in various disciplines such as engineering, IT, ESL, and performing arts. Flipped learning is an advantage for the educator to cater to any learning possibilities. From the discussion above, the flipped learning can be seen as a suitable method for any discipline. It can also help the educator to deliver new ideas in teaching and learning sessions. With flipped learning, educators can be creative and use the technology to the maximum so that students can be engaged fully to active learning.

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