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Enhancing Students' Class Participation through Gamification

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Abstract

The advancement and innovation of technology has provided alternatives to overcome the students' passiveness in class, thus making the classroom active and enjoyable. With the help of the advancing technology, the traditional lectures should no longer be the primary method of instruction, but it should be supplemented as much as possible with active learning methods. The purpose of this study is to examine if the method of gamification may improve students' class participation during the deliverance of course content. The study was conducted using action research methodology in Seminar in Management Accounting class. The study found that students are more active and highly participating during the deliverance of course content with the use of gamification tools.

Keywords: Gamification approach, Education, Action research.

Introduction

Traditional lecture has become an important or main medium in higher learning classroom delivery. Traditional lecture involves the method of transmitting the course content by a teacher, and students will listen and take notes on the information transmitted. In other words, traditional lecture may also be characterized as the transfer of the lecturer's notes to the students' notepads (Isaacs, 1989). Traditional lecture has its own advantages. For instance, it enables the teacher or instructor to cover the necessary content in an allocated time; and the lecturer can relate the lecture content to the students' prior knowledge and relate it to real life examples, thus making the knowledge more meaningful (Dolnicar, 2005). Despite these advantages, traditional lecture also has its own drawbacks. Isaac (1989) suggests that the transfer of the lecturer's notes to the students' notepads is mostly lack of thinking or processing of information. Furthermore, traditional lecture encourages intellectual passivity, as students will exhibit low level of engagement (McGarr, 2009). Due to the drawbacks of traditional lecture, alternative teaching and learning methods which may encourage students' participation in classroom have been developed. The advancement and innovation of technology has provided alternatives to overcome the students' passiveness in class, thus making the classroom active and enjoyable. Among the techniques is the gamification, which refers to the use of game elements in non-game contexts with the goal of engaging people in a variety of tasks (Borges, Durelli, Reis et al., 2014). With the help of the advancing technology, the traditional lectures should no longer be the primary method of instruction, but it should be supplemented as much as possible with active learning methods (Aliaga, Cobb, Cuff et al., 2010). Therefore, the purpose of this study is to examine if the method of gamification may improve students' class participation during the deliverance of course content.

Effective Learning Techniques

Learning is the lifelong activities for everyone to be successful our life. Therefore, an effective learning process is vital to ensure the learning process leads to its intended goals. Various techniques and strategies have been introduced and applied in the classroom to ensure effective teaching and learning activities. Discussing the issue of effective teaching requires us to firstly understand the definition and ultimate goal of teaching and learning. Atkins, Brown and Brown (2002) defined that teaching is an activity that concerned with providing students with opportunities to learn and the objective of learning are to gains knowledge and skills, deepening of understanding, the development of problem-solving and changes in perception, attitudes, values and behaviour. In addition, Brown also highlighted another important goal of learning that is to develop the capabilities to learn to the students. Clear understanding of these definitions will improve our understanding on the criteria for effective teaching and learning in our teaching and learning sessions.

The effectiveness of a particular teaching methods such as the experiential learning, problem-based learning and co-operative learning have been discussed by many authors. For instance, Albanese and Mitchell (1993) provide evidence on the impact of using the PBL on medical students. They found positive and negative impacts of PBL as a teaching method in a medical school setting. Their study shows that medical students who have gone through the PBL learning methods perform well on clinical evaluation and faculty evaluations. However, they scored lower on basic sciences examination; view themselves as less well prepared for the examination. The PBL students also tend to engage in backward reasoning rather than forward reasoning and appeared to have gaps in their cognitive knowledge compare to their traditional learners' counterparts. Slavin (2010) found that the positive impact of co-operative learning is depending on two key factors that are the availability of a clear group objective and the effective individual learning skill of every members. Kirschner, Sweller, and Clark (2006) categorised the experiential, problem-based and inquiry-based teaching as the less instructional teaching methods. They commented that these teaching methods as less effective to learners compare to the instructional or guided teaching methods. However, they did not provide any specific method that are considered as more instructional or guided methods.

Knowing the implication of these teaching techniques of students' learning, this paper attempt to improve accounting students' participation by understanding the effectiveness of integrating game in teaching and learning.

Gamification in Classroom

Many applications can be applied as mediums to conduct games in classrooms by the 21st century instructors, and these apps may be used by the instructors to support gamification in classroom. There is a growing interest in gamification as well as its applications and implications in the field of education since it provides an alternative to engage and motivate students during the process of learning (Borges et al., 2014). Previous studies suggest that students do not participate in class because they do not feel entitled to do so. They feel like they lack power, as such, they are more likely to be silent (Vandrick, 2000). Therefore, by using applications that support gamifications in classroom, instructors may provide a non-threatening space for the collection and curation of collaborative classroom work. As a result, all students will have the ability to contribute and learn from one another (Fuchs, 2014). Gamifications may also reduce the barriers to students contributing to class discussions (Elis, 2015) and will encourage students to engage themselves in active learning activities (Dellos,

2015). As such, the researchers expect that with the gamification technique, the low level of participation in the researchers' classrooms may be resolved.

Methodology

This study employed action research. According to Mc Niff (2010), action research is done by the practitioner. It involves oneself thinking about and reflecting on his/her work. Action research is an enquiry conducted by oneself where the practitioner thinks about his/her own life and work. In action research report, it shows how practitioner has carried out a systematic investigation into his/her own behaviour, and the reasons for that behaviour. In this study, the lecturer observation, checklist and interviews were used by the lecturer/ researcher to gather data throughout the intervention.

Management accounting students comprised of 35 participants were under studied. In this study, the lecturer is acting or behave as if she is 'the instructor' in the learning session. The instrument used to measure the participation is Participation Rubric. In this study, the researcher's reflection and observation checklist was used to gather data throughout the intervention. This provides information of changes /improvement on how well the students develop participation, reaction and understanding.

Below were the phases/stages used in this study:

Phase 1: Traditional lecture -assessment using participation rubric, followed by the instructor's observation and reflection. (See Appendix for Participation Rubric).
Phase 2: Gamification: Kahoot (www.kahoot.com) – assessment using participation rubric, followed by the instructor's observation and reflection.
Phase 3: Improvement from Phase 2 - Gamification: Kahoot (www.kahoot.com) – assessment using participation rubric, followed by the instructor's observation and reflection.

Table 1
Student Group's Participation Rubric during Game Session

Results:						
	Traits	N	Poor	Fair	Good	Excellent
1	Contributions	7 (100%)	(0%)	(0%)	4 (57.1%)	3 (42.9%)
2	Attitude towards peers	7(100%)	0 (0%)	0 (0%)	4 (57.1%)	3 (42.9%)
3	Attitude towards instructor	7 (100%)	0 (0%)	0 (0%)	0 (0%)	7 (100%)
4	Preparedness	7 (100%)	0 (0%)	0 (0%)	4 (57.1%)	3 (42.9%)
5	Focus	7 (100%)	0 (0%)	0 (0%)	2 (28.6%)	5 (71.4%)
6	Quality of discussion	7 (100%)	(0%)	(0%)	3 (42.9%)	4 (57.1%)
7	Behavior	7 (100%)	(0%)	(0%)	2 (28.6%)	5 (71.4%)

Findings and Conclusion

This study showed that students' participation increases with the use of gamification as learning tool. The assessment rubric (see Table 1) showed that in terms of contribution, attitude toward peers and preparedness, 57.1% in good level and 42.9% in excellent level. 100% of students had positive attitude toward instructor. 28.6% of students in good level and 71.4% of students in excellent level in terms of focus and behavior. In term of quality of discussion,

42.9% of students are in good level while 57.1% are in excellent level. From observation, students are very happy and cooperate with each other in finding the solutions of the game. They are highly active, and the classroom become alive.

In conclusion, learning and teaching through games help students better understand the subject matter hence increase participations.

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Enhancing Students' Thinking Skills: The Use of Real-World Context in the Problem Solving Method in the Islamic and Asian Civilization Course

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Abstract

Thinking skill is one of the skills that students are expected to have, particularly students of higher education. One of the compulsory courses that the Malaysian higher education students need to complete during their undergraduate study is the Islamic and Asian Civilization (TITAS) course. This course is made compulsory by the Malaysian Ministry of Education and it aims to provide students with the understanding of various elements of civilization and the implication of this course to national development. The course also aims to produce students who are able to relate civilization with current societal issues. The research found that the problem solving method as a teaching and learning method is able to enhance students' thinking skills. The main question is, how does the use of problem solving method, specifically the use of today's real-world context, in the teaching and learning of civilization concepts in the TITAS course enhance students' thinking skills? To what extent is problem solving method effective in enhancing thinking skills through the use of real-world context when the concepts of civilization are taught to students through this method? Having these questions in mind, this study seeks to fulfil two main objectives. Firstly, to examine and improve the use of problem solving method, specifically the use of today's real-world context, in the teaching and learning of civilization concepts in the TITAS course. Secondly, to examine the effectiveness of the use of the problem solving method, specifically the use of real-world context, in the teaching and learning of civilization concepts in the TITAS course, in enhancing thinking skills. Data were obtained through observation and documentation. Observations, aided by the use of checklists were carried out during the students' presentations. The students' written reflections were analysed through content analysis. Three action research processes were identified during the application of the problem solving method. The research also identified the effectiveness of the use of problem solving method, specifically the use of real-world context, in the teaching and learning of civilization concepts in the TITAS course.

Keywords: TITAS, Thinking Skills, Civilization

Background of the Study

In the field of education, specifically pedagogy, thinking skill is a skill that is centrally important in individual's cognitive development. Based on the research carried out by the researcher, it was found that teaching that centres on thinking skills could produce effective students who could think deeply and analytically on any issue. The thinking skills demonstrated by such students also indicate the students' ability to master a learned subject. Nevertheless,

there is one often-debated question, namely, to what extent could a teacher produce students who have thinking skill and ability (Johnson, Siegel, & Winch, 2010).

One of the methods recommended by past researchers is problem solving method that could enhance thinking skills. Problem solving method is a process that resulted in effective solutions, specifically when it involves real-world problems. Each existing problem has a solution. Problem solving does not rely solely on a person's ability to solve problems, but it goes beyond this. One also needs to have a proactive mindset in order to produce effective environment, and to do this, one needs to work on solving real-world problems (Watanabe, 2010).

One of the thinking skills is having a proactive mindset. Real problems are able to drive people to think proactively. Problem solving process is not a process that is inherited from one's forefathers but rather it is a process that could be learned (Watanabe, 2010).

The above discussion has shown that thinking skills could be learned and one of the simulations that could sharpen one's thinking skills is problem solving that makes use of real-world context problems.

Problem Statement

Islamic and Asian Civilization (TITAS) course is a compulsory university core course that all university students in Malaysia have to complete, irrespective of their skin colour, race or religion. The course aims to expose students to a variety of major human civilizations, focusing specifically on the Islamic and Asian civilizations (Malay, Chinese, and Indian). The course also aims to provide students with deep understanding of each civilization and the impact of human civilization on national development. The course is expected to be able to produce students who are able to link elements of civilization to current societal issues (Kementerian Pendidikan Tinggi, 2017). Students who have completed this course are expected not only to be knowledgeable in other types of knowledge, including Information Technology, but also possess critical and creative thinking skills, as well as be well-prepared to overcome current global challenges (Mustapha Kamal bin Ahmad Kassim, 2015).

Nevertheless, there are students who regard TITAS as a repetitive course which is similar to the History subject that they had taken in their secondary schools. There are also students who felt as though they were forced to complete this course since it is part of their graduation requirements. This negative conception has made them dismiss TITAS course as not a very important course. Consequently, they demonstrate poor interest to the course itself and are not keen to understand the context and content of the course (Mohamad Azhari Abu Bakar, 2012).

In an observation that the researcher made on a group of 97 students who completed this course in 2017, the researcher found that most of these students have not been able to relate TITAS with current issues that the country is grappling with. Similar observation was made by Mustapha Kamal Ahmad Kassim (2015) who wrote that although the course is vital, most students have not been able to master most of the course content. The students' failure to understand the content is visible through the way the students articulate their ideas in their written assignments and verbal presentations that are usually assessed in the course.

Therefore, thinking skills among students are much needed in today's world. In the context of thinking skills, thinking process refers to higher-order thinking activities, which comprise analyzing, evaluating, and synthesizing. All these activities lead to problem solving or producing complex solutions (Butterworth & Thwaites, 2013).

Problem solving method in real current context could be employed in ensuring that students could think critically and hence, be able to link prevalent concepts in TITAS with current real situations. This method requires students to solve the problems given to them. This approach also reflects the unanimous decision made at the National Workshop on Improvement of Local University's TITAS Teaching and Learning Quality held in Lumut in 2003 in which emphasis should be placed on student-centred teaching and learning process. The use of real-world context problem in teaching and learning is one of the approaches recommended for effective teaching and learning of TITAS course (Rahimah, 2003).

Students are encouraged to play active roles in their learning sessions. They will spend more time exploring and resolving their learning issues with the aid of their teachers who play the role as facilitators (Shahabudin, Rohizani & Mohd Zohir 2003). Based on this notion, this study seeks to examine real-world context problem solving method that is geared on civilization concepts to enhance students' thinking skills, specifically Group I, TITAS students of the 201/2017 session at Universiti Utara Malaysia.

Research Objectives

This research is guided by two main objectives:
1) to examine and improve the use of problem solving method, specifically the use of today's real-world context, in the teaching and learning of civilization concepts in the TITAS course.
2) to examine the effectiveness of the use of the problem solving method, specifically the use of real-world context, in the teaching and learning of civilization concepts in the TITAS course, in enhancing thinking skills

Literature Review

The survey carried out on the available literature on this topic has identified three major themes pertaining to the context of the study. The first is that problem solving method could enhance thinking skills. Studies also show that problem solving could make use of real-world problems. Thinking skills are also related to certain platforms, concepts or philosophies.

As for the first theme that centres on the possibility of the use of problem solving methods in enhancing thinking skills, some of the studies that have looked into this issue are studies conducted by Ismail and Atan (2011), Idris, Ariffin, and Mohd Ishak (2009), Sabran (2013), Nordin (2013), and Hashim (2012). Studies that discussed types of problems, including problems that are related to real-world context, include studies carried out by Idris et al. (2009), Saaid (2011), Kasim and Tamuri (2010), and Rahman (2002). The third theme which focused on thinking skills and its relation with specific platforms, concepts or philosophies was examined by researchers such as Seng (2005), Hashim (2012), Yusoff, Osman, Shaari, and Ghazali (2012) as well as Rasul, Ismail, Ismail, Rajuddin, and Rauf (2009).

From the survey, it could be summarized that the use of the problem solving method, specifically the use of real-world context, is a combined method that has been accepted by scholars. Hence, this research has applied the use of the problem solving method, specifically the use of today's real-world context, in the teaching and learning of civilization concepts in the TITAS course, in order to enhance thinking skills.

Methodology

91 respondents who were Universiti Utara Malaysia students who completed the TITAS course during the A162 (2016/2017) session participated in this research. These students who registered under group I, were placed under the researcher's responsibility Most of them were first- and second-years students from various undergraduate programmes. The researcher has split these students into several small groups, which each group consisted of six to seven members.

Prior to the execution of the problem solving process, the lecturer identified today's real-world context problems by adapting the concepts of civilization. The lecturer began by presenting problems that tapped on students' prior knowledge. This action was taken in order to boost the students' confidence and commitment. The problem was displayed in real form or real context through videos or social media reports, such as the news.

Some of the forms of problems used by the lecturer included (Barrett, & Moore, 2010):
1) Scenario
2) Dilemma
3) Challenges
4) News
5) Issues triggered by the media

The lecturer also introduced problem solving method to students since the students will employ this method in their learning process. In addition, the lecturer also informed the students of the actions that they need to take while using this method and its relationship to civilization. The groups of students were then formed (Campbell & Norton, 2007).

The processes involved in this research in applying problem solving methods in the TITAS course to enhance students' thinking skills based on the civilization concepts (Abdul Sukor Shaari, 2011) are as follows.

1) Students will be given a problem and they will find ideas and relate the problem to their prior knowledge.
2) Students will ask questions and define what they already know.
3) Students will answer questions based on the concepts of civilization.
4) Students will explore new information.

This research, specifically, has used the following five items in identifying the process involved in problem solving (Table 1). These items, adapted from Delisle, Supervision, and Development (1997), were used as a guidance by the students in their problem solving process. The items are presented in Figure 1.

Table 1
The five items

Idea	Facts	Learning issues	Civilization concepts	Further actions
1.	1.	1.	1.	1.

The following were the steps taken by the students in their attempt to solve the problems presented to them in this research (Campbell & Norton, 2007):

1) Students were introduced to the problem solving method and its relation to the concepts of civilization. They needed to show their understanding of the methods as well as able to enhance their thinking skill, particularly in the context of today's real-world problems that touched upon the concepts of civilization.

2) Students were placed in groups and later discussed the given problem based on the students' experience and prior knowledge.

3) Each student attempted to examine and think deeply about the following matters:
   - Things that are closely related to the problem
   - Things that are not closely related to the problem
   - Students agree or disagree as to whether the problem is a problem or otherwise
   - The gaps found in the problem
   - The facts that support each argument

4) Findings from each individual were then discussed. Discussion went on until all members came to a consensus on the best response to the questions raised by their lecturer.

5) Each step taken were presented until the group had arrived to what they perceived as the best solution to the problem. Lecturers and other group members then reflected on the findings.
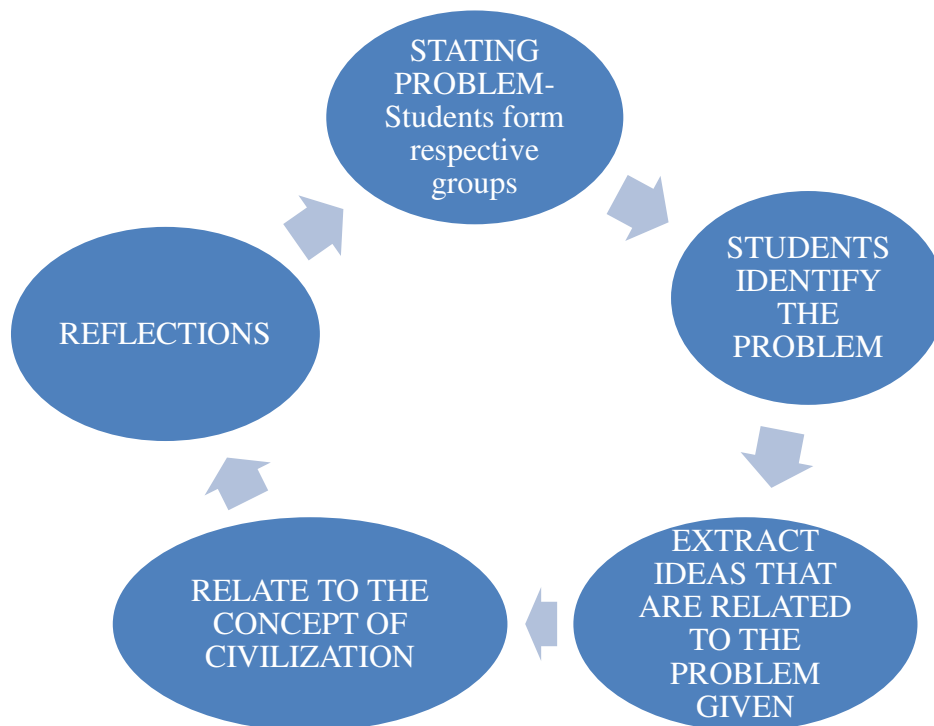
Figure 1. Problem Solving Method Application Used in the Current Research

Reflections Utilized in this Research
Lecturers' Reflections

Two types of evaluation were used in the present research (Fayer, 2010):

1) Cheklist. Reflection is used to determine the effectiveness of this method. The following checklist was used in this research, particularly during the students' presentations. Some of the questions included in the checklist are as follows:

- What is the knowledge or information that the students should have?
- What is the knowledge or information that the students should learn in order to know?
- How did the students learn to know what they should know?
- What have the students learned?
- What resources have been used?
- Were the students able to relate the problem to the concept of civilization?

2) Mentor's observation and reflection.
Five of the researcher's classes will be observed by the researcher's mentor, the dean's representative and a colleague.

Students' Reflections

Some of the questions that the students referred to while working on their reflections, include, among others

- How was your experience in utilizing the problem solving strategies?
- What have you learned from the related topics?
- How was your experience working in groups?
- What new information have you aquired?
- What changes do you think need to be made?
- What do you think should be retained?

Process and Findings for Action Research 1

The following is the problem statement created by the researcher:

"Students are required to make a decision pertaining to the need of having only one race, that is the Malaysian race (Bangsa Malaysia), in forming a Malaysian Civilization."

Students were alloted 5 minutes to come up with an individual decision and were asked to form two big groups (one group for those who agreed to the notion and another for those who disagreed). These two groups were then split into two smaller groups for ease of discussion sessions. The students were advised to discuss and seek information from the Internet and later presented their findings to their classmates. Their lecturer then reflected on their findings.

Check List Used During Students' Presentations

The following check list was used to inspect the students' knowledge and learning during their presentations, in particular the presentations of five students who represented their groups. These five students presented findings from their respective group discussion. The Table 2 sums up their performance during their presentations.

Table 2
Students' Presentation Performance for Action Research 1

ITEMS EMPLOYED	AVAILABLE	NOT AVAILABLE	LEVEL/LECTURER'S COMMENTS
What is the knowledge or information that the students should have?	All five groups were able to provide information on nation-state		Information given not comprehensive.
What is the knowledge or information that the students should learn in order to know?	All five groups were able to state the challenges that they might encounter should they decide to implement nation-state. They were also able to suggest steps that could be taken to overcome the challenges.		Students were able to explore the challenges
How did the students learn to know what they should know?	The five groups had Internet references and held discussions among their group members.		Did not make any justifications in validating their references and why the references were used
What have the students learned?	All five groups were able to identify the challenges and possible steps that could be taken to overcome the challenges.		Students were not able to establish whether the proposed solutions to overcome the problem could be implemented or not.
Were the students able to relate the problem to the concept of civilization?		Not a single group was able to relate the problem or the challenges they faced to the concept of civilization.	

Mentor's Observation and Reflection

The reflection produced was prepared from a discussion held with colleagues.

The learning objectives for the teaching session were met based on the students' responses. The researcher's lesson plans were well-executed, apart from one item, which was: I did not allocate specific duration of time when listening to views put forth by the students. This has led to use of excessive time for only one question. The teaching aspect that I should modify is I must make sure that in the future, I need to allocate specific time that students need to adhere to when they express their views. Some students were excited in sharing their ideas, while some chose to listen without taking part in the discussion. To ensure that all students participate in the class activities, I will vary my questions and ensure that the students be with their group members until the session ends. Before I begin the lesson, I will make sure that I memorize my lesson plans and try not to use ineffective strategies during class I also accept the views and suggestions given by my colleague in order to improve and enhance my teaching and learning. I must keep to time.

Based on the two reflections, problems that were identified and issues that need to be improved in the second action research to enhance TITAS students' thinking skills are shown in Table 3.

Table 3
Problems and Issues for Action Research 1

PROBLEMS IDENTIFIED	ACTIONS THAT COULD BE TAKEN TO ENHANCE STUDENTS' THINKING SKILLS IN THE SECOND ACTION RESEARCH
1) Some of the solutions suggested did not take current real-world into consideration. The practical implementation of the solution is questionable.	Prepare related resources for the students. Employ the just-in-time approach to remind the students of current real-world context.
2) Some students were not able to articulate their views in groups.	I will be more involved by approaching each group to ensure that each student express their opinions and help them look for information.
3) Students were no able to relate suggested issues or solutions with the concept of civilization.	I need to discuss the issue by relating it to the concept of civilization and ask the students to do the same in the next discussion session. (Second action research)

Process and Findings for Action Research 2

The following is the problem statement created by the researcher:

> *"Having a religion is a person's voluntary choice than cannot be forced. Anyone could choose his or her faith, be it Islam, Christianity, Hinduism, Buddhism or others. One could also choose to not have any faith. This is*

because, being religious is related to an individual's confidence. If religion
is forced upon a person, his/her faith is not sincere."

The Improvements Made on the Second Action Research was Carried Out as a Result of the Reflections Made on the First Action Research

1) I prepared additional material for my students.
2) I employed the just-in-time approach during students' discussion to ensure that the students could acquire thinking skill through problem solving method.
3) I participated in the students' discussion (just-in-time) by posing questions that require the students to think in the context of civilization.

Check List Used During Students' Presentations

The following check list was used to inspect the students' knowledge and learning during their presentations, in particular the presentations of five students who represented their groups. These five students presented findings from their respective group discussion. The Table 4 sums up their performance during their presentations.

Table 4
Students' Presentation Performance for Action Research 2

ITEMS EMPLOYED	AVAILABLE	NOT AVAILABLE	LEVEL/LECTURER'S COMMENTS
What is the knowledge or information that the student should have?	All five groups presented different information. Three groups did not support the statement given by arguing that it was a problem. Two other groups did not view the notion as a problem. They perceived the notion as basic human rights that deserve to be celebrated. They presented their arguments as well.		Good. All five groups presented their arguments.
What is the knowledge or information that the students should learn in order to know?	All five groups were able to present their arguments and support their view whether it is a problem or otherwise.		Students were able to explore their arguments. However, the information they acquired was not comprehensive.
How did the students learn to know what they should know?	The five groups had Internet references and held discussions among their group members.		Did not make any justifications in validating their references and why the references were used
Apakah yang pelajar telah pelajari?	Three groups considered the notion as religious		The way the students think is clearly affected by their

What have the students learned?	liberalism while two other groups viewed it as basic human rights.		philosophy or culture. This explains why there were two distinct views, i.e. those who accepted the notion as a problem and those did not perceive it as a problem.
Were the students able to relate the problem to the concept of civilization?	The groups which viewed the notion as a problem were able to relate it to the concepts of civilization. In fact, they considered Islamic civilization as the foundation and other civilizations as relational.		Good

Based on the reflection, problems identified and issues that need to be improved in the third action research to enhance TITAS students' thinking skills are shown in Table 5.

Table 5
Problems and Issues for Action Research 2

PROBLEMS IDENTIFIED	ACTIONS THAT COULD BE TAKEN TO ENHANCE STUDENTS' THINKING SKILLS IN THE SECOND ACTION RESEARCH
1) Students were able to think but their thoughts were cultural, life syle or philosophical driven.	I have to relate to the fact that the way students think is influenced by their culture, lifestyle, and philosophy. These three aspects are supposed to be related to the concepts of civilization.
2) Some of the students were not able to relate the issue or proposed solutions to the concepts of civilization.	I need to discuss the issue by relating it to the concepts of civilization and ask students to do the same in in the next discussion session. (Third action research)

Process and Findings for Action Research 3

The following is the problem statement created by the researcher:

"Characters such as Hang Tuah or Hang Jebat is needed by today's Y generation to overcome today's challenges."

The Improvements Made on the Third Action Research was Carried out as a Result of the Reflections Made on the Second Action Research

1) Always believe that the students' way of thinking is not only influenced by the available resources they have discovered or have at their disposal but also driven by their culture, lifestyle, ideology, theology, as well as philosophy.

Table 6
Students' Presentation Performance for Action Research 3

ITEMS EMPLOYED	AVAILABLE	NOT AVAILABLE	LEVEL/LECTURER'S COMMENTS
What is the knowledge or information that the student should have?	All five students have the answers and reasons to support their answers.		Good. All the groups have their own reasons.
What is the knowledge or information that the students should learn in order to know?	Only one group chose Hang Tuah, the remaining groups chose Hang Jebat They were able to present their arguments.		Good
How did the students learn to know what they should know?	The five groups had Internet references and held discussions among their group members.		
What have the students learned?	Debating and able to relate to other issues.		The way the students think was clearly influenced by their philosophy or culture. As a result, they were two different sets of views.
Were the students able to relate the problem to the concept of civilization?	All five students were able to relate to the concept of civilization		Good

I then asked the studens to prepare a written relfection. Some of the information that needs to be included in their reflections are as follows:

- How was your experience in utilizing the problem solving strategies?
- What have you learned from the related topic?
- How was your experience working in groups?
- What new information have you aquired?
- What changes do you think need to be made?
- What do you think should be retained?

Nevertheless, the students were also allowed to write anything that is related to the course in their reflection. The following is some of the reflections produced by the students (Figure 2 and 3):
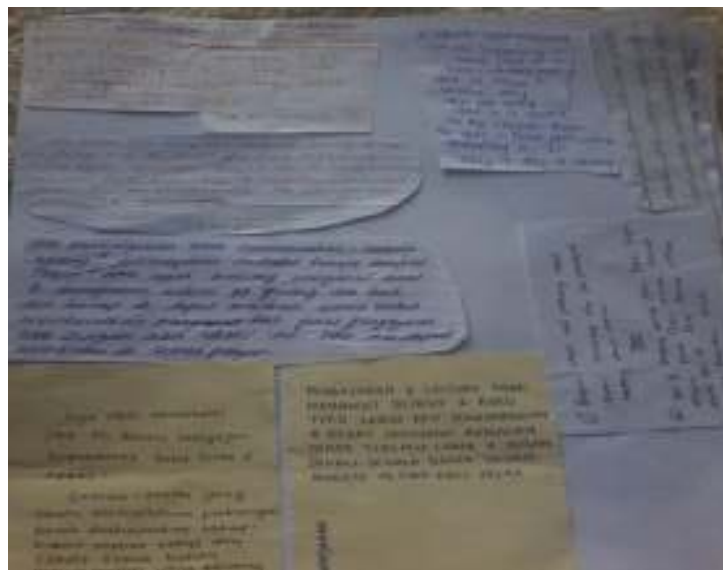
Figure 2. Reflection 1
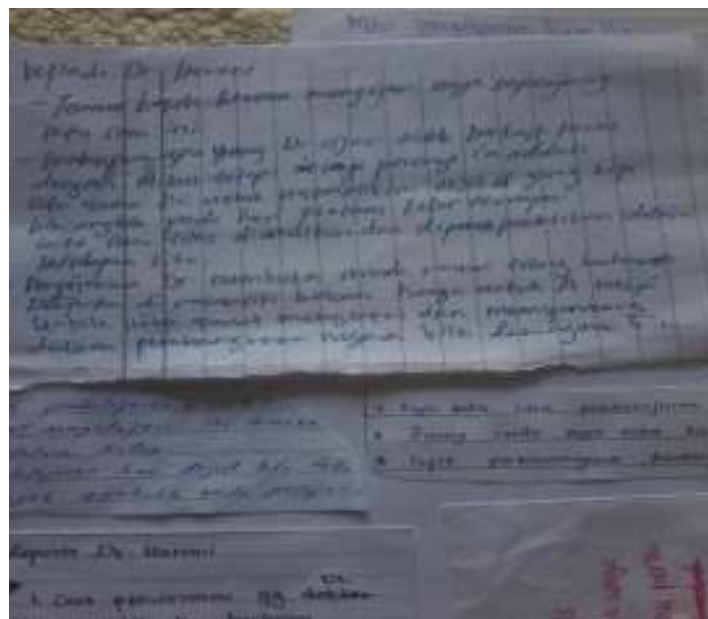
Figure 3. Reflection 2

Analysis of the students' reflections demonstrates that the students went through the thinking experience. However, they felt that they were forced to think and had to think about certain issues. Students also felt that the problem assigned to them was too heavy to be resolved. They also agreed that the problem had multiple answers or solutions and that the problem presented to them was related to other problems. Hence, the students came to a conclusion that the problem or issue given requires further research and should be continued beyond the TITAS course. The students' reflections show that the problem solving method has inevitably forced the students to think as deeply as possible. The researcher, however, is of the opinion that, in the case of her students, although the students felt that they were forced to think, these students need to be guided on how to think. The problem solving method has successfully made a person think but the thinking skill needs to be polished further to ensure that individuals are able to think better and critically.

Conclusion

In a nutshell, thinking skill is vital for each individual, specifically tertiary students. Problem solving method in teaching and learning, specifically through the use of today's real-life problem is perceived to be able to make the students' think. However, since the students were mostly young with the majority of them in their first and second semesters, they need to be guided correctly on how to think and the right way to think.

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Using Supplemental Teaching Materials Package in Flipped Classroom to Foster Active Collaborative Learning for Calculus

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Abstract

The current practice of teaching Calculus is based on conventional lecturing and tutorials. Lecturers use visual aids in the form of presentation slides, whiteboard writing and visualizers. Interactive class activities are occasionally initiated by individual lecturers to encourage participation, but the overall lessons remain very much teacher-centred. In this study, a package of supplemental teaching materials integrating problem-based and student-centered learning approaches was proposed to improve both teaching and learning quality. The flipped lessons have encouraged active students engagement both in class and outside of the classroom. The findings indicate a slight increment of student performance which is most likely due to the limited time to familiarize with the new package and learning approaches. Some practical issues, probable causes and action items are discussed for futher improvement.

Keywords: Calculus, flipped classroom, student-centred, problem-based, higher education.

Introduction

Calculus I (SQQM1043) is a fundamental and compulsory mathematics course for some undergraduate programs in UUM, such as Bachelor of Science (Decision Sciences), Bachelor of Science (Industrial Statistics), and Bachelor of Science (Business Mathematics). This mathematic subject is offered by the School of Quantitative Sciences (SQS) and is often taken by students during their first year of study. It is also a prerequsite for courses such as Calculus II (SQQM2034), Multivariate Calculus (SQQM 3034), Intermediate Calculus (SQQM2033) and Ordinary Differential Equation (SQQM3043). Thus, students must pass this course to enable them to continue with the next milestone of their study.

The current practice of teaching this course is based on conventional lecturing and tutorials. Lecturers use visual aids in the form of presentation slides, whiteboard writing and visualizers. Interactive class activities are occasionally initiated by individual lecturers to encourage participation, but the overall lessons remain very much teacher-centred. Sometimes, videos could not be played in the class due to the classroom not being equipped with audio systems, as most of the lessons are conducted in Tutorial Rooms (BT). In tutorial class, students are encouraged to solve the problem first before discussing within their groups. Although the course has some student-centred elements, the core of the learning process is mainly teacher-orientated. To improve on the teaching and learning of this course, we proposed a package of supplemental teaching material to implement problem-based and student-centered learning, to enhance the overall teaching approach as well as improve both the teaching and learning quality, which shall be explained further. This new package will be embedded in the flipped

teaching approach to encourage active student engagement in class and outside of the classroom. We also investigate the effectiveness of the integrated package of supplemental teaching and flipped classroom approaches.

Literature Review

Calculus I provides fundamental quantitative skills, namely, the concepts of differentiation and integration which students must acquire as these concepts are widely applicable in economics, finance, and engineering. However, these concepts are abstract, difficult to understand, rich in content and is arranged in a logical order (Zhitao, 2004).

As a result, Calculus I becomes one of the courses with high failure rates in SQS. Often, students who passed the course with a lower grade than B- are likely to fail in Calculus II, which is another compulsory course for SQS bachelor's degree programs. Failing to pass these Calculus courses and repeating classes may diminish the students' motivation, confidence, and self-esteem in learning the subsequent quantitative courses. Hence, this may prolong their study and affect their on-time graduation. Past studies and our own observation have shown that some students worked very hard but achieved undesirable poor grades, whilst some passed the course but forgot what they had learnt soon after the final examination. Thus, lecturers have to keep repeating the concepts learned in the higher level courses since the students often fail to utilize the concepts and techniques learned in Calculus I (Yuan, 2002). Some of the factors affecting student performance are the negative mindset that calculus is difficult to understand, the improper teaching technique applied during the class, and focused on scoring in the examination instead of understanding the methods and concepts (Hallet, 2006). In addition, Calculus I which is taken by first year students who generally have difficulties with learning independently (Zhitao, 2004). Thus, there is a need to improve the quality of teaching as well as the student learning experience in order to retain knowledge.

Methodology

This research was conducted in three phases: package development, experimental data collection, and data analysis. In phase one, we developed the new teaching and learning package which contains as follows:

(i)   Lecture notes that are typed and self-contained
(ii)   List of YouTube videos on the topic of differentiation in Calculus I
(iii)   A mathematical apps software related to a topic in Calculus I, called FX Math Solver
(iv)   An alternative online learning platform as a venue for questions and answers, such as Padlet.com

Meanwhile in Phase Two, we performed the experimental data collection as follows:

(i)   During the first day of the lesson, students are given a questionnaire to fill in their background and past Mathematics grade.
(ii)   The package of supplemental teaching is implemented for one topic (Differentiation) in Calculus I. Students' reflections through discussions/ interviews/ instructor observations are analyzed.
(iii)   The scores for coursework such as quizzes, and tests for particular topics are used to assess the students' performance.

The selected sample is group D comprising 36 students out of the total 145 students taking Calculus I for semester A162. At the end of Phase Two, we obtained the reflection of students' opinion towards calculus via online survey. In Phase Three, the collected data are analysed using quantitative methods, mainly descriptive statistics.

Overview of FX Math Solver as a Mathematical app

One of the interesting applications associated with learning mathematics and calculus is FX Math Problem Solver. This app is equipped with complete and specialized features to aid in the understanding of the concepts presented in each and every chapter of the subject. Thus, Calculus I can be made more interesting and easier to be understood by students whether inside or outside of the classroom.

FX Math Solver is a comprehensive math software based on an automatic mathematical problem-solving engine. This app contains almost 1500 samples of math problems and provides fully animated solution steps. It also supports the scientific calculator and graphing calculator, and is created to be a user friendly math problem expression editor in WYSIWYG mode, which is an acronym for *"what you see is what you get"*. In computing or apps, a WYSIWYG editor is a system in which its contents are either text or graphics, and can be edited in a form closely resembling its appearance when printed or displayed as a finished product such as a printed document, web page and also slide presentation. FX Math Solver can automatically solve problems and generate fully animated step-by-step procedures for problems typed in by the user.

Findings

Students Demographics

Out of 36 Malay students, 34 are from the Bachelor of Decision Science program; 1 from Finance; and 1 from Education. In terms of gender, 24 female students dominate the group.

The students come from several previous qualifications before continuing their undergraduate studies in UUM. There are 4 basic qualifications legally stated by the Ministry of Education: Diploma, Asasi (Foundation at UUM), Matriculation, or STPM (Sijil Tinggi Pelajaran Malaysia). Most had progressed from matriculation and STPM from all over Malaysia. Overall, 80% are ex-matriculation students, 14% are STPM holders and the remaining 6 % are from Diploma and Asasi, as shown in Figure 1.
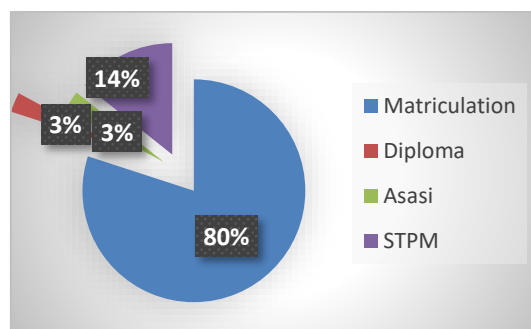
Figure 1. Previous Qualification

In this study, five steps are designed to test the students' understanding and effectiveness of FX Math Solver in flipped classroom.

Step 1: Watching video and online Quiz

The first step involves assigning an individual task where students have to watch the video given and then answer an online quiz via UUM online learning for 30 minutes. The quiz consists of 10 questions about differentiation and is conducted at the night before the next class.

Another quiz is then conducted a day later. This is repeated until the 5th step in the same class. All the students are required to answer the quizzes individually with the aid of FX Math Solver Mobile Apps, which can be downloaded from the Google Play Store and Apple Store. Every correct answer yields one mark or one point, and is recorded to identify the level of individual student performance with the aid of FX Math Solver Mobile Apps.

Step 2: Solving problems using FX Math Solver individually

In this step, students are given 10 set of question which similar to online quiz and solve it using FX Math Solver in 20 minutes.

Result from Step 1 and 2, we combined to see the difference such as follows:

Table 1
Quiz result

Marks	Online Quiz (%) in Step 1	FX solver (%) in Step 2
6-10	51	67
0-5	46	30
absent	3	3

From Table 1, we can see that exist the improvement when student use FX Math solver to solve to problem.

Step 3: Problem solving in pairs

The technique applied in this step is slightly different from that in step 2, but scoring systems is still conducted in the same way. In this phase, students are asked to individually answer 2 sets of question sheets, consisting of 10 questions each; the first is to be answered with the aid of FX Math Solver while the other sheet is to be answered without the app.
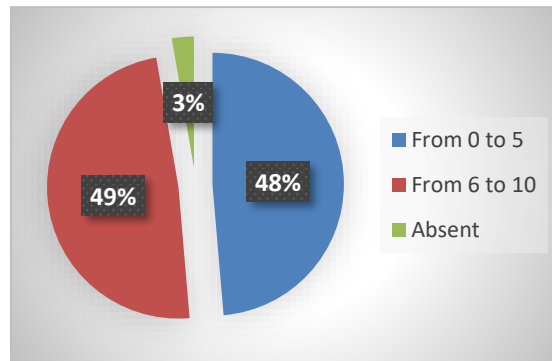
Figure 2. Result for pair task without using apps

The main reason for conducting different tasks is to measure the effectiveness of learning and understanding mathematical concepts with or without the aid of mobile apps. It is commonly known that mathematics is a complex subject and is difficult to understand, especially among students. Thus, the existence of FX Math Solver may be able to assist with the mathematical learning experience.

The first set of questions is aimed to observe students' performance when not using the FX Math Solver, and the scores are as shown in the pie chart above: 49% of students, which represents 18 out of 36 in totals, are able to score at least 6 to 10 marks while 17 scored 5 marks and below and 1 student is absent.
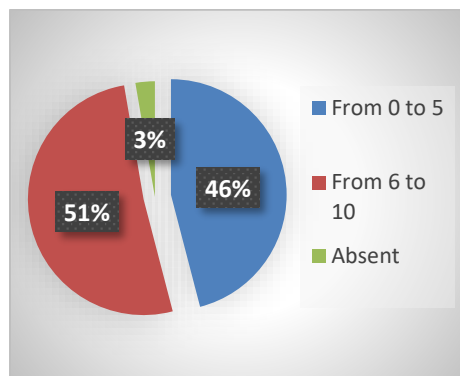
Figure 3. Result for pair task using apps

The second set of questions aims to identify the students' performance when using the FX Math Solver mobile app, and the scores as shown in the pie chart below. Based on the results obtained, 51% (19 out of 36) are able to score at least 6 to 10 marks, while 16 (48%) from them scored 5 marks and below.

Based on the results from Figure 2, slight differences can be found in both conditions. Namely, the number of students who scored at least 6 out of 10 marks increased from 49% to 51% with the aid of the mobile app. Therefore, it can be considered that the FX Math Solver has some contribution in improving the understanding of mathematical concepts.

Step 4: Problem solving in groups

Every student has his or her own preferred way of learning and understanding mathematical concepts. Most of the participants chose to study in a group, whilst some favoured handling their work individually and with mobile apps such as FX Math Solver.

The task in Step 3 was conducted to identify whether paired tasks (study in pair) with the aid of mobile apps FX math Solver may increase the learning effectiveness among students. In this step, the task was conducted with the same instructions as in phase 2, but with a slight difference in terms of procedure. In Step 3, students were asked to answer 2 sets of question sheets, each consisting of 10 questions, and each set was answered in pairs. Similarly with step 2, first set was answered without the aid of FX Math Solver while the other was with aid.
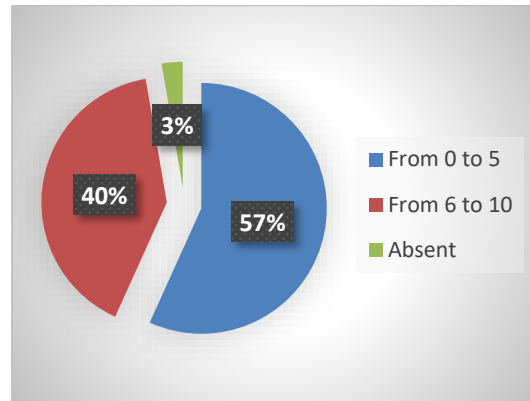
Figure 4. Result for group task without using apps

The first set of questions aimed to gauge the students' performance without using the FX Math Solver, and the scores are as depicted in Figure 4. This task was conducted in groups of three students. Based on the Figure 4, only 40% (14 out of 36) were able to score at least 6 to 10 marks, whilst 57% (21 of 36) scored 5 marks and below, and with 1 student being absent.
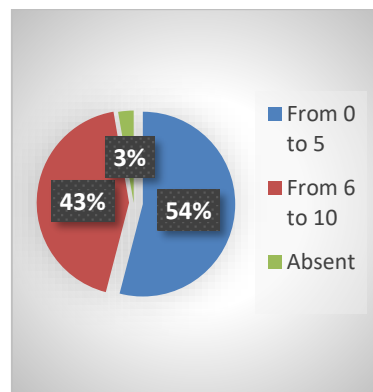
Figure 5. Result for group task using apps

The scores for the second set of questions conducted to measure the students' performance with the use of FX Math Solver is displayed in Figure 5 below. Similarly, this task was handled in groups of three students. Based on the diagram, 43% (15 out of 36) were able to score at least 6 to 10 marks, while 54% (20 of 36) scored 5 marks and below.

Throughout the data collected from both tasks in Phase 3, a slight difference can be found. The number of students who achieved 5 marks and below had decreased from 57% to 54 %. Hence, it can be deduced that the mobile app may have some contribution in the understanding of mathematical concepts. Based on the results obtained from Step 2, 3 and 4, the presence of mobile apps such as FX Math Solver may enhance the students' ability to solve

mathematical problems. However, at the same time it seems to be uninteresting to students. Most students enjoy spending their time on multiple mobile applications, but FX Math Solver mobile apps was not one of such. Thus, this app is generally not used as part of their reference materials.

Step 5: Reflection via padlet.com
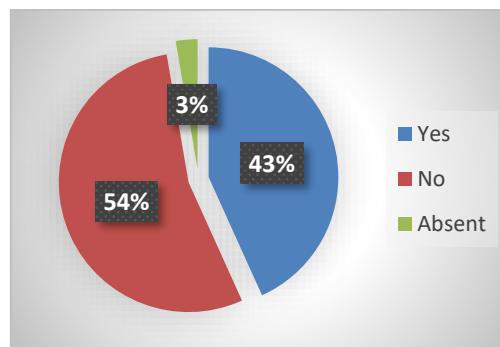
Figure 6. Student Preference using apps

A survey was carried out to identify the preference of mobile app FX Math Solver among the students using padlet.com. At 43 %, 16 out of 36 students preferred to use this app whilst the remaining 54%, or 19 students, were not keen to. FX Math Solver provides helpful examples, is easy to use, and provides various solutions with different methods. The students who disagreed on the effectiveness of this app stated that it is difficult and complicated to use, as some of them were more comfortable with traditional ways such as referring to their books and lecture notes. Another reason is that there are some limitations in the app, such as the solutions are only provided for certain chapters and concepts. Moreover, FX Math Solver is not a free application, thus some of the students felt burdened to purchase it.

Reflection on the Flipped Classroom

Based on the online survey conducted on flipping the classroom to foster an active collaborative learning among the students, some important information was gained from 34 respondents.

One of the responses obtained was the initial reaction from the students when the class was told to be replaced with videos. Most of them agreed saying it would be good, interesting, fun, and quite helpful. Some stated that this video may act as an alternative way of learning and understanding the calculus subject, but less than 5 students were in disagreement by saying that the video replaced was not enough and that they would not be able to fully understand the concept, instead preferring to learn in class as usual.

In terms of engaging the students with the videos, the teacher set up activities such as conducting a quiz or jotting down the notes, and then had them sent to the teacher. From 34 respondents, 65% agreed to take notes and send it as feedback while 35% preferred to take a quiz after watching the videos.

For student-centered aspects, learning via video is one of the best strategies where students can learn by themselves. Based on the survey, 74% of students agreed that watching the prepared videos was similar to self-learning. The rest of the respondents disagreed with such statement as sometimes they may not understand the video and have questions to ask but are unable to do so. On the other hand, the remaining 26% preferred a regular classroom instead of learning via video.
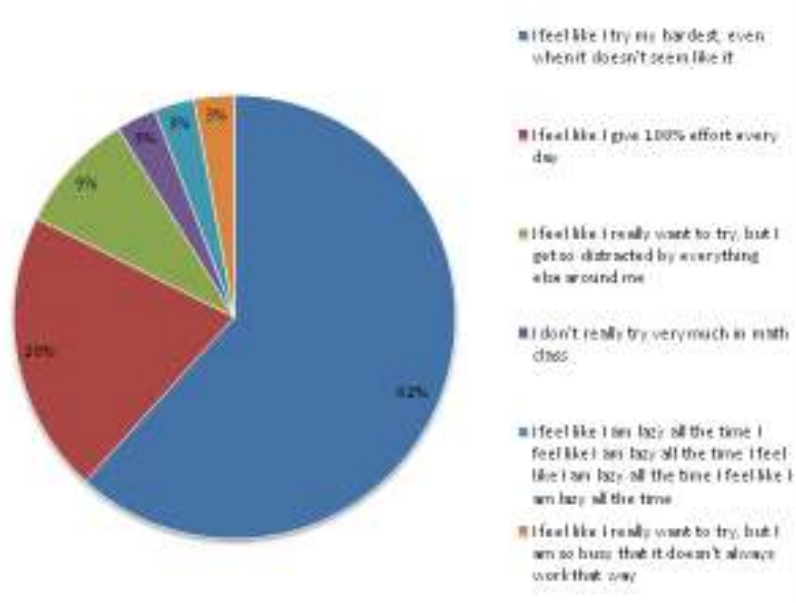
Figure 7. Student effort in flipped classroom

In this survey, students were also asked about their effort in the flipped classroom. The results show that 62% said "I feel like I try my hardest even when it does not seem like it", whereas 20% said "I feel like giving 100% of my effort every day; 9% stated that "I feel like I really want to try, but I get so distracted by everything else around me", while the remainder of 3% stated that "I do not try very much in math class", "I feel like I am lazy all the time" and "I feel like I really want to try, but I am so busy that it doesn't always work that way".
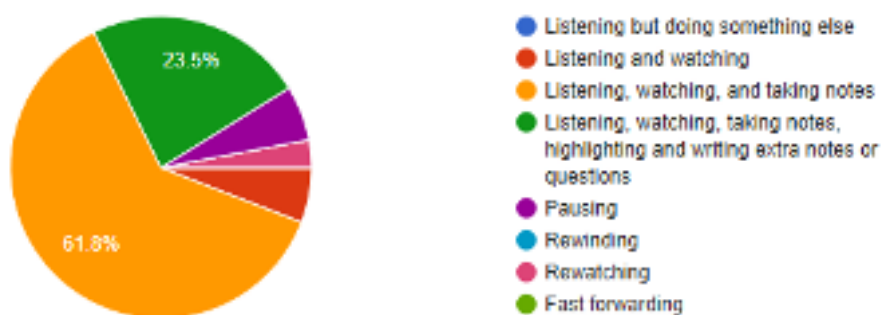
Figure 8. Student activities while watching video

There were several reactions when asked "What were you doing when you watched the videos?"; 61.8% claimed that they were listening, watching and taking notes, while 23.5% were listening, watching, taking notes, highlighting and writing extra notes or questions. The rest of the respondents, at 5.9% listened and watched, with 5.9% pausing and 2.9% re-watched the videos. The details show that most of the students were active listeners and gave a good response while watching the videos.
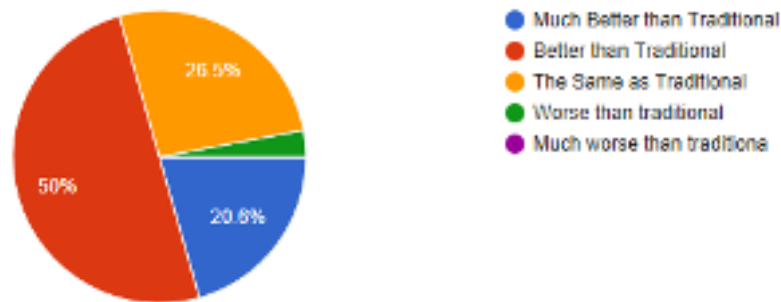
Figure 9. Flipped classroom vs Traditional classroom

This flipped classroom is aimed to help students enhance their learning and understanding of the concepts of calculus. 50% of the respondents stated that this flipped classroom was better than traditional learning in the class; 26.5% felt that this activity was just the same as traditional classrooms; and 20.6% boldly and confidently admitted that this activity was much better than the traditional method which has helped them well in understanding calculus. Unfortunately, the remaining 2.9% of respondents were in disagreement and stated that the flipped classroom was worse than traditional learning.
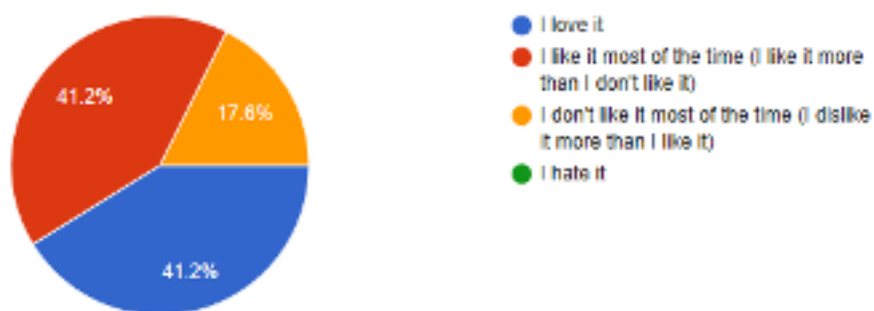
Figure 10. Student opinion about flipped classroom

When asked about their opinions and what they felt about the flipped classroom, most of them liked it most of the time (they like it more than do not like it). 41.2% stated that they

love it. 6 respondents, at 17.6%, disliked it most of the time. In addition, 5 out of these 6 respondents achieved a result of between D+ and C+.

In order to ensure that the students become a responsive and active listener, the duration of the videos were considered in this flipped classroom activity. 16 respondents, the majority, agreed to have 10-minute-long duration videos whilst 38.2% preferred to have less than 10 minutes; 8.8% suggested for 15 minutes and the final 2 respondents felt that 20 minutes and longer were more favorable.
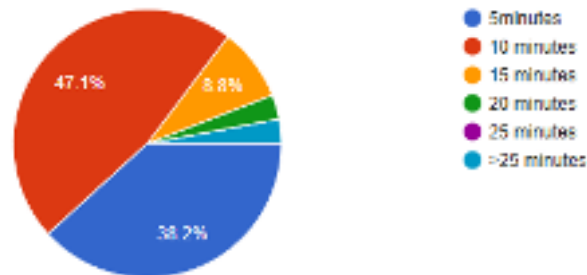
Figure 11. Video duration

Conclusion

As a conclusion, from the students' view, the flipped classroom is better than the traditional classroom. They also become more encouraged to try harder at understanding the content presented in the videos. They prefer the flipped classroom that is conducted as follows:

a.   Length of video is less than 10 minutes
b.   Having activities after watching video, like a quiz or sending notes to the teacher, in order to promote student engagement

Based on these findings, the instructor must have a clear objective, conduct assessments on online learning, and keep the length of video to about 5 minutes. For improvement, more elements of group discussion and peer study can be included in the new package.

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Investigating Students' Learning via Virtual Reality Videos in Organizational Behavior Classroom

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Abstract

The learning of Organizational Behavior (OB) course is abstract and perceived as difficult by students as they are unable to visualize the behavioral concepts and situations happening in an organization. This can be fixed by using Virtual Reality (VR) videos. VR videos can offer a personalized learning experience to all students, by virtually bringing them into the organization to experience the organizational ambience. For this purpose, this research attempts to investigate the effectiveness of virtual reality videos on improving students' understanding of the learning content in an OB classroom. The respondents for this research were 60 undergraduates who enrolled in an OB course in a public university in Malaysia. An experimental research design was employed whereby one group of 30 respondents was randomly assigned to the intervention (VR videos) and the other group acts as the control group with no intervention (traditional learning method). Four sets of case studies were used as data collecting instruments and were given to the respondents after each learning session. The data were then collected and analyzed using ANOVA statistical analysis. The findings revealed that the students who experienced the VR videos used showed higher understanding compared to those who used traditional method, therefore adducing a scope of implementing technology in a non-IT classroom such as Business to enhance the learning process.

Keywords: Virtual reality video, Organizational Behavior, understanding, learning, university

Introduction

In the digital age, creative media is prolonged to create high-impact teaching and learning activities and to enhance the quality of teaching and learning. The technology-enabled innovations such as Virtual Reality (VR) videos are harnessed to offer more personalized learning experience to all students. It also attempts to promote effective, enjoyable and meaningful learning.

Essentially, students in higher learning institutions are encouraged to learn through gratifying approach, however, not all courses are taught in such a way. This is applicable to one of the course in higher learning institution which is known as Organizational Behavior (OB). The learning of Organizational Behavior (OB) course is a challenging task. The content is basically on how an employee behaves in the organization by engaging in motivation, communication process, leadership styles, teamwork, managing conflicts, emotion and personality in the organization so that they can help to achieve the efficiency and effectiveness of their organization.

In many public universities in Malaysia, Organizational Behavior (OB) course is a core subject for undergraduate students who are taking Bachelor of Business Administration (Hons.) programme. This course introduces students to organizational behavior as a whole. The course stresses on the concepts of individual, group and organizational system and the importance of the concepts towards improving the effectiveness of organization. This course also covers the roles of manager in understanding and applying the concepts in developing and retaining the competitiveness of the organization.

Currently, for this course, the teaching and learning is conducted in traditional method whereby the students attend three hours lectures and the syllabus covers from the process of individual, group and interpersonal process, towards organization process.

Issues with Organizational Behaviour Classroom

Organization Behavior (OB) subject delivers a clear picture of the human side of organizations together with general causal models that allow managers to determine action in order to improve the use of resources. The learning content is much more confined with accumulation of specialist content with less involvement of students to both practices and theories (Costia & Crump, 1999). The main issues concerned with organizational behavior subject are: first, in many business schools, the students undertake the learning, in traditional model such as lectures, complemented discussion and online reading materials (Smith & Clark, 2010). The face-to-face model of a number of lectures plus a single tutorial each week has been a standard approach to course delivery (Butt, 2014) in business course such as OB for decades.

Secondly, OB teaching requires systematic consideration of intellectual developments and discourses. It means OB relies on multitude of theoretical sources which is unmanageable to be teaching in the particular way such as lecture and online discussion (Costia & Crump, 1999). The maintenance of the formal lecture and tutorial structure is despite significant evidence that the traditional lecture format is not the most effective way for most students to learn (Butt, 2014).

A need analysis was done with the OB course students in a public university in Malaysia, indicated that students were struggling with the concepts, theories and models of the organizational behavior execution which are very abstract and difficult to visualize. An analysis of the questions asked to students revealed areas of misunderstanding that students were encountering at the beginning of the course that appeared to carry forward for the remainder of the course. Therefore, the students find the course frustrating and demotivating.

In addition, it is tiresome for students to learn as it is a content based subject which has too much of information to digest. This is a complicated task that is perceived as hard and rigid by the undergraduates who have no idea of the real organizational background and environment. They also differ in their ability to understand material which is very abstract and difficult to visualize. Eventually, these accelerate their lack of engagement, motivation and interest. As a result, the students performed poorly in the subject.

The millennial students are less concern about the authority of the knowledge and focus more on finding easiest way to understand the things and processes. In other words, the students feel content when the practicality of a learning aid especially technology based would enable them to understand the content-based subject (Albert & Beatty, 2014; Smith & Clark, 2010). In order to develop their capacity in learning, they should be encouraged by articulating their processes and arguments on both theoretical ideas and social practices. The adequate practices definitely boost their learning experiences towards variety learning styles.

The evolution of teaching and learning method in academic fields are moving from

traditional approach (teacher-centered) towards modern approach (student-centered). In this circumstance, organizational behavior (OB) is not an exceptional. The new teaching method is applied in organizational behavior through two-way communications, adaptation of games, role play, case method and others. In other words, teaching and learning organizational behavior subject shifted from tacit knowledge towards applied knowledge. These learning environments should be "student-centered" in that it is through student activity with the guidance of the teacher that learning occurs. Prince (2004) describes for active learning, students are required to do meaningful learning activities and think about what they are doing. Baeten et al. (2010) find that student-centered learning approaches are more likely (among other factors) to lead to a deep approach to learning. As a transition to a student-centered approach, educators can more effectively apply technology to improve learning outcomes (Froyd & Simpson, 2008). Therefore, it is crucial that there is some technological-based pedagogical innovation in order to maintain students' motivation and engagement (Smith & Clark, 2010) in the OB classroom.

Digitalizing Organizational Behaviour Classroom

This research attempted an approach to incorporate virtual reality video as a learning aid in an OB classroom as to improve students' understanding of the learning content. The motivation of this research originates from the advantages of virtual reality reviewed in past literatures. There are increasing volumes of computer simulation such as virtual reality videos that are utilized in higher education for teaching and learning process (Merchant, Goetz, Cifuentes, Kennicutt & Davis, 2014).

Virtual Reality (VR) video has been used in classrooms to involve students in the learning process and it caters students with all learning modalities (Huang, Rauch, & Liaw, 2010). It actually bridges the real world into the classroom, rather than learning it in a lecture room. It enables students to interact with the real scenario rather than listening to the lecturer and trying to imagine an abstract scenario (Huang, Rauch, & Liaw, 2010). Figure 1 illustrates a screen example of a virtual reality video used to teach OB content.

Figure 1. Example of an Organizational Virtual Reality Video (Source: https://www.youtube.com/watch?v=GYPCjznfvu0)

In this research, a few VR videos related to the students' learning outcome in OB course will be employed. The students will interact with the VR videos through the usage of VR Cardboard (Figure 2) and smart phones (Russell, 2015). Zhang et al. (2017) stated that the application of VR in improving users' learning outcomes, especially in perceived learning

effectiveness, is a new area. VR also provides visualization and interaction within a virtual world that closely resembles a real world, bringing an immersive study experience (Merchant et al., 2014).

Virtual reality video will provide a multi-genre virtual learning environment that engages and draws students into a different interaction with course learning content (Hussein & Natterdal, 2015). Students are able to learn while creating and integrating 'schema' to understand better as they can be involved in a particular situation happening in the organization. This will offer the students a welcome change from routine lectures in the classroom (Monahan, McArdle, & Bertolotto, 2008). and also arouse their interest in being in a condition that resembles an organization environment.

Figure 2. VR Cardboard

Methodology

This research was conducted at a public university in Malaysia. The sample for this research is 60 undergraduate students who enrolled in an OB course. It employed a experimental research design whereby one group of selected participating sample are randomly assigned to the intervention which is the VR videos and the other group act as the control group with no intervention (traditional learning method). In this research, 30 respondents who were assigned randomly to the use the intervention become the experimental group and another 30 respondents become the control group. All of them are homogeneous in term of the prior knowledge of the learning content.

This experimental research was carried out for the duration of 4 weeks, using four VR videos (one for each week), with a purpose of improving students' understanding of the OB content and engages them in learning. A virtual learning environment (VLE) approach was adopted whereby the students were given the VR videos as learning aids. 30 respondents (experimental group) viewed the VR videos using VR Cardboards and Smartphone. The students were expected to experience the virtual reality videos which will help them to explore and interact with the scenario by themselves. The control group was given no intervention and used lectures and tutorials for their learning.

The effectiveness of the VR videos on improving students' understanding was assessed. The instruments that were used include four sets of OB case studies to measure students' understanding. Pre-tests were administered before the execution of the interventions. After each intervention, the respondents were given an OB case study as their post-test. The students took 45 minutes to answer the case study. As the pre-test and post-test questions were similar, test-wise effect may occur whereby students may show an improvement on the post-test simply

as a result of their experience with the pre-test. To minimize this effect, the orders of the pre-test and post-test questions were randomized. The data were then collected and was treated statistically using ANOVA parametric statistic and the results are described in the following section.

Findings

The purpose of this research is to improve the content understanding of the Organizational Behavior course. In achieving the main research aim, an innovative pedagogical approach by utilizing virtual reality videos was adapted as a learning tool. Among the aspects that are evaluated is students' understanding of the learning content.

The sample for this research is 60 undergraduate students who enrolled in an OB course. 30 respondents were assigned randomly to the use the intervention and another 30 respondents become the control group. Table 1 depicts the respondents' demographic profile.

Table 1 shows the respondents' demographic profile. The analysis of the respondents' gender revealed that more than half (60.0%) of the respondents are females and 40.0% are males. Most of the respondents were predominantly Malaysian, who accounted for 76.7%, and the international respondents are 23.3%. 57 of them are in the age range of 20 to 29 years old and 3 of them are below 20 years old.

Table 1
Respondents' demographic profile

Demographic Characteristics		C	E	T
Gender	Male	9	15	24
	Female	21	15	36
Nationality	Malaysian	18	28	46
	International	12	2	14
Age (years old)	Below 20	2	1	3
	20-29	28	29	57
	30-39	0	0	0

*C= Control; E= Experimental; T=Total

The respondents were randomly divided into two groups; experimental and control. The experimental group experienced the VR videos while the control group used traditional method of learning. Table 2 describes the descriptive statistics for four pre-test and post test mean scores.

The statistical analysis in Table 2 reveals that both groups scored almost the same in the pre-tests; however, they differ in the post-test scores. The experimental group scored a higher mean scores during the post-test compared to the control group. The mean average of the experimental group pre-test scores is 4.02 and for the post-test scores is 14.78. As for the control group, the average of mean for pre-test scores is 3.97 and for post-test scores is 11.75. The mean scores indicate that the students who used the VR videos ($\overline{X}_{\text{Post-Pre}}$ = 10.76) scored higher on their understanding of the learning contents compared to students who used the traditional method ($\overline{X}_{\text{Post-Pre}}$ = 7.78). This means that the students were more successful in understanding the learning content when they used the VR videos.

Table 2
Descriptive statistics for Pre-test and Post-test Scores

Item	Group	n	Mean	sd
Pretest1	Experimental	30	4.03	1.920
	Control	30	4.23	2.299
Pretest2	Experimental	30	3.73	2.033
	Control	30	4.56	2.661
Pretest3	Experimental	30	3.80	1.901
	Control	30	3.23	2.028
Pretest4	Experimental	30	4.50	2.345
	Control	30	3.83	2.150
Posttest1	Experimental	30	15.93	2.303
	Control	30	11.63	2.671
Posttest2	Experimental	30	14.60	3.069
	Control	30	11.63	2.042
Posttest3	Experimental	30	14.26	3.226
	Control	30	11.86	2.738
Posttest4	Experimental	30	14.33	3.198
	Control	30	11.86	2.161

*n= number of students, sd= standard deviation

To further investigate the research question, an ANOVA was conducted to see if there is a significant difference in the students' understanding between those who experienced the VR videos and those who don't. The data were distributed normally, the Levene's test for homogeneity of variances results for all the pretests revealed that the *p*-value is greater than 0.05 (*pre1= 0.33, pre2=0.09, pre3=0.84, pre4=0.76)*, indicating that the variances in the post-test scores between both groups are approximately equal indicating that they were homogenous with their prior knowledge.

Table 3 describes whether the groups; experimental and control, are significantly different in terms of the post-test scores. The *p*-value for each all the means scores of the post-tests are lesser than 0.05 ($p_1=0.00$, $p_2=0.00$, $p_3=0.03$, $p_4=0.01$), therefore indicating that there is a significant difference between respondents who experienced the VR videos and the students who were in the control group. Hence, this suggests that students who used the VR video obtained higher understanding compared to students did not used the VR videos.

Table 3
ANOVA Test of Between-Group for Students' Understanding

Item	t-test for Equality of Means		
	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Pretest1	.716	-.2000	.5470
Pretest2	.178	-.8333	.6114
Pretest3	.269	.5667	.5076
Pretest4	.256	.6667	.5810
Posttest1	.000	4.3000	.6440
Posttest2	.000	2.9667	.6731
Posttest3	.003	2.4000	.7726
Posttest4	.001	2.4667	.7048

Discussion

The use of virtual reality (VR) videos in education can be considered as one of the natural evolutions of computer-assisted instruction (CAI) or computer-based training (CBT). It can stimulate learning and comprehension, because it provides a tight coupling between symbolic and experiential information. Research stated that it provides an alternate method for presentation of material as it can more accurately illustrate some features, processes, allowing extreme close-up examination of an object, observation from a great distance, observation and examination of areas and events unavailable by other means. Virtual reality video motivates students, grabs attention and encourages active participation rather than passivity.

The findings of this research indicated that utilizing the VR videos in OB classrooms gives the students a concrete experience of the organizational behavior scenarios. This allows them to reflect their observations, and further conceptualization of modified and new ideas. This will later encourage the students to gather information and use imagination to solve problems in their organization behavior classroom. In this research, the use of VR videos was a successful complement to conventional teaching. The students were able to understand and visualize situations related to organizations. In conclusion, the use of VR videos in the learning environment contributes more information, deeper comprehension, better perception and more efficient memorizing.

Conclusion

The findings from the research are expected to open up new means for non-technology courses such as Business to improve students' understanding and enhance classroom engagement. Virtual reality (VR) videos are an aid to engage students and also to overcome the limitations of traditional teaching strategies. The students are able to involve a real scenario of an organizational behaviour rather than reading it from textbook or PowerPoint notes.

Hence, the outcome of this research could also be successfully adapted into different classroom setting or disciplines. By highlighting the potential of virtual reality as a strategy to enhance non-IT classrooms' learning experience, it may answer to several pedagogical principles and learner modality. Therefore, it will be a useful instructional aide to teach abstract and raise standards of teaching achievement more effectively.

Acknowledgement

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Cultivating Communication Skills Through Problem-Based Learning (PBL)

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Abstract

Problem-based learning (PBL) is a concept of small group learning where it is a "student-centered" pedagogy in which students learn "from problems" (Barrows 1996; Kwan & Lee 2009). Chen & Sun (2006) stressed that PBL can help develop students' judgment, creativity, critical thinking, and information integrating abilities. It involves student's core knowledge, cognitive skills and action skills (Burch, 2001). The purpose of this study is to examine if the method of PBL may improve students' communication skills. The study was conducted using action research methodology in an Accounting class. The study found that students are more active and highly participating during the deliverance of course content with the use of PBL. Thus, enhance their communication skills.

Keywords: Problem-based learning (PBL), Education, Action research.

Introduction

Communication skills is generally defined as the way of communication that is highly structured used to express ideas. Zaid and Abraham (1994) stressed the need for the reconsideration of an emphasis on communication skills in the accounting education, a role which arises from the very nature of accounting as the processing and communication of information. A number of studies emphasize the view that both oral and written communication skills are recognized to be the two most essential skills (Clark, 1990; Deppe et al., 1991; Novin and Tucker, 1993; Nelson et al., 1996; Morgan, 1997; DeLange et al., 2006). An employer survey on satisfaction of new graduates showed that there were skill deficiencies in important areas, such as problem solving, creativity and flair, and oral business communications (ACNielsen Research Services, 2000). This was supported by Kavanagh & Drennan (2008) who discovered that students are becoming aware of employers' expectations in terms of communication, analytical, professional and teamwork skills. Accordingly, there is an urge to develop the communication skills among the students with sufficient practices. Shepherd (1998) reports that problem-based learning can have a positive effect on students' acquisition of critical thinking skills. PBL can increase students learning performance, capabilities in handling given problems and help improve their lifelong independent learning skills (Gallagher, Stepien, Sher, & Workman, 1995; Stepien, Gallagher, Workman, 1993; Becker, Wong & Ravitz, 1999) and these enhance students' communication skills. Therefore, the purpose of this study is to examine if the method of PBL may improve students' communication skills.

Research Objectives

The research objective of this study is to examine how Problem-Based Learning (PBL) helps to cultivate communication skills among the accounting students.

Research Questions

The research question of this study is how will the use of Problem-Based Learning (PBL) help to cultivate the communication skills among the accounting students?

Methodology

This study employed action research. Action research is open ended where it does not begin with a fixed hypothesis. It begins with an idea that the practitioner developed. The research process is the developmental process of following through the idea, seeing how it goes, and continually checking whether it is in line with expectation of the practitioner. Action research is viewed as a type of self-evaluation. It is used widely in professional contexts such as appraisal, self-assessment and mentoring. The methodology of action research means that the practitioner has to evaluate what he/she is doing. The practitioner needs to check constantly that what he is doing really is working. This awareness of the need for self-evaluation shows one willingness to accept responsibility for his own thinking and actions.

The lecturer observation checklist and field notes will be used by the lecturer/ researcher to obtain data throughout the intervention. This tool provides information of changes on how well his/her students understand and apply the skill strategies throughout the time.

The accounting students comprised of 35 participants were under studied. In this study, the lecturer is acting or behave as if she is 'the instructor' in the learning session. The instrument used to measure the communication skill is Presentation Rubric. In this study, the researcher's reflection and observation checklist was used to gather data throughout the intervention. This provides information of changes /improvement on how well the students develop participation, reaction and understanding.

Below were the cycles used in this study:

Cycle 1: The researcher will build students' problem awareness, monitor and underpin student learning, and avoid giving immediate results. Students should be independent and have self-management and learn through group collaboration. Students are divided into five members per group. Each group of students will be distributed with a case or problems. The students are given specific time to solve the case or problems during the class. Observations and field notes were taken by the researcher on each group to understand the situation during the discussions

Cycle 2: The same activities and cycle as in the first phase were conducted. The researcher made improvements based on the reflections, observations and field notes based on the first cycle. The researcher approached the students directly during the group discussions more frequently.

Literature Review

Learning Techniques

Discussing the issue of effective teaching requires us to firstly understand the definition and ultimate goal of teaching and learning. Atkins, Brown and Brown (2002) defined that teaching is an activity that concerned with providing students with opportunities to learn and the objective of learning are to gains knowledge and skills, deepening of understanding, the development of problem-solving and changes in perception, attitudes, values and behaviour. Learning is the lifelong activities for everyone to be successful our life. Therefore, an effective learning process is vital to ensure the learning process leads to its intended goals. Various techniques and strategies has been introduced and applied in the classroom to ensure effective teaching and learning activities. In addition, Brown also highlighted another important goal of learning that is to develop the capabilities to learn to the students. Clear understanding of these definitions will improve our understanding on the criteria for effective teaching and learning in our teaching and learning sessions.

The effectiveness of a particular teaching methods such as the experiential learning, problem-based learning and co-operative learning have been discussed by many authors. For instance, Albanese and Mitchell (1993) provide evidence on the impact of using the PBL on medical students. They found positive and negative impacts of PBL as a teaching method in a medical school setting. Their study shows that medical students who have gone through the PBL learning methods perform well on clinical evaluation and faculty evaluations. However, they scored lower on basic sciences examination; view themselves as less well prepared for the examination. The PBL students also tend to engage in backward reasoning rather than forward reasoning and appeared to have gaps in their cognitive knowledge compare to their traditional learners' counterparts. Slavin (2010) found that the positive impact of co-operative learning is depending on two key factors that are the availability of a clear group objective and the effective individual learning skill of every member. Kirschner, Sweller, and Clark (2006) categorised the experiential, problem-based and inquiry-based teaching as the less instructional teaching methods.

PBL in Classroom

Problem-based learning (PBL) is a concept of small group learning where it is a "student-centered" pedagogy in which students learn "from problems" (Barrows 1996; Kwan & Lee 2009). Chen & Sun (2006) stressed that PBL can help develop students' judgment, creativity, critical thinking, and information integrating abilities. It involves student's core knowledge, cognitive skills and action skills (Burch, 2001).

Trop & Sage (2002) and Hmelo & Evenson (2000) urged that the instructor should build students' problem awareness, monitor and underpin student learning, and avoid giving immediate results. Students should be independent and have self-management and knowledge-seeking inner self and learn through group collaboration in PBL context. Shepherd (1998) reports that problem-based learning can have a positive effect on students' acquisition of critical thinking skills. PBL can increase students learning performance, capabilities in handling given problems and help improve their lifelong independent learning skills (Gallagher, Stepien, Sher, & Workman, 1995; Stepien, Gallagher, Workman, 1993; Becker, Wong & Ravitz,1999).

Findings and Discussion

Table 1
Student Group's Presentation Rubric during 1st cycle

	Traits	N	Poor	Fair	Good	Excellent
1	Organization	5				5
		(100%)	(0%)	(0%)	(0%)	(100%)
2	Idea/Delivery	5	0	0	0	5
		(100%)	(0%)	(0%)	(0%)	(100%)
3	Multimedia Support /Visual Aids	5	0	0	0	5
		(100%)	(0%)	(0%)	(0%)	(100%)
4	Non-Verbal Skills	5	0	0	0	5
		(100%)	(0%)	(0%)	(0%)	(100%)
5	Verbal Skill	5	0	0	1	4
		(100%)	(0%)	(0%)	(20%)	(80%)

After all group discussions finished, the presenters from each group did their presentations. The presentation rubrics (see Table 1) showed that in terms of organization, idea/delivery, multimedia support/visual aids, and non-verbal traits, all presenters followed logical sequence and provided excellent explanations and elaboration. The presenters were able to deliver ideas with great clarity, used excellent quality of multimedia support and visual aids and maintained excellent eye contact with commendable gestures, posture and appearance. However, only one group in good level where they had only good interaction with the audience, correctly pronounced terms, made minimal grammatical errors and spoke clearly.

Table 2
Student Group's Presentation Rubric During 2nd^t cycle

	Traits	N	Poor	Fair	Good	Excellent
1	Organization	5				5
		(100%)	(0%)	(0%)	(0%)	(100%)
2	Idea/Delivery	5	0	0	0	5
		(100%)	(0%)	(0%)	(0%)	(100%)
3	Multimedia Support /Visual Aids	5	0	0	0	5
		(100%)	(0%)	(0%)	(0%)	(100%)
4	Non-Verbal Skills	5	0	0	0	5
		(100%)	(0%)	(0%)	(0%)	(100%)
5	Verbal Skill	5	0	0	0	5
		(100%)	(0%)	(0%)	(20%)	(80%)

After all group discussions finished, the presenters from each group did their presentations. The presentation rubrics (see Table 3.8) showed that in terms of organization, idea/delivery, multimedia support/visual aids, non-verbal and verbal traits, all presenters followed logical sequence and provided excellent explanations and elaboration. The presenters were able to deliver ideas with great clarity, used excellent quality of multimedia support and visual aids, maintained excellent eye contact with commendable gestures, posture and

appearance, had excellent interaction with the audience, correctly pronounced terms, and slight grammatical errors and spoke clearly.

Conclusion

This study showed that students' participation increases with the use of PBL as learning tool. In conclusion, learning and teaching through PBL help students increase their communication skills.

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Using "Hay Day" Game to Support Students Learning

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Abstract

Game based learning is one of the innovative approaches to complement classroom teaching. It utilizes game related technology and features to support and facilitate students learning. This paper discusses the deployment of game in teaching Enterprise Resources Planning (ERP) topic. After the students attended the face-to-face lecture, they are given a task to implement ERP using a game called Hay Day. Hay Day game simulate the agricultural activities, where students can apply ERP concept to manage the resources in their farm in order to obtain optimum production and profit. Student's feedback on their experience applying ERP on Hay Day game is recorded using a set of questionnaires with 7-likert scale. At the end of the course the students take the final examination which including the ERP topic. The marks for that topic is taken and compared with previous semester students. The findings show that students are very positive towards Hay Day as a tool for their learning. Furthermore, their achievement on ERP topic is superior compared to the previous semester.

Keywords: Game Based Learning, Hay Day, Blended Learning, Teaching & Learning, Enterprise Resources Planning

Introduction

To date, teaching is one of the challenging tasks faced by most of academician. In line with the current practice in teaching and learning (T&L) academician nowadays facing various challenges such as in applying student-centred learning, succouring students with higher order thinking skills (HOTS) and facing students' undesired behaviours (Kasim & Abdurajak, 2018). Therefore, teaching required a lot of efforts in order to make it more interesting and gain students' interest. On the other part, student should "enjoy" their learning, motivated to attend the lecture hall and be able to participate in the learning activities (López-Fernández et al., 2019).

Game based learning and gamification are another innovation in T&L, where students can learn in a fun and interactive ways. In T&L context, gamification refers to a set of activities and processes to increase students' learning by applying the characteristics of game elements. The games that are used in T&L can be distinguished into two categories (All et al., 2016): special purpose games which have been developed with an educational purpose and Commercial-Off-The-Shelf games that have been developed for entertainment purposes, but that are being deployed in an educational context.

Game can be implemented along with existing blended learning approach that emphasis on the use of information & communication technology (ICT) to complement face-to-face learning. Previous studies have shown that blended learning have a positive effect on students' participation and improving their performance (Yamin & Ishak, 2017; López-Pérez et al., 2011).

In this study, an online game that is Hay Day has been adopted to teach Enterprise Resources Planning (ERP) topic. The elements provided by Hay Day provide a magnificent experience to students to learn, practice and understand ERP.

Related Studies

A survey by Koivisto & Hamari (2019) reveal that majority of the empirical research on gamification in 2011 to 2015 (first half) was conducted in the domain of education and learning. This shows that gamification has been one of the popular approaches applied in education. Kusuma et al (2018) collect and review articles on gamification in education from 2009 to 2018. They classified the articles into four domains applications: generic, STEM, history, and language. STEM stands for Science, Technology, Engineering, and Mathematics. Kusuma et al also found that most of their surveyed articles were from 2014 to 2017. This shows that gamification in education has been a major interest in T&L in those years.

Example of the studies that deployed games in T&L are Faghihi et al (2014) and Ke (2013) deployed games to teach mathematics, Müller et al (2016) in factory management education, and Alhammad & Moreno (2018) in teaching software engineering. These studies demonstrate that gamification approach is beneficial to facilitate T&L.

Gamification also can increase student's motivation and interest towards learning (Koivisto & Hamari, 2019). It has been progressively accepted as one of the best approaches to increase users' engagement or motivate teach (Rodrigues et al., 2019), improve students' achievement (Yildirim, 2017) and minimizes distraction and boosts the learning curve (Kayimbasioglu et al., 2016).

Methodology

In this study respondents were requested to play a game that is related to the ERP topic. The ERP is one of the main topics in Operation and Manufacturing Information System course. ERP is somewhat difficult to understand as it involves planning and decision making. Usually, ERP is implemented at the middle and high level of organization management.

The game used in this study is Hay Day (Figure 1). Hay Day is a freemium mobile farming game developed and published by Supercell. Hay Day was released for iOS on 21 June 2012 and Android on 20 November 2013. The game is suitable to demonstrate planning and decision making in order to increase the production based on the limited resources.

The respondents are students who are taking BJIP2053-Operation and Manufacturing Information System in the first semester 2017/2018 (A171). Students were given questionnaires to measure students' knowledge on ERP transaction and their attitude towards Hay Day as a learning tool. The questionnaires apply 7-likert scale that range from 1 (Very poor) to 7 (Exceptional). The feedback from both questionnaires were analyse using frequency analysis.

In measuring the impact of the study on students' academic performance, students answer for ERP topic from the final exam question were extracted. The mark obtained by the students were compared with the previous semester students.

Figure 1. Hay Day Game

Findings & Discussion

In the analysis, the respondents' feedback is rescaled into three group's poor (1-3), fair (4), and good (5-7). The pre-test analysis is shown in Table 1 and Table 2. Table 1 shows respondents' ERP transaction skills performed through Hay Day. The findings show that most of the respondents' skill are good with average score more than 4.

Table 1
ERP Transaction Skills through Hay Day Game

	Poor (%)	Fair (%)	Good (%)	Average Score
1. How would you rate your ability to accomplish transactions to procure inventory in Hay Day Game?	0	40	60	4.6
2. How would you rate your ability to accomplish transactions to set (and change) prices and sell products in Hay Day Game?	0	40	60	4.6
3. How would you rate your ability to accomplish transactions to collect from customers?	0	0	100	5.2
4. How would you rate your ability to accomplish transactions to pay for purchases (accounts payable) in Hay Day Game?	0	40	60	4.6

The respondents were found to have positive attitude on Hay Day and learning ERP through Hay Day. As shown in Table 2, 60% of the feedback are good with average score more than 5.

Table 2
Attitude

	Poor (%)	Fair (%)	Good (%)	Average Score
1. Your attitude/feeling about Hay Day Game	0	40	60	5.2
2. Your attitude/feeling about Hay Day Game's ease of use	0	0	100	5.6
3. Your attitude/feeling about integrated business processes	0	20	80	5.6
4. Your attitude/feeling about Enterprise Resource Planning	0	0	100	5.6

The impact of this study is measured by comparing the students' final examination result from the current semester with the previous batch. Table 3 shows that in all students can answer the ERP questions very well, where out of 10 marks the lowest mark obtained by the students is 6/10 with the average of 7.2/10 marks for all students. This achievement is superior when compare to previous batch in A162 session. In A162 session, only few students able to get mark for this question with the largest marks obtained 5/10 marks and with average 3.75/10 marks for all students.

Table 3
Comparison of examination result for semester A162 & A171

	A162	A171
Min	0/10	6/10
Max	5/10	8/10
Average	3.75/10	7.2/10
Median	5/10	8/10

Discussion and Conclusion

The findings of this study confirm that game is one of the best approaches applied in T&L. Game makes T&L fun, enjoy and interesting. Thus, students have better learning experience and able to visualize the learning concept better than traditional approach. This finding is in line with Xia & Hamari (2019) in which Hay Day have substantially positive effect on the students learning needs that is on ERP topic.

This study also illustrate that students gain better marks on their ERP questions compared to previous semester. This finding is in line with Yildirim (2017) where employing game approach in T&L give positive impact on students' achievement.

The Hay Day game is a network-based game program. The program can only be used in a network environment. Therefore, the university support is required to allow the usage of this game under the university network facility. Currently, the university policy prohibited the access to any online games as this action can cause negative implication on the university internet services. The university should consider online games as one of the innovative strategies to improve students learning.

Acknowledgement

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An Exploratory Analysis of the Effectiveness of Cooperative Learning on Student Engagement

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Abstract

A more interactive way of learning or active learning is believed to encourage student engagement and improve their understanding. Learning with friends in a small group, known as cooperative learning, and doing what they have learned during a lecture can be considered as approaches of active learning. Hence, the objective of this study is to identify the effectiveness of cooperative learning on student engagement based on the observation of the lecturer and perception of the students. Two groups of inferential statistics classes were selected, and the cooperative learning approach was implemented. The effectiveness of the approach is based on the lecturer observations on the students' behavior during the activities, their perception, and interest. The lecturer observations revealed that the cooperative learning approach positively engages students during the lesson. According to the students' perception, they prefer to have group activities during the lecture. It helps them to have a better understanding and encourage participation in the class discussion. The group work activities also build students' interest in the subject.

Keywords: cooperative learning, student engagement, active learning, statistics education

Introduction

Statistics inevitably plays one of the important roles almost in every field of knowledge, and the practice is undeniable; statistical skills are crucial for university graduates to survive and excel in their chosen career. Accordingly, inferential statistics is often a foundation course for higher-level statistics courses in which most of the quantitative sciences students should be proficient. To ensure students are capable of receiving the knowledge efficiently in the classroom, the lecturer plays an essential role in creating excitement of learning inside the classroom. Well-known to contain lots of data, formulas, theories, calculations, as well as statistical thinking skill, some students feel that the inferential statistics course is too boring to be explored. It is a huge challenge to change this perception and to develop student curiosity in the subject matter.

Teaching statistics in the classroom through active learning is one way to develop students' curiosity and engagement. Active learning in the classroom can be more effective with cooperative learning (Garfield and Ben-zvi, 2008). Cooperative learning promotes cooperation rather than competition in the learning process. Prince (2004) explained the term cooperative learning as a group work that is formed organizationally, where students pursue common goals while being assessed individually. This approach enhances the student's engagement and allow them to express their understanding.

Conducting the class of inferential statistics using the approach of cooperative learning can be interesting because this course involves real case problems and students should be able to work together to obtain a solution for the given problem. The approach also provides opportunities for students to discuss various conditions and stimulate their critical thinking. Hence, the objective of this paper is to identify the effectiveness of cooperative learning on student engagement based on the observation of the lecturer and perception of the students.

Literature Review

Generally, active learning can be defined as any instructional method that involves the student in the learning activities (Prince, 2004). It means that the student learns by doing activities in the classroom, and the learning process engages the student directly. As time changes, the teaching and learning approaches should also change. Contrary to the active learning, traditional lecture emphasizes on how the knowledge is delivered, not on how much the students receive the knowledge. Nowadays, the young generation is more exposed to open sources of information. In STEM (science, technology, engineering, and mathematics) education, the need to educate students to be creative has drawn increasing attention. Student's creativity can be stimulated via an active learning process, which is recommended for improving education regardless of the discipline (Garfield, 1993). An important learning principle is that students learn best when they are actively involved in the learning process. Smith (1998) proved that in teaching statistics, the approach of 'learning by doing' together with group-work dramatically improved student performance. Correspondingly, according to the pyramid of teaching effectiveness (Booth, 2011), in general, students remember 10% by reading, 20% by listening, 30% when assisted with visual aids, 50% with live demonstrations, 70% via discussions and 90% by doing the real thing.

"Coming together is a beginning. Keeping together is progress. Working together is success." – Henry Ford. Active learning in a classroom can be more effective with cooperative learning (Garfield and Ben-zvi, 2008). Cooperative learning promotes cooperation rather than competition in the learning process. Cooperative learning appears to benefit students in different ways. As discussed in Garfield (1993), cooperative learning in statistics class particularly encourages a comparison of different solutions, strategies, and ways to understand the statistical problem given. Using cooperative learning provides a wider view, which opens up students' critical thinking to have not only one way to solve most statistical problems. Their communications with peers allow them to express their feelings and realize on which topic they still have not yet mastered. By learning in a small group, it appears that students with lower ability improved their performance significantly as students are less intimidated while discussing with peers (Ray, Leeper & Amini, 2014; Tran, 2014).

There are various approaches to cooperative learning in the classroom. Johnson & Johnson (1999) explained the types of cooperative learning which described as formal cooperative, informal cooperative and cooperative based group. The integration of these types of cooperative learning can be used to create a mood conducive to learning while Gull & Shehzad (2015) provided a summary of cooperative learning approaches such as Jigsaw, student team achievement division (STAD), and team game tournament (TGT).

It does not take a matter on which cooperative learning approach to be implemented in the classroom as long as the basic elements of cooperative learning are presented. Johnson, Johnson, and Smith (2014) identified the basic elements of cooperative learning as interdependence, face-to-face, individual accountability, social skills, and group processing.

Methodology

As mentioned previously, the objective of this paper is to identify the effectiveness of cooperative learning on student engagement based on the observation of the lecturer and perception of the students. The implementation of group work activities in the classroom can be described as the following:

1. Target classroom

    Two groups of inferential statistics in semester A181 were the subjects of the experiment. Each group consisted of more than 40 students and was taught by the same lecturer.

2. Group selection process

    In the second week of the lecture, students were required to form a group of two to four. The self-selection of group was adopted to minimize the awkward feeling among students during the activities and to maximize their relaxation, hence facilitating them to express their understanding for knowledge sharing.

3. Activities: tasks and materials

    The problems were given to all groups according to the topics discussed. Students had to discuss solutions to the given problems and learned the topics with the guidance of the lecturer. Students were also provided with lecture notes and online references. During the activities, students were encouraged to ask questions to the lecturer.

4. Evaluating students' learning

    At the end of the activities, students shared their group findings to the entire class. All students allowed themselves to express their opinions and suggestions. Immediate evaluation and correction on the group work findings by the lecturer help students to identify their mistakes, and at the same time, the other groups also learn from the mistakes. Individual evaluation was based on student's performance in the coursework and final examination.

5. Identifying lecturer's observations and student's reflection

    To assess the effectiveness of cooperative learning through the group activities in the classroom, the lecturer's observations on the student's behavior during the activities were considered. Besides that, a set of questionnaires was distributed to the students to determine their perceptions about the activities, and to get feedback on their experiences. Information about student interest level towards the subject is also collected as listed in Table 1.

    The eight items were taken from the Survey on Attitude Toward Statistics SATS36 (Schau, 1990), as adopted by other researchers (Zain, Abdullah, Khalid and Murat, 2017). The interval scale from one to seven was used to represent strongly disagree to strongly agree, respectively.

Table 1
The questionnaire items related to student's interest in statistics

1. I will like statistics.
2. Statistics should be a required part of my professional training
3. I am interested in being able to communicate statistical information to others.
4. I will enjoy taking statistics courses.
5. I am interested in using statistics.
6. I am interested in understanding statistical information.
7. I am interested in learning statistics.
8. I can learn statistics.

Results and discussions

The results on effectiveness of cooperative learning evaluated based on the lecturer's observations, student's perceptions, and their interest in the subject, are discussed in sequence.

The observations by the lecturer

During the group activities, the lecturer observed students' behavior of both positive and negative effects. The positive effects of cooperative learning on the students' behavior during the lecture are students showed their commitment to participate in the activities where the in-group discussions occurred during the activities. Students also seemed more at ease in asking questions, but they still prefer to ask it personally when the lecturer came to their group rather than raising their hands and asking loudly. Similarly, students seemed more comfortable communicating with the lecturer when the lecturer came to their group. From this observation, the lecturer was also able to figure out the students' individual weaknesses. The discussions after the activities also gave them courage and confidence to share their understanding or opinions. However, there were some negative effects observed from the activities such as more time needed to finish a particular topic, while the course is restricted with the scheme of work.

The perceptions of the students

At the end of the semester, the students completed a questionnaire regarding their opinions about group activities. Most of the students preferred to have the activities during lectures instead of a traditional lecture. Based on Figure 1, the majority of students (88%) preferred to have group activities during the lecture. They felt easier to understand particular topics and more comfortable to communicate with their friends and lecturer. From the group activities, students also felt motivated to commit to the class since their opinions or questions were not considered as coming from the individual student, but on behalf of the group instead. Some students also felt that working in a group lessens their burden to find a solution for a given problem. It was also a platform to share more and different ideas.
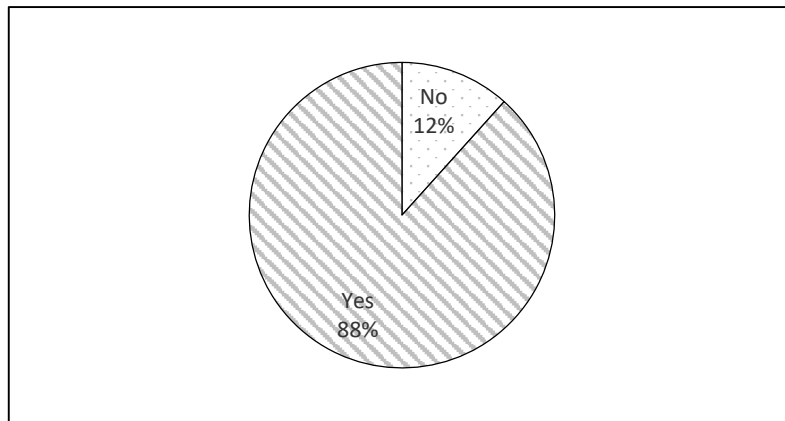
Figure 1. The percentages of students' preferable to have group activities during the lecture

Student's interest level toward the subject

The responses on student's interest level towards statistics based on eight questions, as listed in Table 1, are summarized in *Figure 2*. The higher the value represents the higher agreement on the question. It is obvious that most of the students have a level of agreement more than 4 (where the first quartile of all boxplots are above 4). This indicates that most of them have a high interest in the subject.
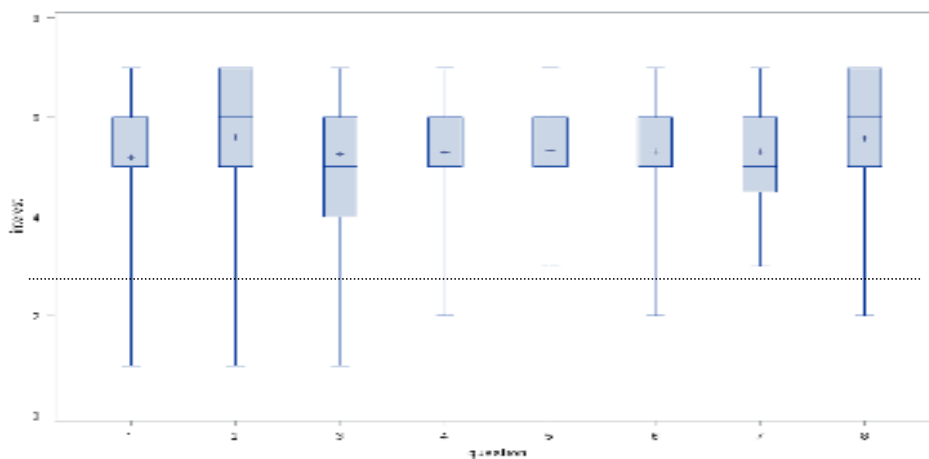
Figure 2. Boxplots of eight items regarding student's interest level towards statistics

Conclusion

Student engagement in the classroom is an important indicator of knowledge transfer. Active learning through the cooperative learning approach provides a better option of handling a lecture for the inferential statistics students. The results show that learning in a small group promotes students to self-learn as well as knowledge-sharing in the class with the guidance of the lecturer, well-planned activities and sufficient references. This approach also benefits the lecturer in terms of being able to assess student's understanding and correct any mistakes immediately during learning, instead of having to wait until the graded assessment time.

Acknowledgment

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The Impact of Service Learning on Students' Social Skill

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Abstract

Teaching and learning activities for generation Z students requires different approaches from the previous generation of students. The characteristic of generation Z is classified as active learners who prefers to engage with the learning materials especially when they are related to real situation. This requires lecturers to design learning activities that incorporates inside and outside classroom activities. This paper explains the implementation of service-learning activities for undergraduate students, who were classified belonging to the generation Z group, taking Islamic Principles in Marketing Management in the academic session over a period of three months. Educational action research method involving three phases of service-learning activities was used in order to assess the impact of service learning on students' social skills. Formative and summative assessments methods using rubric scores and students' reflection were utilized to measure the impact of service learning on the student's social skills. Analysis of students' score on rubric and written reflections at the end of the semester revealed students' development of social skills such as self-confidence, respect, social communication and social responsibility have improved from first phase to the end.

Keywords: service-learning, summative-formative assessment, reflection, social skills

Introduction

Generation Z are those who born after 1995 (Consultancy.uk. 2015). A study conducted by Barnes and Noble College (2018) concluded that Generation Z has been found as naturally active learners. For example, results of the study revealed 51% of the respondents said that they liked learning by doing and only 12% claimed they learned best by listening. Students of this generation enjoys participating in fully engaged lessons and learning process. Listening to traditional lecture and writing lecture notes can easily made them feel bored. With this group of student's personalities, they tend to appreciate technological devices, in which they perceive technology to offer all sorts of solution to most problems that they encounter (Cilliers, 2017). For example, when giving them a real problem to solve, they will start browsing the internet or watching the video online for solutions. They learned from other people's real experiences and apply to solve their own problems. Students of generation Z find that this way of learning gives them an opportunity to develop skills and talent. Figure 1 shows infographic on generation Z. (Source from: Peopleguru Blog, The Next Generation: Generation Z, posted by Allyson Edwards on Jun 8, 2017 9:46:06 am, http://blog.peopleguru.com/the-next-generation-generation-z).
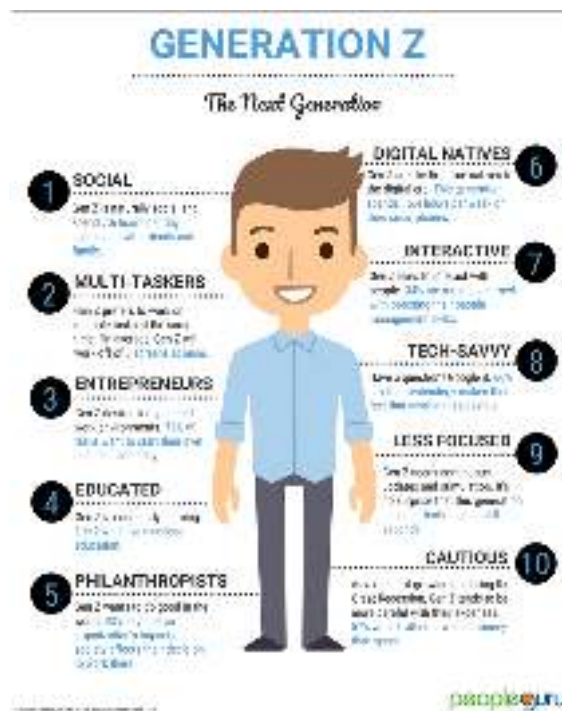
Figure 1. Generation Z

Nevertheless, it is also noted that generation Z students also tend to show a short attention span that is between 10 to 15 minutes (cite). Therefore, in order to ensure these students can focus in the classroom, it is important for lecturers to gain their attention and able to engage them beyond or at least within 10-15 minutes. This can only be done by choosing the appropriate learning activity. Given the situation above whilst it may still be valid and preferred for cognitive performance, if lecturers continue to depend highly on traditional lecture, which consists of face to face lecture and examination orientation, however it may be insufficient for developing human talents and skills. It has been suggested that blended learning combining the traditional lecture with other methods of teaching such as service learning, online learning, case study, problem solving, or field visit are encouraged. The teaching methods expose students to a wide range of learning experience and sound practical that is more relevant to industry's current needs and wants (Chen, Snell, and Wu, 2018). Real-life problem-solving activity has the potential to educate and develop generation Z with soft skill such as social, creative thinking, teamwork, communication with stake holders as well as develop confidence and leadership. This paper share insight from a higher education institution about an activity performed by a group of students to partake in educating and helping food premises community to apply the principles of halalan toyyiban in their daily business activity as part of their service-learning activity. Service-learning pedagogy was employed to engage students with the mentioned community

Literature review

Service learning or sometimes called community engagement refers to a learning activity that aligns course learning outcomes with issues faced by a community. Petkus (2000) defines service learning as a pedagogical process involving students engaging with relevant community service with learning outcomes to enhance students learning experience through an integration of course material with community. Similarly, Ransom (2009, p. 215) refers *service-learning as pedagogy which directs students' classroom learning to address the needs of relevant communities, where reciprocity between the institution and the community partner is essential in formulating "proposals, solutions and strategies for meeting their organizational missions"*. Based on the definitions above, service-learning involves students to immerse themselves into real-world environment setting whereby learning activity takes place outside the lecture hall into the real situation site. One of the key requirements in implementing a service-learning activity is to have students to collaborate with the community as a partner so that it offers direct application of knowledge and theories by the students.

Service-learning pedagogy was largely influenced by experiential learning model developed by Kolb (1984). The assumption underlying this model is that experience plays significant roles in learning. Kolb's experiential learning model constitute of four (4) stages of learning cycles in which all parties involves in all stages. Marketing educator such as Petkus (2000) has adopted Kolb's model to perform service learning. Four stages of learning cycles involve (1) *concrete experience* can acquire through observation or by doing the activity, (2) *reflection observation* involves reviewing the experience and try to identify inconsistencies between experience and understanding by writing reflection (3) *abstract conceptualization* refers to where students modify previous approach with new ideas (4) *active experiment* is to apply new ideas and later evaluate the outcomes. Kolb (2000) mentions learning as an integrated process. Hence, each learning stage is corresponding to each other's suggestion on learning which can begin at any stage of the cycle and it continues through its logical sequences (see Figure 2).
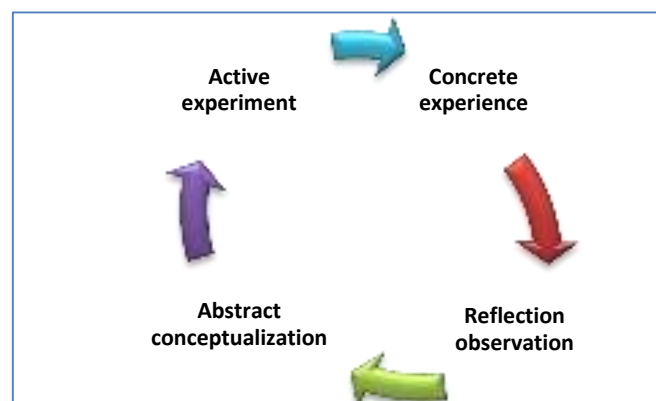
Figure 2. Kolb's experiential learning model

Plethora of benefits coming from service learning has been mentioned by academicians. (McCarthy & Tucker, 2002; to add because academicians) who through their studies have found service learning to help improve students' motivation of learning, remove negative perception towards other people and increase students' sensitivity towards moral issues. They also observe that service learning increases contextual understanding of course material suggesting that the real-world application of classroom knowledge in a community setting

allows students to synthesize course material in more meaningful ways. Service-learning method provides a distinctive, meaningful and influential life experience (Zieren and Stoddard, 2004) and extends learning beyond the academic term; it lays the foundation for continual personal growth throughout the student's academic experience and beyond.

Boyd and Brackmann (2012) mention that service learning provides a high impact of students learning outcomes and community wellbeing. Students build relationships, solve problems, value a sense of community and gain self-awareness. Service-learning is beyond memorable; it can influence one's career path and enhance civic responsibility. Among others, students gaining a deeper appreciation of the course materials and enhanced students' affections towards society and responsibilities. Reciprocally, community will also have a chance to learn from students about managing issues and problems (Kilgo, Sheets, & Pascarella, 2015).

There are a few methods that can be used to assess the benefits or outcomes of service learning. Writing reflections are one of the popular assessment methods used in the past. For example, Bringle and Hatcher (1996) claim the best outcomes can be gained when meaningful service activities are related to course material through reflection activities such as directed writings, small group discussions, and class presentations. Similarly, Petkus (2000) mentions that learning outcomes can be assessed through students' writing some form of reflections on or reporting of their experiences. Service-learning practitioners and researchers alike have concluded that the most effective service-learning experiences are those that provide 'structured opportunities' for learners to critically reflect upon their service experiences. Reflection can enable learners to examine and form the beliefs, values, opinions, assumptions, judgments and practices related to an action or experience, gain a deeper understanding of them and construct their own meaning and become aware of their responsibility towards others (Godfrey, Illes Berry, 2005: Chen, Snell, and Wu, 2018). This will give the students as learners to have the opportunity to express their empathy towards the community and uphold their responsibilities (Berry and Workman, 2007). Another method to assess the service-learning outcomes is by asking the community to give their view on students' behaviour after each activity. Finally, lecturers evaluating the students on the content by observing student learning activities at the real community site on how well the students apply what they have learned in class and enhance their soft skills. Rubrics used and lecturers' feedbacks can help students to know how well they have performed, especially in terms of the soft skills. Even students themselves can also gain feedback from their peers in enhancing their learning experiences through peer assessment. Combination of multiple stakeholders (the community, the lecturers and even the students themselves) provides feedback on assessment of and on learning, which makes service-learning unique (Martin, 2015).

The Implementation of Service Learning for Islamic Marketing

This section will explain the design of service-learning activity for the selected course. A service-learning activity was chosen as it allows students to have an interaction with the community. For this activity, a group of students were given an assignment to approach and identify to what extend the proprietor of cafeterias in the location understand and execute the *halalan toyyiban* concept and practices. *Halalan Toyyiban* refers to food or products that are allowed and permissible for consumption comply with Shariah law if they are safe and not harmful.

This assignment was carried out by approaching the targeted community such as UUM food providers' and UUM community through the service-learning activity. By doing service-

learning activity, students are given the opportunity to experience the application of their classroom knowledge and theory and relate it in real-world settings as well as deepen their knowledge understanding. Not only do students use their classroom-acquired knowledge and skills, they also help community members among UUM food providers to raise awareness about the importance of choosing the right food and way of handling the food that is *halalan toyyiban*.

Four main elements were considered in designing this activity as it must be aligned with the context of the syllabus content for Islamic Marketing course, context of community, course learning outcomes and issues pertaining to develop student's social skill with community.

Context of Syllabus. In Islam, offering *halalan toyyiban* products is compulsory especially the for Muslim market. Islamic Principles in Marketing Management is a 3000-level course, in which *Halalan toyyiban* is one of the main Islamic principle covered in four sub-topics namely products, place, price and marketing communication. Choosing these topics has significant relationship with the notion of real-life experiences in business context because it involves students to help the business communities within the university, who still lack the knowledge and practices of *Halalan Toyyiban*.

Context of community. There were six food proprietors within the campus of the university involved in this student service-learning activity. Some of the business food proprietors have been doing business for more than 20 years. However, the proprietors' understanding and execution of *halalan toyyiban* practices were found very minimal. As an institutional of higher learning and as part of the higher education provider, it is our responsibility to educate the community in the university especially when the problem is highly related to the course offered in Islamic Marketing.

Context of the students' soft skill. Malaysian Higher Education has urged universities to embed and harness students' soft skills via the programmes offered before students embark into the job market. In ensuring that this aspiration is uphold, universities have included soft skills in the syllabus and have been encouraged to embed high impact practices in their respective courses. Thus, students will be able to acquire and improve these skills upon graduation. Based on the instructors' personal experience teaching for many years, it has been observed that students if exposed to real world contexts when solving problems, become better compared to those merely exposed to traditional method of teaching. This is in line with previous findings that show when students are exposed to community engagement, they acquire civic responsibilities (Ehrlich (2000), become better citizens (Beatty, 2010) and become empowered when solving community problems. The service-learning activities require students to assist the community that they are engaged in the process of understanding the procedure to obtain halal certification from Department of Islamic Development Malaysia (JAKIM) whilst improving their soft skills related to the course. Understandably the students may lack these soft skills, especially social skills initially due to lack of personal engagement with people who are not in their social cycle. As mentioned earlier, generation Z are more prone to use technology devices has limit themselves from socialize with another human. However service learning activities may provide potential opportunities for the students to improve the skills when they work with the community to prepare the documents, convince the community, getting the cooperation from their team members, community (food premise proprietors) and

the wider group, which may include customers of the community as well as the top management of university.

Hence combining the communities' problems and students' lack of soft skills, this provide an opportunity for the instructors to embed service learning as part of the learning and teaching activities in the course. There are three course learning outcomes (CLO) designed in the course, however only two of the CLOs that were related to service learning. These two CLOs were related to social skills. Therefore, this paper discusses two out of the three CLOs which are:

1. Apply the Islamic principles, theories and concepts in marketing mix activities
2. Analyse the situational factors that influence marketing mix activities using the Islamic marketing framework and values

Based on the selected CLOs, the following Table 1 highlighted the research objectives, questions and data collection method.

Table 1
Research objectives, questions and data collection method

Research objectives	Research questions	Methods of data collections
1. To look into the impact of service learning on students' ability to analyze the situational factors by using life learning skill	How well does the service learning improve students' ability to analyse the situational factors through life learning skill?	Cycle 1 (phase 1): Pre-measurement • Observation • Personal interview • Reflection by students and community • Social skill rubric score Cycle 2(phase 2)/Cycle 3 (phase 3): Post-measurement
2. To observe the impact of service learning on students' social skills while transferring Islamic principles to community.	How does the service learning improve student's social skill in transferring Islamic marketing principles (e.g. halal toyyiban) to community?	Cycle 1 (phase 1): Pre-measurement • Observation • Personal interview • Reflection by students and community • Social skill rubric score Cycle 2(phase 2)/Cycle 3 (phase 3): Post-measurement

Research Methodology

This research employs educational action research method in which Kemmis and McTaggart (1986) action research model were used. Figure 3 shows the phases of activity.
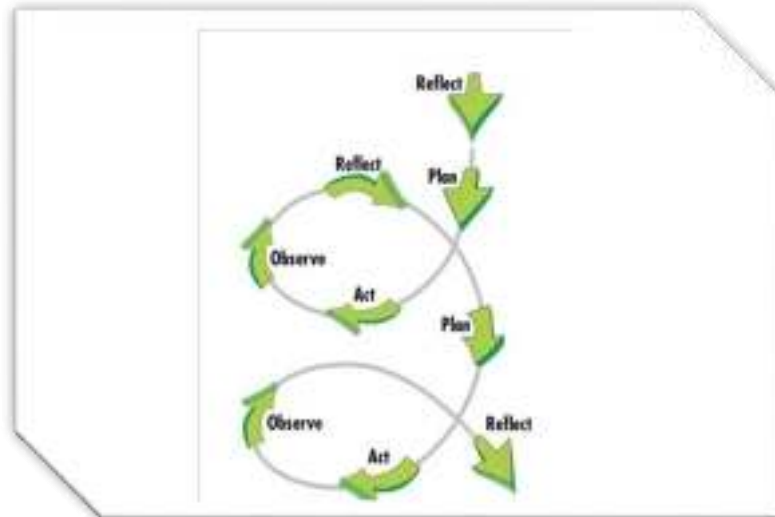
Figure 3. Phases of Action Research employed in this study

The figure shows the four steps of action research activity. First, it begins with a reflection of issues or problem related to students' course learning outcomes and problems faced by community that needed to be solved. Second, the lecturer plan service-learning activities that were aligned with course learning outcome and community's problem. Third, students performed the planned activity. Fourth, the lecturer observed the activity carried out by the students at the community sites. Fifth, students, lecturer and community made reflections based on the service-learning activities done. Findings from the observation and reflections were used for the lecturer to assess whether students' social skills have improved or not. If students do not achieve the social skills above the satisfactory level, then the lecturer intervened and improved the service-learning activity with new remedial activity as a form of intervention. The same steps of activity were applied until students achieved the targeted soft-skills performance.

The service learning was conducted in three (3) phases throughout the semester. The first phase resembles the pre-intervention stage i.e. before service learning was introduced in the course. In this phase, interviews with the students on their expectation and ways of learning as well as concepts on Islamic principles in marketing were collected. Reflections from the students and the lecturers involved were collected and analyzed.

Second and third phases function as the interventional (post measurement) stage where service learning was introduced. This phase involved examining students' ability to apply the Islamic principle into marketing activities through service learning and how they analysed situational factors that influenced marketing activities of the chosen community. Data was collected from focus group interviews with the students, the community involved and observations from the lecturers as well as students' performance on formative and summative assessments related to the course. In this stage, reflections from the lecturers and students were also gathered. It should be noted that adaptation was made depending on problems that students face while being involved with the community. The adaptation was done before the next phase begun. If students' social skills have still not improved, the intervention was improvised and adapted as well as reintroduced in the next service-learning activities, for example in the next cycle or activity two (2). This activity was repeated until students' scores on identified social

skills achieved above the level of satisfactory. Figure 4 shows the service-learning activities in each phase.

Figure 4. Service-learning activities by phase

Information gathered through observation and focus group interviews with the students, community during and after each service-learning activity were used to assess students' performance. The first and second activity is considered as formative assessment. Whilst the third activity was utilized for summative assessments related to the CLOs. It should be noted that adaptation was made depending on problems that students faced during their involvement with the community. In this stage information from students' reflections and scores from the rubrics were analysed. Feedback were given to students for their further improvements of their social skills. If students' social skills have still not improved, the next intervention was introduced in service-learning activity 2. This activity will be repeated if the students' scores on identified social skills below the level of satisfactory. The final stage or phase three (3) is the post intervention stage in which the final assessment of the students' learning experiences and performance were carried out. In phase three (3) students' final service-learning activity were carried out and once again they must write reflections of all the activity they have performed.

Data Analysis and Findings

For this study, a rubric was designed to measure social skills among students in the marketing course. It was divided into four traits with two sub-attributes each, namely, (i) Self-confidence ('Relationship building', 'Self-expression'), (ii) Respect ('Active listening', 'Respect for others'), (iii) Social Communication ('Interaction with others', 'Nurturing relationships'), and (iv) Social responsibility ('Rational attitude', 'Contribution to society'). For the assessment, students were asked to evaluate themselves on each of the trait based on five performance levels (with 1 = 'Very weak', 2 = 'Weak', 3 = 'Fair', 4 = 'Good', and 5 = 'Very good'). These self-evaluations were carried out twice, once before the start of Activity 1 (formative assessment 1), and the second, at the end of Activity 1 (formative assessment 2) but before the introduction of Activity 2.

Figure 5 shows the results of the students' formative assessments 1 and 2 on each of the trait for social skills. Overall, interestingly, students scored themselves high on each trait before they embarked on the activity (formative assessment 1). The trait, 'Respect for others' showed the highest average score of 3.93 followed by 'Active listening' (score of 3.60) and 'Relationship building' (score of 3.40). The trait, 'Contribution to society' showed the lowest score of 2.60.

For Activity 1, students worked with the café operators for over three weeks. Upon meeting the café operators and immersing themselves in the activities, students 63ealized that they had much more to learn. As such, by the end of Activity 1, their perceptions changed and when they were asked to assess themselves again on their social skills using the same social skills rubric, their scores were marked lower. This is evident from Figure 5 where the scores for formative assessment 2 were lower with an average score of 2.0 on all traits. Furthermore, the trait with the largest difference in average score was 'Respect for others' which showed the highest score (as in formative assessment 1). Figure 5 shows results of students' social skill performance scores.
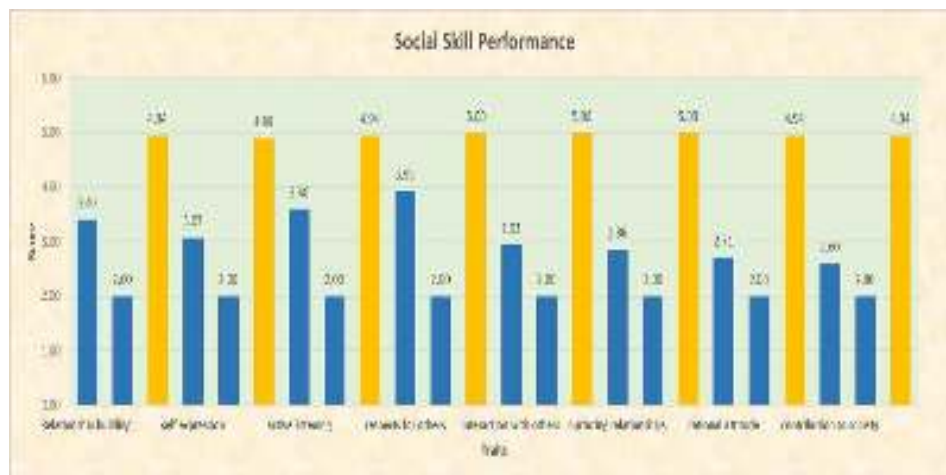
Figure 5. Students' social skills performance

Apart from using rubrics to record students' CLOs' performance, students were required to write their reflections about their feelings and experience after each service-learning activity. Their reflections were captured on web 2.0 tools such as padlet. The following Figure 6 shows padlet website contains of students' reflections.

Figure 6. Student's' Reflections of Service-Learning Activity

Feedbacks from group interview with community also illustrated the community being very pleased receiving help from the students until they have successfully completed the halal JAKIM certification application through online. The community also mentioned that they understood and became more informed about the importance to comply with the halal JAKIM standard and procedure through the students' service learning. Figure 7 below shows one of the interview sessions after receiving consent to add their pictures from the participated community.

Figure 7. Interview session with participated community

Conclusions and Recommedations for Future Research

This section shows that overall, there is positive findings from the service learning conducted by students taking Islamic marketing course, which required students to assist the community amongst the proprietors of café in the university as part of the service-learning activity. The main objective of the service learning was to ensure that the community understand the process and procedures to obtain certification from JAKIM whilst ensuring that

students increase their social skills. Findings showed students' improvement in their social skills especially in self-confidence, respect, social communication and social responsibility. This is in line with previous findings that when students were exposed to community engagement, they improved their civic responsibilities (Ehrlich (2000), became empowered when solving community problems as well as social responsibility, civic mindedness, self-esteem, and self-confidence (Kezar and Rhoads, 2001) which in the long run influenced them to become better citizens (Beatty, 2010).

Therefore, having completed the three phases when introducing service learning to these students were worthwhile especially to the lecturers, having observed the transformation that these students went through and being able to make them build their confidence to work with the real community and solving real world problems. These experiences of observing students' transformation in learning were a phenomenal experience to the instructors themselves. These invaluable experiences were also felt by the students in that having seen the changes in themselves and feeling that they can complete an arduous task like speaking and convincing strangers in the beginning, was part of the self-satisfaction that improved not only their knowledge related to the content of the course but also their social skills that was part of the soft-skill embedded in the course. Students felt the arduous task was worthwhile because they could observe the transformation in the community too due to their contribution in ensuring understanding about *halalan toyyiban* to the community.

Whilst service learning proved as one of the high impact practices that have the potential to develop students' knowledge and skills, conducting service learning did not come without challenges. Getting the cooperation and participation of the community as well as convincing them; adjusting students' time table in order for them to complete the task during and outside of class time; adjusting to the problems that came in, in an ad-hoc manner to align with the course content and outcomes were some of the challenges faced. It is, therefore, lecturers who intent to use service-learning for their students should have a detailed plan and design of learning and teaching activity before semester starts. In addition, getting the constants support from the university top management, community and students can make these obstacles dealt smoothly.

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I-Think Mind Mapping: An Approach to Improve Students' Interest and Motivation in Malaysian Nationhood Course at Universiti Utara Malaysia

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Abstract

Malaysian Nationhood course is an introduction to the history of nation building that covers the period from pre-independence until the establishment of post-independence government policies. In addition, the course discusses the fundamental factors that have taken place in the development of Malaysian history and lists the factors that have been the turning point in the country's history. This course is very important in building a new generation of Malaysians using history as the foundation of nation building. But the students' reactions gave the negative perception of the Malaysian Nationhood course by stating that it was a heavy subject, uninteresting, too many facts and boring lectures. As a result, they have reacted negatively when they were in the classroom. These include coming late to the class, skip class, talking during lectures, reading other course notes, looking at cell phones and often falling asleep. To overcome this problem, the I-Think mind mapping method is used in learning activities. Qualitative methods are applied through observation, activities using Mind Map and Focus Group Discussions. The results show that activities carried out through I-Think mind mapping have had a positive impact on increasing students' interest and motivation in this course. However, in this large-scale classroom, lecturers will need to diversify their teaching techniques and other teaching aids to keep students engaged in the lectures.

Keywords: Malaysian Nationhood, I-Think Mind Mapping, Interest, Motivation, Teaching & Learning

Introduction

History Education is a core subject in the Integrated Curriculum Secondary School (ICSS) which is often criticized by most students as a boring and difficult subject (Zahara & Nurliah 2009). Previous studies have found that the content of teaching and learning was filled with facts and storylines that cover a variety of chronologies that have made it difficult for students to understand and appreciate the subject of History (Khairuddin 2011). The situation becomes worse when History teachers do not take more creative initiatives to stimulate students' interest in learning History (Zahara & Nurliah 2009). While students need to be aware that every current or future problems can be identified through past events and teaching patterns taught by teachers will affect the quality of History teaching in schools. Therefore, one of the most effective approaches to aid students' understanding of History subject is through the use of mind map (Abdul Rahim 2000; Novak & Govin 1984).

Mind Map, when applied critically, is capable of expressing the relevance of one event to another, finding evidence, interpreting, making judgments, predictions and imaginations. Such teaching and learning can develop intellectual thoughts and enhance rational, critical and creative thinking (Ministry of Education Malaysia 1992). A diverse and innovative approach

is required to make History teaching and learning in line with its goals as the foundation for patriotic citizens. In this regard, to address similar issues encountered in teaching and learning of Malaysian Nationhood Course (MN) at Universiti Utara Malaysia, the use of Mind Map will be applied.

The MN course is compulsory and should be taken as a prerequisite for graduation at Universiti Utara Malaysia (UUM). This course adopts the elements of history as the dominant element over other areas of study. This course is aimed to provide knowledge, basics and facts about Malaysian history that are fundamental to the knowledge of MN course. Students are also expected to list factors that influence the continuity, change and also socio-political and social development of Malaysia. In addition, students are expected to apply their knowledge of citizenship in an effort to shape their identity and have a high patriotic spirit and thus identify the implications of the changes that are taking place in the socio-economic and political development of the country. The end goal is to apply the knowledge of the nationhood in the spirit of patriotism, nationalism, volunteerism and leadership among students.

Problem Statement

Implementing teaching and learning activities in a classroom with a large number of students is a big challenge. Based on nearly 15 years of teaching experience, some students have given negative perceptions of the MN course by saying it as a heavy subject, boring, too many facts and boring lecturers. As a result, they have reacted negatively when they were in the classroom. These include frequently coming late to class, skipping class, talking during lectures, reading other course notes, looking at cell phones and often falling asleep.

This negative attitude is translated into a lack of interest in this course which is one of the core components of the university. Interest is actually closely related to attitude. Students will respond positively when they are interested in a situation or matter. Instead, they will react negatively when they are not interested. Therefore, the content of the course presented should be clear, interesting and applicable in the context of daily life (Mager, 2004). Motivation also has some importance for the teaching and learning process. The first priority is to get students involved in the learning process. Motivated students will be eager to follow what is being conveyed by the teacher and give full attention to the teaching. This will give rise to the second priority which is to enhance students' understanding of the subject.

The Importance of Mind Mapping in Teaching & Learning (T&L)

In general, Trochim (1989) states that mind mapping is a process that can help develop ideas on a different topic. Mind mapping is one of the effective learning methods that utilizes the transfer of ideas from one concept of knowledge to a related branch. Mind map is a construction made on a piece of paper, an important idea is placed in the middle as a central idea and other related ideas are developed outside of the main idea using small centers, lines, blocks, geometry, colors and so on. In addition, the mind map is a graphical arrangement containing specific information, written in a simple but compact way.

More specifically, I-Think Mind Mapping (Nurhafizah et.al, 2017) is a visual teaching tool that fosters and promotes lifelong learning. Among the key features of I-Think are thinking outside the box, which is being creative, ready to accept new ideas, willing to take risks, willing to make mistakes and not be too restricted by traditional thinking. I-Think was introduced as a thinking tool for teachers and students.

I-Think Mind Map was created and developed by Dr. David Hyerle which aims to help teachers and students make the teaching and learning process more meaningful. I-Think is

based on the workings of the human brain and the way information is structured. The importance of I-Think has been demonstrated through classroom research and observation during the learning process. Teachers can use I-Think Mind Map to teach a variety of subjects. They can choose different sets of I-Think tools based on the standard of the content they want to teach. Teaching becomes more dynamic when I-Think Mind Map is used to enhance students' abstract thinking skills. Indirectly, students' interest in the subject taught also improved. Students are able to come up with ideas and improve their learning (Vishalache Balakrishnan, 2014).

I-Think Mind Map helps students to increase their level of thinking, from low order thinking to high order thinking. I-Think helps students think *divergently* and *convergently* and can structure their thinking in a systematic way. I-Think Mind Map can also help students to understand the relationship between various aspects, concepts and so on in various situations. They will learn to focus their thinking on meaning rather than focusing on facts and other technical aspects such as language style and grammar. Students will also be more aware of conflicts, problems, challenges or situations that need to be analyzed.

Literature Review

There are several articles and studies on the use of I-Think Mind Map on student academic achievement. Among them, a study on the Effectiveness of Using Mind Map assisted by *e-Book* on the academic achievement of fifth year students in Science subjects at Seberang Takir Complex National School in Kuala Terengganu district by Zulkifli Mat (2012) has proved the effectiveness of using Mind Map on student academic achievement. One book that should be read if we wish to apply I-Think based teaching and learning is Ismail Said's *Kaedah Pengajaran Sejarah* (*History Teaching Methods*) (2014). This book discusses the methods that history teachers should use to create interesting lessons. The author also discussed the use of I-Think. However, the information provided is fairly basic and the researcher and history teacher need to obtain additional reading material to master I-Think.

In addition, the book *Aplikasi I-Think dalam Pendidikan (I-Think Application in Education)* (Vishalache Balakrishnan, 2014) gives a good and comprehensive overview of the use of I-Think in the teaching of some subject components such as History, Moral, Science, Mathematics, Malay Language, English and Islamic Education. This book has provided insights and overview into how I-Think-based teaching methods are taught. Another must-read guide to implementing I-Think mapping methods is *Mind Mapping* by Tony Buzan (2006) which provides a basic but comprehensive overview of what Mind Map is, requirements to produce Mind Map, Mind Map for all activities and Mind Map that can be used in education.

Svantesson (1989) in his book *Mind Mapping & Memory* has also described what is meant by Mind Map till the level of Mind Map application. The author stated that Mind Map is an effective technique for taking and making notes. This method is a modern approach compared to the traditional one. This method is also the simplest, time saving, able to recall and restore memory in a short period of time. In short, the author points out about the benefits of using Mind Map which can improve memory levels, save time and solve many matters. In addition, the mind mapping method enables accurate, structured and logical organization as well as enhances creative thinking and imagination in many ways. Mind map as interpreted by him is a "*new note-taking technique*" that can be applied in many situations. These include planning, problem solving, formulating, structuring, brainstorming and generating ideas as well as taking notes. Mind Map is usually built on a piece of paper. An important idea or theme is placed in the center and other related ideas are developed outside of the main idea using small

centers, lines, blocks, geometry, images, lines, colors and so on. Mind Map can also save you time in learning a subject. In the process of learning, a student needs to develop strategies so that all content can be processed by the brain more easily. Mind Map also has many benefits such as improving memory without losing too much paper and energy.

A book entitled *Mind Mapping for Dummies* (Florian, 2012) also provides a brief and simple description to facilitate understanding of the application of Mind Map. Among them, the author states that the brain cannot be locked in because it has the potential to produce an extraordinary method of mind mapping. In my opinion this book is quite interesting as the author has covered inputs on traditional Mind Mapping methods till the applications of modern Mind Map software.

The importance of using Mind Map has led to the emergence of such writings as *Learning Maps and Memory Skills* by Ingemar Svantesson (1988). The author has shown that the mind mapping method is a note taking technique and can be used in a variety of situations including planning, problem solving, summary, structuring, brainstorming and generating new ideas.

Thus, to realize the use of I-Think Mind Map. According to Zulkifli Mat (2012), visualization elements such as graphics, animation, video and youtube can be used to solve students' problems especially when they involve the process of remembering and memorizing. High student visualization capabilities help students to develop new concepts which can then be used to analyze learning at the next level.

In line with the writings of Omardin Ashaari and Yunus Muhamad (1996) entitled *Kaedah Pengajaran Sejarah* (Teaching Methods for History) to meet the needs of history teaching, it is very useful in providing an overview of the methods that should be used in teaching MN Course so that the delivery is effective.

Teaching & Learning History 11-18, Understanding The Past (Kitson et al., 2011) is also a very interesting book that contains inputs that educators who teach history in schools or at tertiary levels should obtain. The strength of this book is that the author presents different and dynamic views in the teaching and learning of History. According to the author, teaching and learning should be alternately performed with research, discussion and practice. Previous studies have also shown that using mind maps in History subjects can increase visual stimulation among students to be more creative in writing and thus improve students' ability to communicate orally and encourage students to learn confidently and independently (Norfadilah 2000). The use of mind map can also facilitate students' thinking, help strengthen their memory, and help them to remember important facts that can be well elaborated later (Abdul Rahim 2000). It makes the teaching and learning process more effective. Past studies showed that many students still face difficulties remembering historical facts for a long time (Khairuddin 2011). This is because, History subject have many abstract ideas and concepts that are difficult to understand. This concept plays a very important role in shaping the thinking of an individual and shaping the intellectual capacity of students. By using the Mind Map method, all the History notes which is filled with facts can be shortened using various symbols, colors, patterns and so on. This will make it easier for students to remember all the facts that have been diffused through the mind map.

Therefore, based on the success of the empirical studies on the use of Mind Map in the t&l of History subject, the t&l of MN course will apply the use of Mind Map as an approach to increase students' interest and motivation in the MN Course at Universiti Utara Malaysia.

Research Questions and Objective

This study aims to look at students' attitudes towards using mind map in learning MN course. This attitude refers to their interest and motivation for the MN course. The two main questions in this study are:

i) How does the use of I-Think Mind Map help in the teaching and learning of MN courses?
ii) To what extent is the use of I-Think Mind Map can improve students' interest and motivation in MN course?

Methodology

This study is designed as a simple descriptive analytical action research that explores the use of mapping concept to improve students' interest and motivation in large-scale lectures by using qualitative methods to obtain research data. According to McNiff (1988), action research is an approach to correct or improve the quality of education through changes that encourage teachers to become more aware of their own practices, critical of these practices, and willing to change their practices. The researcher used an action research model that is based on the Kemmis and Mc Taggart (1988) model (Figure 1). A total of 102 respondents from Group C of MN Course were surveyed. Next, the students were divided into 20 small groups. But during presentation, only five groups were randomly selected to present the mind map created by their group.
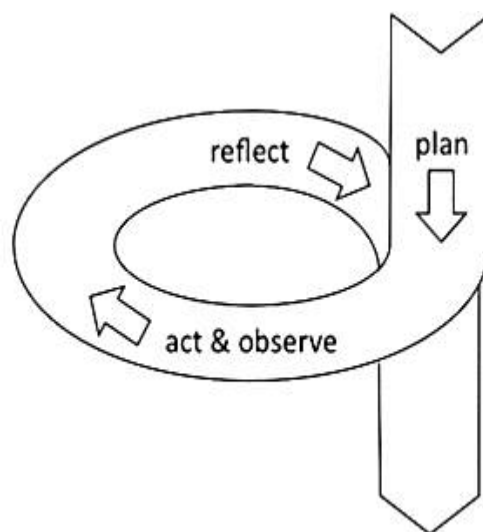
Figure 1. Model Kemmis and MacTaggart (1988)

(i) Observation Method

Observation methods will be used to identify the problems encountered by students in the course. Observations will be carried out during and after each class' teaching and learning activities. The I-Think Mind Map method will be used to evaluate the effectiveness of the teaching and learning process that will take place and the extent to which the use of Mind Maps

achieves the objectives of this study. Some improvements will be made through the different methods of using Mind Map in the following lecture session if students find that they are still not well versed in applying the Mind Map in the early stage.

(ii) I-Think Mind Map Activities

Information gathering techniques (through *Brainstorming, Buzz Group, Syndicate, Three Minutes Each Way, or Snowballing*) will be implemented using I-Think (Mapping) activities through several types of Mind Map such as Circle Map, Bubble Map, Double Bubble Map and Brace Map until the course learning outcomes (CLOs) are achieved.

(iii) Reflection

Reflections are intended to see whether research objectives and CLOs are achieved through the Mind Map activities. If the students are not able to explain based on the questions given (which means CLOs have not been achieved), the researcher will repeat the learning activities using other Mind Maps until the students can achieve the objectives of the study.

(iv)Focus Group Discussion

In order to get feedback on the (I-Think) mind map method that has been used in the teaching and learning activities, a focus group discussion approach will be implemented at the end of the semester. A total of 10 students will be selected to share ideas about the methods that have been applied and their impact in particular in enhancing their interest and attitude towards mastering Malaysian Nationhood course. Questions that will be prepared include students' interest in the course, the methods used in the classroom teaching and learning, and the impact the course will have on them.

Implementation Methods in the Lecture Hall

Initial implementation of Action Research
Announcement to students about the teaching and learning process that will take place using Mind Map based on discussion topics.

During implementation of Action Research
Step One:
Before delivering the lecture, the Lecturer provides a clear explanation about the learning objectives (CLO) that are supposed to be achieved by the students.
Step Two:
The Lecturer gives an assignment based on one of the topics from the course content, using Mind Map in the lecture.
Step Three:
Students are required to discuss, screen the facts, and make shared decisions base on the use of Mind Map through SCL activities such as *Brainstorming*, *Three Minutes Each Away*, *Snowballing*, *Buzz Groups*, *Syndicates* or others.
Step Four:
Students will present the results of their discussion.

Step Five:

> Reflection, looking at the extent to which the research goals are achieved by the students. If students do not reach the desired level, then the researcher will repeat Step One through Step Five at the next lecture. If the students have achieved the desired objectives of the study, then the next step is repeated based on other Mind Map activities on the next topic to assess the use of Mind Map in achieving the study objectives. The researcher can then evaluate which methods of the Mind Map are suitable for teaching and learning Malaysian Nationhood Course to achieve the objectives of the study.

<u>Final Implementation of Action Research</u>

> *Focus Group Discussion* is used to get students' feedback on activities that are carried out using the Mind Map to achieve the objectives of the study.

Findings of Research Reflection

i) Reflections based on activities in the lecture according to chapter using Mind Map

Table 1
Reflections on Mind Mapping Activities

Date	Chapter	Subtopic	Types of mind map used	Reflection
	1. Development of Nation Building	Knowledge about Malaysian Nationhood course	Circle Map	Students are still confused about how to relate their existing knowledge to the given topic. 2/5 group of students are able to write down the important points that are relevant to their knowledge about the MN course.
	2. Traditional Malay Society (TMS)	i) Definiton of TMS ii) The Importance of Traditional Malay Society in the Development of Nation Building	Circle Map Bubble Map	5/5 group of students are able to write the main points.
	3. Colonialism	i)Definition of Colonialism ii) Motivating factors of Colonialism and Imperialism.	Circle Map Double Bubble Map	5/5 group of students are able to provide information according to context. 4/5 group of students are able to differentiate the information.

4. Nationalism	Development of Nationalism in Malaya	Tree Map	5/5 group of students are able to classify ideas.
6. Malayan Communist Party and State of Emergency	Background of MCP	Brace Map	4/5 group of students are able to analyse objects.
7. Establishment of Malaysia	Overall Topic	Flow Map Multi-Flow Map Bridge Map	5/5 group of students are able to display their selected map. 3/5 group of students use maps that are not used in their previous activities.

ii) Written Reflection

The students are required to write down their reflections after finishing the mind map activity. The schedule shown below describes the positive and negative reflections based on individual student's view.

Table 2
Description of Positive and Negative Reflections after the Implementation of Mind Map Activities

NO	DESCRIPTION	SIMILAR VIEW
	POSITIVE REFLECTION	
1	Development of ideas about a topic (clearer and concise)	88
2	Able to reduce stress when creating mind map while listening to music/Stimulating mind/Relaxing	35
3	Deeper understanding of topic/ Easy to understand	31
4	Motivate me more	22
5	More interesting, laid back and not sleepy	21
6	Help to attract my interest	19
7	Mind Map provides a better picture about a topic	18
8	Opens mind and increases knowledge based on various ideas from group members/Development of ideas from students' presentations	16

9	Easy to remember	14
10	Better relationship with group members through discussion activities	14
11	Fun because today's lecture helps with revision	14
12	Better understanding on how to prepare mind map	12
13	Easy to study	9
14	Use important points	9
15	Easy to express ideas	7
16	This class/session is totally different from other classes	7
17	Time savings, use key word.	6
18	Fun, happy, cold, nervous (during presentation earlier)	6
19	More similar activities	5
20	Able to appreciate the PKM event	5
21	Easier to understand chronological events	4
22	Improve creativity	4
23	Able to use as preparation for final exam, we do not have to read a lot of books	4
24	Simple and attractive presentation	4
25	Able to apply learning techniques in mind mapping	4
26	Students give better and clearer information	4
27	Easier to revise	3
28	Focus on main topic	2
29	Simple and effective	2
30	Learn to summarise	2
31	Able to provide a good lesson to future generations	2
32	Highly confident	1
33	Good source of reference	1
34	Mobile	1
35	Cultivate the spirit of patriotism in self	1

36	I suggest both activities and old method	1
37	Today's lecture is a lot of fun, accompanied by music	1
38	Do a lot of group work, a lot of ideas can be shared	1
	NEGATIVE REFLECTION	
1	Music played was not suitable with topic	2
2	I suggest we maintain the traditional way of learning after this and do little activities	1
3	Mind Mapping – rather boring, feels like school children	1
4	tiring	1

iii) Focus group discussion

10 students were selected randomly for an interview, then they were required to answer in writing seven reflection questions set by the lecturer.
1. How do you feel about today's class?
2. What did you learn today?
3. Explain how today's lecture differs from previous ones?
4. Did the mind mapping activity attract your interest in this course?
5. Did the implemented activity motivate you to learn this course?
6. Do you like music being played while you are doing class activities?
7. What do you suggest for the next class activity?

Findings from Focus Group Discussion

Table 3
Findings from Focus Group Discussion

No.	Student	**Question 1: 1. How do you feel about today's class?**
1	247689	I enjoy and feel happy with the learning technique used today.
2	246837	Enjoy and not bored because there is music in the background as we mind map.
3	241120	Happy working together
4	233302	Learning today is fun.
5	247033	Interesting and fun.
6	247073	Enjoyable.

7	242714	It is fun because can refer to a chapter that will be tested in a quiz
8	247687	Fun, not bored, study in a relaxed manner.
9	247310	I prefer to listen to a lecture about historical events which we do not know. I feel happy and not sleepy.
10	246706	Tiring, fun, not burdensome, easy to remember.

No.	Student	**Question 2: What did you learn today?**
1	247689	In today's class, I receive better information for Chapter 1 till Chapter 4.
2	246837	A lot of information has been obtained to supplement the knowledge on this subject.
3	241120	New technique to do mind mapping.
4	233302	Today I learn various topics through my friends' presentations.
5	247033	Learn to make summary. Can see information clearly.
6	247073	Able to understand and learn how to prepare mind map.
7	242714	Learn a fast way to take notes through sharing of ideas.
8	247687	Learn to know/use various mind maps. Learn from classmates' perspectives.
9	247310	Summary of Chapter 1till Chapter 4.
10	246706	Learn about TMS dan how to do mind mapping.

No.	Student	**3. Explain how today's lecture differs from previous ones?**
1	247689	-
2	246837	Today's lecture it is the student who gives the information and explains it more clearly.
3	241120	Sleepy lecture, not sleepy games
4	233302	Learning to use mind map is fun and not boring.
5	247033	Not sleepy compared to previous lectures
6	247073	This lecture is interesting because it is in a group and it is easy to understand the topic.
7	242714	The difference today is that there is music that stimulates the brain, more relaxing.
8	247687	Lecture is more interesting compared to before.
9	247310	Previously we only listen in class, now it is more towards discussion.
10	246706	The difference in today's lecture is that it is not rushed and more relaxed compared to previous ones.

No.	Student	**4. Did the mind mapping activity attract your interest in this course?**
1	247689	Learning through mind mapping is very helpful and easy to understand.
2	246837	I understand before preparing mind map, students have to read first.
3	241120	Interested to do mind mapping.
4	233302	
5	247033	Mind map helps to make me interested to study Nationhood.
6	247073	Mind mapping is very useful, very simple and interesting.

7	242714	It is like a game of sharing ideas and able to tie each group member closer to each other.
8	247687	Mindmap helps in making me interested to learn this course.
9	247310	Mapping really helps me to learn.
10	246706	Relaxing class without stress and at the same time can acquire knowledge.

Bil	Student	**5. Did the implemented activity motivate you to learn this course?**
1	247689	
2	246837	Mind map is really helpful because MN can be very sleepy if it is just reading.
3	241120	Music stimulates thinking.
4	233302	
5	247033	Yes, it is a good motivator
6	247073	This activity is very motivational and shows teamwork.
7	242714	
8	247687	Yes, this activity motivates me to learn.
9	247310	Average activity can help motivate me to learn the Nationhood course, because I am already interested to learn Nationhood. Therefore, there is no need to be more motivated.
10	246706	Today's activity did not give me any stress, so I enjoy attending class for the sake of knowledge.

Bil	Student	**6. Do you like music being played while you are doing class activities?**
1	247689	Music can help lift students' spirits to continue focusing on preparing mind map.
2	246837	Desire top English and Malay songs.
3	241120	Yes, lively songs are preferable
4	233302	
5	247033	Music can stimulate thinking (fun)
6	247073	Love the songs.
7	242714	Music more relaxed.
8	247687	Love it, can learn in a relaxed manner and stimulate the mind to think.
9	247310	
10	246706	I love the songs being played.

Bil	Student	**7. What do you suggest for the next class activity?**
1	247689	Maintain the current activity to enhance the students' spirit and motivation to learn MN course.
2	246837	
3	241120	Maintain the current activity to enhance the students' spirit and motivation to learn MN course.
4	233302	Diversify the activities to stimulate students' interest.

5	247033	Having activities is more effective in the learning process (not sleepy)
6	247073	Maintain interesting activities to avoid sleepiness.
7	242714	Do a lot of group work, so a lot of ideas can be shared.
8	247687	Do more activities compared to just lecturing.
9	247310	Like a normal lecture, lecturing is good enough.
10	246706	Learning activities that do not involve movement.

Discussions

Findings from Reflections

i) How does the use of i-Think Mind Map help the T&L of MN course?

The findings of the study on respondents' reflections based on their class activities using Mind Map, in general, indicate that respondents generally knew how to use Mind Map. Starting with the introduction of Circular Maps and their functions to the use of various types of Mind Map at the end of the activities, Respondents have successfully created mind maps using their creativity (refer to the attached appendix). Respondents also stated that they could better describe a topic through the use of Mind Map. Mind Map activities through presentations also opened their minds and enhanced their knowledge based on a variety of ideas presented by other group members. At the same time, the respondents were happy because the lecture helped them with their revisions and the Mind Map enhanced their memory. To a certain extent, some respondents stated that notes using Mind Map can be used as preparation for their final exams and they do not need to read a lot of textbooks.

Further, a survey of respondents' reflections through their positive and negative descriptions which were written after completing the Mind Map activities, showed that the majority of respondents indicated that Mind Map was able to develop their ideas on the topic more clearly and concisely. Mind Map activities alternated with musical rhythms can reduce stress while at the same time can stimulate the thoughts and calm the mind. Respondents also stated that through the use of Mind Map, they could easily understand the subject matter being discussed.

Through focus group discussions, the findings showed that respondents enjoyed and were happy and not bored in learning to use Mind Map. Through Mind Mapping, respondents can learn the techniques of making notes quickly, to summarize and see information clearly. In addition, Mind Map activities also help them to review topics as preparation for future tests. Respondents also stated that through this activity, they were able to focus on discussion topics and not feel sleepy in the lecture compared to previous lectures. Respondents also stated that group activities provide additional input to them in understanding the topics through peer sharing. According to them, group activities also stimulate them to exchange ideas, and forge a sense of cooperation. Additionally, according to the respondents the activities were carried out in a relaxing manner and they did not feel pressured to study.

In summary, positive reflections indicate that Mind Map activities contribute to the respondents' learning process. Thus, the use of mind maps will help students to be more focused, be able to make interpretations and better understand the topics they are learning. The mind map facilitates students' thinking, helps to reinforce their memory and remember important facts and do better explanation (Abdul Rashid, 2000).

ii) To what extent is the use of I-Think Mind Map can improve students' interest and motivation in MN course?

The findings showed that the Mind Map activities that were conducted in the lecture were able to attract respondents' interest towards learning in the lecture. High interest refers to how learning methods using Mind Map help them to review and understand the topics being discussed. Interest also refers to their knowledge of creating a Mind Map. Additionally, through Mind Map activities, respondents stated that they did not feel pressured and that Mind Map activities were considered to be relaxing and at the same time provided them with knowledge. In brief, Mind Map activities made them interested to study MN course.

Respondents also stated that Mind Map activities gave them a great motivation to study the course. Through Mind Map activities they do not feel sleepy and the group activities can create a sense of co-operation among them. Respondents also agreed that the background music being played as they were engaging in Mind Map activities, stimulate their thinking, thus increasing their motivation to learn.

Findings from Focus Group Discussion

Respondents were asked about their knowledge of Mind Map. The findings showed that 5 respondents stated that they had learned about Mind Map at school level. However, they admitted that they had never applied the map in their higher learning activities.

The initial perception and picture that this group of respondents gave about the t&l of Malaysian Nationhood course changed as they were introduced to I-Think Mind Map method. Nine respondents stated that the I-Think method was something different which was absent in other courses' t&l. They felt happy and enjoyed learning through the use of Mind Map. Mind Map activities were considered relaxing, do not exert pressure, and they do not get bored in class. The pleasure displayed by the respondents was in the different way of learning as before, which required them to focus on the lecturer's explanation. In addition to mind-mapping activities being relaxing, it requires teamwork. However, one respondent stated that although he learnt about Mind Map, he disagreed with the use of the Mind Map as t&l of this course because he was more interested in hearing explanations from the lecturer about what he did not know.

The findings also showed that all respondents indicated that I-Think had successfully increased their interest in class. Learning through Mind Map was very helpful and easy to understand. Mind Map was very simple and interesting. Thus making them interested to learn MN course. These activities were considered relaxing and did not put any pressure on the students. In addition, nine respondents corroborated that the I-Think Mind Map method increased their motivation to study in class. Mind Map activities facilitated them to recall historical facts easily. Supported by the findings of a study conducted by Lim Kui Lik (2009) showing that the method of using mind map had successfully helped the three respondents of his study in increasing their understanding and memory while increasing their interest and motivation in studying Science. They also have the ability to recall quickly when tested. The respondents also stated that this skill was very important to them especially during quizzes and end-of-semester exams.

The majority of respondents also agreed that the I-Think method saves time because they do not need to write down everything they learnt except the important and relevant facts. Mind Map also helped them to record important facts concisely. It was also said that this method was easy to understand, simple and encouraged the students to attend the lecture. However, students needed to read their book first. Thus Mind Map indirectly encouraged

students to study the topic before setting up a Mind Map. Additionally, according to one respondent, a Mind Map is like a game of sharing ideas within a group and at the same time enhancing the relationships between the members of the group.

Respondents also stated that Mind Map is a new technique in their learning. Through Mind Map, respondents learned to summarize notes, see information clearly, understand topics through presentations from other groups, and add knowledge on the subject they were studying.

The majority of respondents also explained that activities using Mind Map were different from previous lectures. Mind Map activities were more interesting than previous lectures. Mind Map activities were focused on stimulating the students. It is the students who seek information and give explanations. Additional group activities did not bore them and is considered a fun game and avoid them from feeling sleepy.

Respondents also stated that the use of music as a teaching aid can stimulate their thoughts when preparing Mind Map activities. The music also helped them to focus, uplift their spirits, and make them feel relaxed. Eight respondents agreed that music helped them to carry out the Mind Map activities.

The findings had also proven that the majority of respondents agreed Mind Map activity is one of the activities that must be applied in lectures. These activities, they said, enhanced the students' spirits and motivation to learn MN course. Respondents also wanted this kind of activity to be maintained to stimulate their interest in learning, prevent them from feeling sleepy in class, and with the group activity, many ideas could be contributed. However, one respondent suggested a one-way lecture should be continued as he was more interested in what the lecturer has to say in class.

The majority of respondents also stated that they would apply the I-Think Mind Mapping method in learning other courses. This is because I-Think can build new knowledge, help them think through problem solving, generate ideas and make smart decisions in the face of various possibilities and challenges. This finding is also consistent with the study of Haslina & Khalidah (2015). Students also noted that all these have been achieved when the lecturers diversified their teaching methods in the classroom. Beginning with students' discussions, presentation of findings and learning about their weaknesses and deficiencies. Encouragement and appreciation to students who use creative and innovative mind maps should be culturally embedded amongst educators (Mohd Mahzan et al. 2013). In this way, students would feel they have contributed to the teaching and learning process of History, thus fostering student's self-efficacy. In addition, MN learning could overcome its misconception as a boring subject as previously seen in History subject (Abdul Razaq et al. 2013).

Respondents also agreed that the opportunity given them to explore learning based on I-Think Mind Map enabled them to be more confident and boldly confront and solve problems in new situations. Similar findings were obtained from the study of Haslina & Khalidah (2015). They can also develop social skills and work with others. These skills were acquired as they interacted and discussed while implementing Mind Map activities.

Finally, the majority of respondents explained that I-Think Mind Mapping method has successfully changed their negative perception of t&l in MN course. The findings also showed that I-Think has successfully captured the interest and attention of the students in this course and considered it a significant core component. This is evident when students were able to create an I-Think Map based on their own understanding and creativity. Therefore, initiatives to educate students on building a more creative mind map based on the latest technology should be pursued by MN lecturers to make learning MN more enjoyable. This is in line with Robiah's (2007) recommendation for teachers to leverage the use of information and communication technologies in selecting effective teaching approaches.

Conclusion

Overall, the use of Mind Map as one of the T&L techniques in MN course is effective in boosting student's interest and motivation in the course. Therefore, lecturers should take the initiative to introduce teaching technique using Mind Map as an effective measure of increasing students' interest and motivation in MN course. However, lecturers need to be creative and innovative in carrying out their responsibilities as educators. Diversification of activities in the classroom is highly expected to keep students from feeling confined and bored of just the same activity.

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Confirmatory Factor Analysis for Student Perception of Massive Open Online Course in Islamic Banking Management

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Abstract

The objective of this study is to evaluate modelling of student perception towards massive open online course (MOOC) using confirmatory analysis in structural equation modelling (SEM). MOOC is an online course aimed at unlimited participation and open access via the web to enable learners to access electronic content using internet. In this study, Islamic Banking Management course is selected as reference to measure student perception towards online learning with two input variables namely perceived usefulness and perceived ease of use. The method implemented in this study is using structural equation modelling using confirmatory factor analysis and path analysis. Both of these analyses are to confirm the correlation effect and causal effect between independent variables and dependent variable. The number of respondents is 105 students that involved with online learning course. This study implemented model fit method to assess how well the proposed model captured the covariance between all the items or measures in the model. The results of this study indicate the model fit using Root Mean Square Error of Approximation (RMSEA). The value of RMSEA is 0.059 that is lower than required level 0.08. Therefore, small value of RMSEA shows model fit that avoids issues of sample size by analysing the discrepancy between the hypothesized model, with optimally chosen parameter estimates, and the population covariance matrix. The model indicates student perception towards MOOC is significantly contributes by perceived usefulness and perceived ease of use.

Keywords: Massive Open Online Course (MOOC), Confirmatory Factor Analysis (CFA), Structural Equation Modelling (SEM), Student Perception

Introduction

Massive Online Open Courses (MOOC) has become one of the famous platforms in high education fields. MOOC can be defined as open online learning courses that offer free learning to entire students that register under MOOC online learning system. The main purpose of online learning is to offer its learners an access to education materials at their own pace and time as well as lowering the average educational learning cost (Fesol, 2017). Four public universities in Malaysia were launched MOOC online course namely: Islamic and Asian Civilizations course provided by Universiti Putra Malaysia; Ethnic Relations course provided Universiti Kebangsaan Malaysia; Entrepreneurship course provided by Universiti Teknologi Mara; ICT Competence course provided by Universiti Malaysia Sarawak (Fadzil, et. al., 2015).

Consequently, MOOC online learning provided a good platform for students to study without follow the timetable to attend a class. Besides that students can active access MOOC online learning due to this platform is free, open access, easy and friendly. Students get more

benefit through online learning. However, there are several problems related with MOOC online learning such as they involved with many participant and to manage the course is quite complex. Therefore, it is important to examine the perception of student towards MOOC online learning system. Study by Ahmad Fesol, et al., (2017) found that learning outcome is the best predictor for students' perception towards MOOC online learning. While, Aharony and Bar-llan (2016) reveal that perceived usefulness and perceived ease of use have major influence on the intention to enroll in MOOC online learning. Therefore, this study tries to investigate the perception of students enroll in Islamic Banking Management course that used MOOC online learning system. Students that register this course need to answer questionnaires regarding perception towards MOOC online learning system. This study proposes a conceptual model based on the Technology Acceptance Model (TAM) in order to explain the factors that affect students' perception towards MOOC online learning course.

TAM has been tested in various studies. Study by Lindsay, et al., (2011) regarding adapted TAM model for mobile policing could be applied by other police forces and potentially of organizations. Lu (2003) develops a technology acceptance model for wireless internet via mobile devices. Then, Wong (2016) examines the factors which facilitate effective teaching through massive open online courses. Kuciapski (2017) awareness and readiness to use mobile technologies in order to explain the determinant factors that affect employees' intention to use mobile devices and software for knowledge transfer during the process of knowledge management.

Therefore, Universiti Utara Malaysia (UUM) also developed several courses that used MOOC online learning platform in order to develop and promote management education in Malaysia and worldwide. Its academic program is especially geared towards providing a broad spectrum of academic knowledge and intellectual skills. In Islamic Business School (IBS), Universiti Utara Malaysia was established two courses used MOOC online learning platform that are Islamic Banking Management course and Islamic Bank Operations course. Thus, this study chooses Islamic Banking Management course as reference to measure student perception towards online learning with two input variables namely perceived usefulness and perceived ease of use.

Literature Review

MOOC has recently received a great deal of attention from media, entrepreneurial vendors, education professionals and technologically literate sections of the public (Yuan and Powell, 2013). Study by Mee, et al. (2018) focused on undergraduate's perception of MOOC in Mandarin subject in fostering their employability skills and found that two employability skills which are 'information gaining skill' and 'system and technology skill' are positive perception.

TAM model is the most widely model used to identify the factors that contribute towards acceptance a technology. The original TAM was developed by Davis in 1989 and intends to identify the factors that facilitate integration of technologies into an organization and discover why users accept or reject a technology. Some variables are used to explain this theory namely, perceived attributes or measures are used: perceived usefulness and perceived ease of use (Lindsay, et al., 2011). Lok, (2015) investigate the adoption of Smart Card-Based E-Payment System for retailing in Hong Kong use TAM Model. The findings reveal that all cultural dimensions demonstrate direct effect on perceived usefulness though the influence of uncertainty avoidance is found marginally significant. Qi Dong (2011) found that perceived usefulness variable are determinant behavior of intention for Chinese users towards information technology innovations.

Brandon-Jones and Kauppi, (2018) examine the key antecedents of the TAM for employees expected to use e-procurement systems in their day-to-day activities. The results confirm the core TAM relationships within an e-procurement context. Weerasinghe and Hindagolla, (2018) conduct a systematic review of studies that have used the technology acceptance model in the context of social network sites. The findings illustrated that the TAM has been successfully applied via its extension and modification for explaining user adoption and acceptance of social network sites.

Research Methodology

The objective of this study is to validate the relationship between latent endogenous construct (student perception) with two latent exogenous construct namely perceived usefulness and perceived ease of use. The two latent exogenous constructs were developed from technology acceptance model.

Target population

Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics and it is also known as the theoretical population. This study implemented random sampling technique. The random sampling is purest form of sampling under the probability approach, random sampling provides equal chances of being picked for each member of the target population.

This study performed sampling on 105 students who are having experience using online platform with MOOC. The subject that is selected in this study is Islamic Banking Management.

Questionnaire development

The aim of this study is to evaluate relationship between two exogenous latent construct with one endogenous latent construct. The two-endogenous latent construct are developed using technology acceptance model namely perceived usefulness and perceived easy to use. Then, the exogenous latent variable selected in this study is student perception toward MOOC online learning. Table 1 shows questions for testing exogenous latent construct. Table 2 shows question for perceived usefulness. Table 3 shows questions for perceived ease of use.

Table 1
Items for endogenous variable: student perception toward MOOC online learning

Student perception toward MOOC online learning
1. I intend to use MOOC online learning
2. I plan to use MOOC online learning for the other course
3. Using MOOC will improve my knowledge
4. Using MOOC online learning make easier for me to do homework
5. I find MOOC online learning is easy to use

Table 2
Items for exogeneous variable 1: perceived usefulness

Perceived usefulness
1. Using MOOCs will help me to understand better
2. I believe using MOOC will improve the learning process
3. Using MOOC will contribute to my personal success in the future
4. The courses video provided able to meet my learning needs
5. I can repeat watch the video

Table 3
Items for exogeneous variable 2: perceived ease of use

Perceived usefulness
1. It would be easy for me to become skillful at MOOC online learning
2. I think that using MOOC is very simple
3. I think that generally MOOC use is easy
4. I find MOOC is flexible to interact with other students
5. I think MOOC is easy to understand

Regression analysis

Regression analysis is a set of statistical processes for estimating the relationships between an endogenous variable (Y) and one or more exogeneous (X) variables. The equation for regression analysis is represented using Equation (1).

$$Y_i = f(X_i, \beta) + e_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(1)}$$

In Equation (1), the parameters are described as follows:

Y_i : Dependent variable (endogenous variable).

X_i : Independent variables (exogenous variables).

β : Coefficient of vector for each independent variable.

e_i : Error term representing and additive error term that may stand in for unmodeled determinants of Y_i or random statistical noise.

In regression analysis, ordinary least squares (OLS) is implemented to estimate value of coefficient β. In statistics, ordinary least squares (OLS) is a type of linear least squares method for estimating the unknown parameters in a linear regression model. OLS chooses the parameters of a linear function of a set of explanatory variables by the principle of least squares: minimizing the sum of the squares of the differences between the observed dependent variable (values of the variable being predicted) in the given dataset and those predicted by the linear function.

The OLS method implemented to find value of β that minimizes the sum of squared errors. The sum of squared error is shown in Equation (2).

$$\sum_i e_i^2 = \sum_i \left(Y_i - f\left(X_i, \beta \right) \right)^2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \ (2)$$

In this study, there are one dependent variable and two independent variables, therefore the equation for regression analysis become as Equation (3).

$$Y_i = \beta_0 + \beta_{1i} + \beta_{2i} + e_i \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.\ldots\ldots.\ (3)$$

The OLS estimates infinitely many combinations of $\left(\beta_0, \beta_1, \beta_2 \right)$ that minimize the sum of squares errors equally well, all of which lead to $\sum_i e_i = 0$.

Result and Discussions

The objective of this study is to validate the relationship between latent endogenous construct (student perception) with two latent exogeneous construct namely perceived usefulness and perceived ease of use. This study implemented confirmatory factor analysis to develop model fit that meet the requirement level. This study emphasized on absolute fit, incremental fit and parsimonious fit.

Theory and framework for student perception towards MOOC

Figure 1 shows schematic diagram of research model for technology acceptance model towards student perception on MOOC. The hypotheses for this framework are stated in Table4.
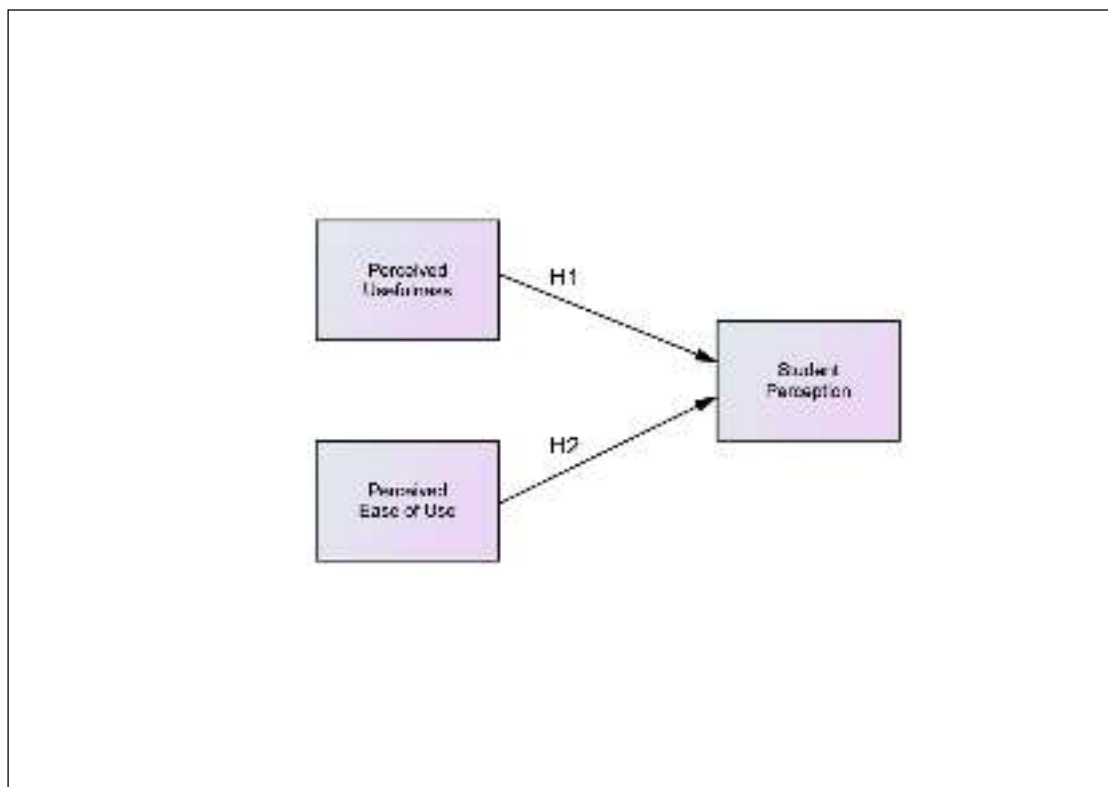
Figure 1. Schematic diagram of research model for technology acceptance model towards student perception on Massive Open Online Course (MOOC)

Table 4
Hypothesis testing for student perception framework

Hypothesis	Hypothesis statement
H$_1$	The perceived usefulness has a significant effect on the student perception towards MOOC
H$_2$	The perceived ease of use has a significant effect on the student perception towards MOOC

Confirmatory factor analysis (CFA)

Figure 2 shows structural diagram for correlation measurement of technology acceptance model towards student perception on MOOC. The model fit index for correlation is stated in Table 5. The RMSEA for this structural diagram is 0.196 which higher than required index. Therefore, this structural need modification to meet with the requirement level of model fit index. The items of constructs need to consider for deletion with refer to modification indices (MI).

Table 5
Model fit analysis for student perception framework

Name of category	Name of index	Index value	Requirement level	Decision
1. Absolute fit	RMSEA	0.196	RMSEA<0.08	Model not fit
2. Incremental fit	AGFI	0.629	AGFI>0.90	Model not fit
3.Parsimonious fit	Chisq/df	10.585	Chisq/df<5.0	Model not fit
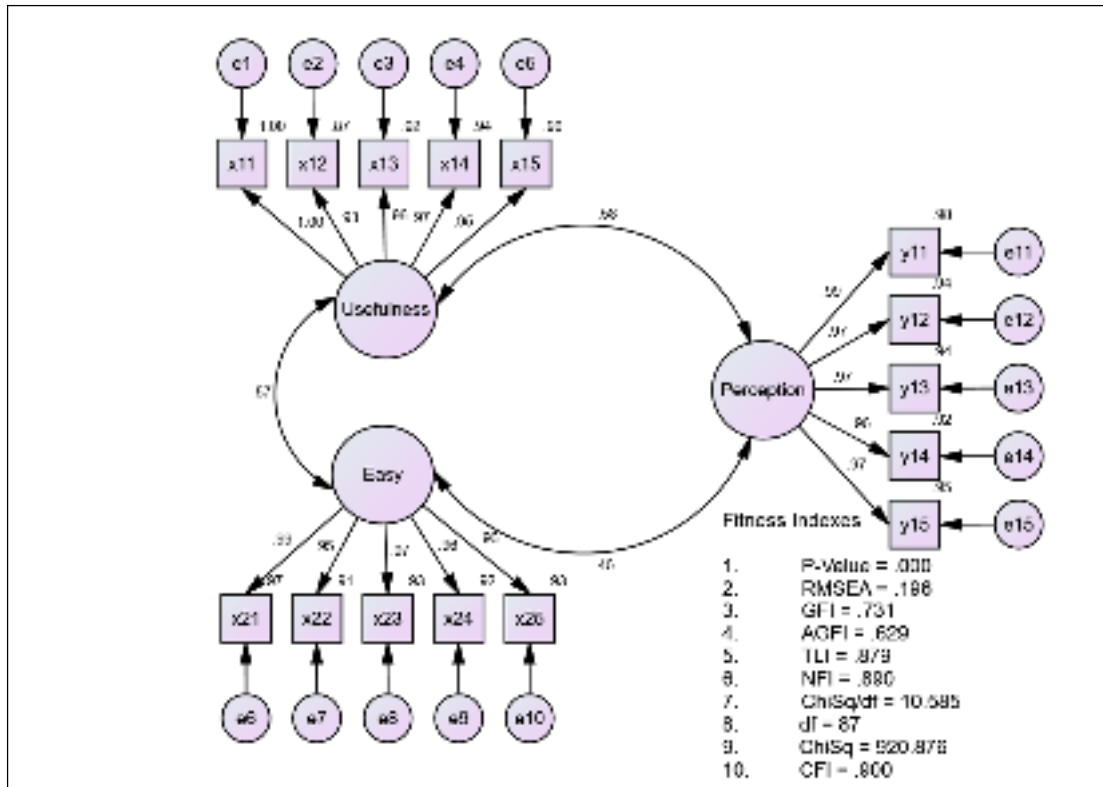
Figure 2. Structural diagram for correlation measurement of technology acceptance model towards student perception on Massive Open Online Course (MOOC)

Confirmatory factor analysis (CFA) using modification indices (MI)

Figure 3 shows Confirmatory Factor Analysis (CFA) for technology acceptance model towards student perception on MOOC. The model fit index for correlation is stated in Table 6. This study deleted items with high Modification Index (MI). This study deleted items x13, x14, x22, x25, y12 and y13 to increase fitness of model. The RMSEA for this structural diagram is 0.059 which lower than required index. In structural equation modelling (SEM), goodness-of-fit indexes indicates the fitness of the model to the real data.

Table 6
Model fit analysis for student perception framework

Name of category	Name of index	Index value	Requirement level	Decision
1. Absolute fit	RMSEA	0.059	RMSEA<0.08	The required level is achieved, model is fit
2. Incremental fit	AGFI	0.929	AGFI>0.90	The required level is achieved, model is fit
3.Parsimonious fit	Chisq/df	1.872	Chisq/df<5.0	The required level is achieved, model is fit
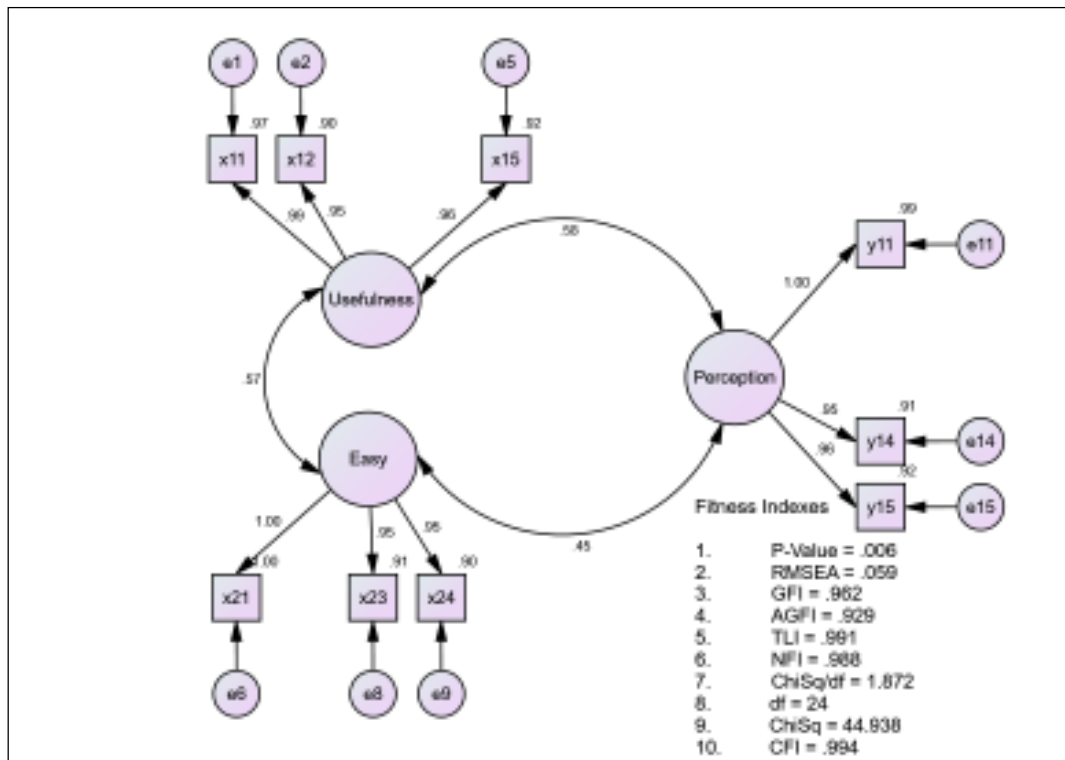
Figure 3. Confirmatory Factor Analysis (CFA) for technology acceptance model towards student perception on Massive Open Online Course (MOOC)

The structural model in modelling causal relationship

Figure 4 shows causal structural model for technology acceptance model towards student perception on MOOC. The model fit index for correlation is stated in Table 7. The RMSEA for this structural diagram is 0.059 which lower than required index. Absolute fit, incremental fit and parsimonious fit are meet with the required level for goodness-of-fit indexes. Table 7 indicates the model is fit for all three categories of indexes.

Table 7
Model fit indexes of structural equation modelling for student perception framework

Name of category	Name of index	Index value	Requirement level	Decision
1. Absolute fit	RMSEA	0.059	RMSEA<0.08	The required level is achieved, model is fit
	GFI	0.962	GFI>0.90	The required level is achieved, model is fit
2. Incremental fit	AGFI	0.929	AGFI>0.90	The required level is achieved, model is fit
	NFI	0.988	NFI>0.90	The required level is achieved, model is fit
3.Parsimonious fit	Chisq/df	1.872	Chisq/df<5.0	The required level is achieved, model is fit
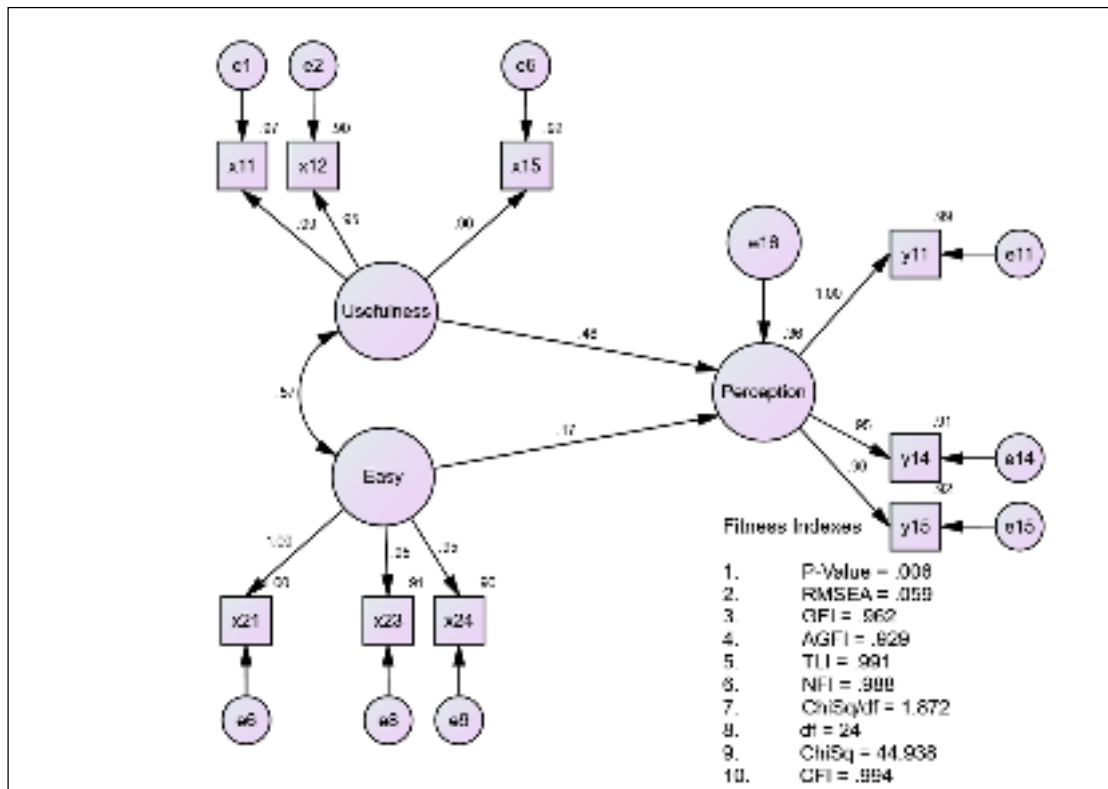
Figure 4. Structural Equation Modelling (SEM) for technology acceptance model towards student perception on Massive Open Online Course (MOOC)

Uni-dimensionality

Unidimensionality is achieved when measuring items have acceptable factor loading for respective latent construct. In order to confirm unidimensionality of a measurement model, all items should be higher than 0.65 of factor loading. The causal relationship model in Figure 4 indicates all of the factor loading for items are larger than 0.65. Therefore, unidimensionality is meet for this model.

Model validity

Model validity is the ability of instrument to measure what is supposed to be measured for a construct. The validity that is required for each measurement model as follow:
(i) Convergent validity by using average variance extracted (AVE) in Table 8. The model in this study after CFA process exhibits is larger than 0.5. Therefore, all latent constructs are meet requirement for convergent validity. Convergent validity tests that constructs are expected to be related are, in fact, related.

Table 8
The confirmatory factor analysis (CFA) report summary for validity and reliability

Construct	Item	Factor loading	Cronbach Alpha (above 0.7)	Construct Reliability, CR (above 0.6)	Average Variance Extracted, AVE (above 0.5)
Perceived usefulness, x1	x11	0.99	0.975	0.977	0.935
	x12	0.95			
	x15	0.96			
Perceived ease of use, x2	x21	1.00	0.977	0.977	0.935
	x23	0.95			
	x24	0.95			
Student perception toward MOOC online learning, y1	y11	1.00	0.979	0.980	0.941
	y14	0.95			
	y15	0.96			

Model reliability

Model reliability is the extent of how reliable is the said measurement model in measuring the intended latent construct. The assessment for reliability of measurement model could be made using following criteria:

(i) Internal reliability using Cronbach Alpha. The value for latent variables is larger than 0.7, therefore all latent variables have internal reliability.

Discriminant validity of SEM

Discriminant validity tests that constructs that should have no relationship do, in fact, not have any relationship. The diagonal values (bold values) are square root of average variance extracted (AVE). While, other data values show correlation between the respective latent constructs. The discriminant analysis is achieved when a diagonal value in bold is higher than the values in its row and column. Table 9 shows all diagonal value is larger than other values. Therefore, this study indicates all latent constructs exhibit discriminant validity.

Table 9
Discriminant validity for latent constructs

Construct	x1	x2	y1
Perceived usefulness, x1	**0.967**		
Perceived ease of use, x2	0.570	**0.967**	
Student perception toward MOOC online learning, y1	0.580	0.450	**0.970**

Regression analysis of SEM

Regression analysis is a statistical method that examines the relationship between two or more variables of interest. Regression analysis examines the influence of one or more independent variables on a dependent variable. The definitions of variables are as follows:

(i) Dependent Variable: This is main factor that the study trying to understand or predict. This study selected dependent variable as student perception toward MOOC online learning.
(ii) Independent Variables: These are factors that the study hypothesizes have an impact on dependent variable. This study selected two independent variables namely perceived usefulness and perceived ease of use.

R-squared (R^2) is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables in a regression model. From Figure 4, the value of R^2 is 0.36, which indicate the contribution of exogenous latent construct X1 and exogenous latent construct X2 in estimating endogenous latent construct Y is 36 %.

Table 10
The unstandardized regression weight for path diagram

Relationship	The actual beta value	Standard error (S.E.)	Critical ratio (C.R.)	P-value	Comment
Perception←Usefulness	0.541	0.071	7.584	***	Significant
Perception←Easy	0.166	0.060	2.783	0.005	Significant

Table 10 and Figure 5 indicate main findings as follow:
(i) When Usefulness (X1) goes up by 1 unit, Perception (Y1) goes up by 0.541 unit.
(ii) The regression weight for Usefulness (X1) in the prediction of Perception (Y1) is significantly different from zero at the 0.001 level (two-tailed).
(iii) When Easy (X2) goes up by 1 unit, Perception (Y1) goes up by 0.166 unit.
(iv) The regression weight for Easy (X2) in the prediction of Perception (Y1) is significantly different from zero at the 0.01 level (two-tailed).
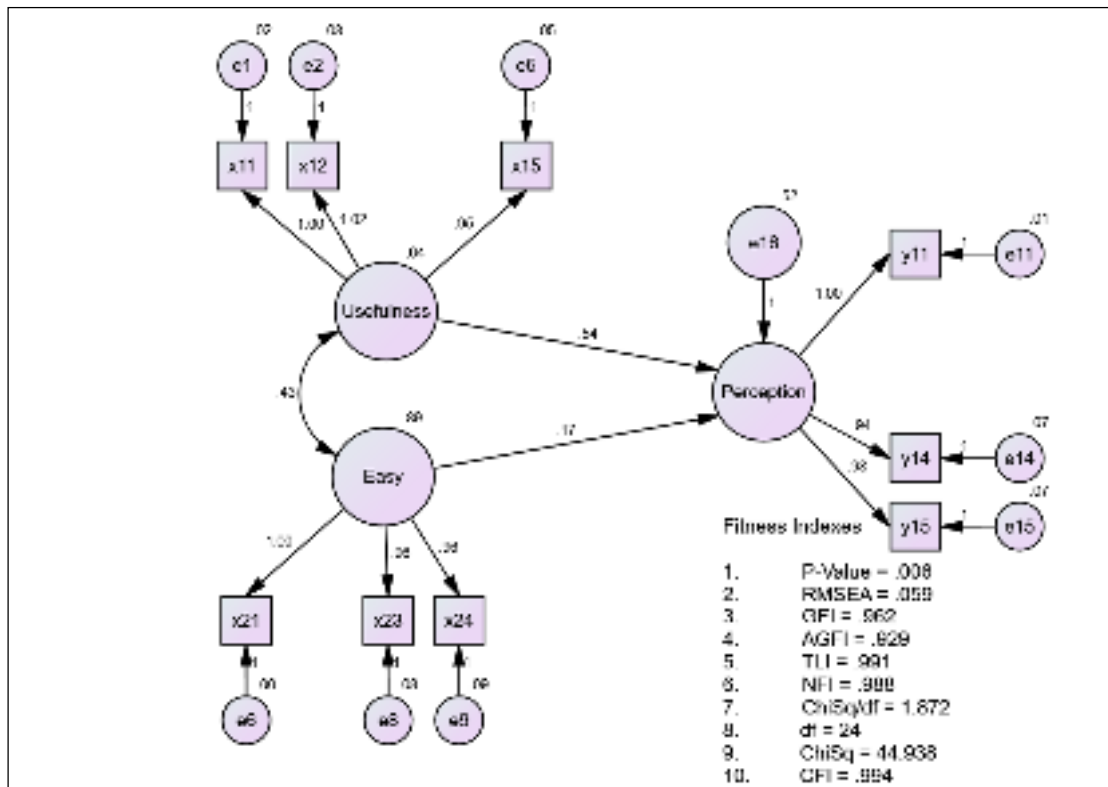
Figure 5. The unstandardized regression weights for Structural Equation Modelling (SEM) for technology acceptance model towards student perception on Massive Open Online Course (MOOC)

Conclusion

The objective of this paper is using structural equation modelling to examine relationship between two exogenous latent constructs (perceived usefulness and perceived ease of use) related to one endogenous latent construct (student perception toward MOOC online learning). In improving model fit for structural equation modelling, this study implemented confirmatory factor analysis (CFA). The findings of this study are:

(i)   The RMSEA for this structural diagram is 0.059 which lower than required index. Absolute fit, incremental fit and parsimonious fit are meet with the required level for goodness-of-fit indexes.

(ii)   The value of R^2 for regression analysis is 0.36, which indicate the contribution of exogenous latent construct X1 and exogenous latent construct X2 in estimating endogenous latent construct Y is 36 %.

(iii)   When Usefulness (X1) goes up by 1 unit, Perception (Y1) goes up by 0.541 unit.

(iv)   The regression weight for Usefulness (X1) in the prediction of Perception (Y1) is significantly different from zero at the 0.001 level (two-tailed).

(v)   When Easy (X2) goes up by 1 unit, Perception (Y1) goes up by 0.166 unit.

(vi)   The regression weight for Easy (X2) in the prediction of Perception (Y1) is significantly different from zero at the 0.01 level (two-tailed).

Acknowledgement

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Service Learning in Accounting and Reporting Course Based on Islamic Principles: Benefits and Challenges

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Abstract

Service-learning involves students to immerse themselves into real environment setting and provides avenue for students and community to a wide range of experiences. Interviews with students who involved with service learning activities in accounting and reporting course based Islamic principles (i.e. Zakat Accounting) have indicated benefits and challenges. Understanding the course content of zakat accounting, appreciating discipline of accounting and reporting, enhancing students' affection towards community and improving communication skills are among the benefits of service learning. However, the students could also face challenges in applying service learning activity in accounting and reporting course based on Islamic principles. The challenges include (1) collecting accounting documents; (2) meeting the food owners; and (3) preparing the financial statements and determining zakatable amounts. The findings imply that students need to address these challenges in order to take the benefits of service learning activities. These activities are also encouraged to be continued in future for accounting and reporting course (i.e. Zakat Accounting) due to the activities that are fun and provide valuable experience. As a result, educators and policy makers should promote and support these service learning activities which are regarded as one of the high impact educational practices in Malaysia.

Keywords: Service Learning, Accounting Course, Benefits, Challenges, Islamic Principles, Financial Reporting

Introduction

Service-learning is a real-world application of classroom knowledge in a community venue that allows students to synthesize course material in more meaningful ways. The students will involve themselves into real environment setting through service learning activities that give an avenue for students and community to a wide range of experiences (McGoldrick and Ziegert, 2008). The service learning activities may also include various stakeholders and community (Musa, Ibrahim, Abdullah, Mat and Khiri, 2017) such school community or neighborhood community and citizen in multi-ethnic in Malaysia (Mahadir, Piang and Jamil, 2019). Hence, students could build relationships, solve problems, value a sense of community and gain self-awareness when applying service learning activities.

Furthermore, service learning could be considered as one of high impact practices in tertiary education given that educating accounting and financial reporting course seems to be an interesting way of teach Islamic accounting subject (i.e. Zakat Accounting) well as serving the community needs. Hence, the benefits and challenges in employing Islamic principles for

accounting and financial reporting course through service learning activities are noteworthy issues to be discussed in this paper.

In particular, research objectives are as follows: (1) to explore the benefits acquired by the students when applying service learning in accounting and reporting based on Islamic principles, and (2) to explore the challenges faced by the students when applying service learning in accounting and reporting based on Islamic principles.

Specifically, Section 2 reviews service learning in accounting and reporting course based on Islamic principles, Section 3 and 4 respectively discuss the benefits and challenges faced by the students when applying the skills in accounting and reporting based on Islamic principles through service learning? Conclusions for this study are discussed in Section 5.

Service Learning in Accounting and Reporting Course

Service-learning refers to learning activity which involves students to immerse themselves into real environment setting. In addition, service-learning is a curricula-based approach to teaching and learning that allows students to directly put academic theory into real-world practice (Blessinger, Sengupta and Yamin, 2019). It gives an avenue for students and community to a wide range of experiences. This real-world application of classroom knowledge in a community setting allows students to synthesize course material in more meaningful ways. In other words, service-learning method provides a distinctive, meaningful and influential life experience (Zieren and Stoddard, 2004).

The process of reflection is a core component of service-learning. Service-learning practitioners and researchers alike have concluded that the most effective service-learning experiences are those that provide 'structured opportunities' for learners to critically reflect upon their service experience. Reflection can enable learners to examine and form the beliefs, values, opinions, assumptions, judgments and practices related to an action or experience, gain a deeper understanding of them and construct their own meaning and become aware of their responsibility towards others (Godfrey, Illes Berry, 2005).

Another element that tends to make service learning unique is that multiple stakeholders will assess students (Martin, 2015). The assessments include community, teacher and student assessment. The community partners can get their say by assessing the students through community assessment. In addition, along with evaluating students on the content, teacher can observe student learning activity at the real community site on how well the student apply the soft skills under teacher assessment. Lastly, students might conduct self-assessment as a form of reflection through student assessment.

This service learning activities will further provide students an opportunity to express their affections towards the community and responsibility (Berry and Workman, 2007). The instructors will explore the possibilities of embedding service learning in the course that they are teaching whilst attempting to solve real community problems and investigate the impact of service learning on students' learning in the course and lecturers' teaching the course.

Service-learning activities are also beyond memorable because it could influence one's career path and enhance civic responsibility. Service-learning activities extend learning beyond the academic term and lay the foundation for continual personal growth throughout the student's academic experience and beyond.

Accounting and financial reporting activities are also directly linked to service-learning (Rama, 1998). Service-learning refers to learning activity which involves students to immerse themselves into real environment setting. It gives an avenue for students and community to a wide range of experiences. It offers direct application of theoretical models. Therefore, applying Islamic conceptual framework in accounting and financial reporting education,

service learning as one of the high impact educational practices 'HIEPs' in tertiary education, seems to be an interesting way of learning Islamic accounting course as well as serving the community needs.

Research Method

This research employs qualitative strategy in which interview is used as major qualitative research tool. Data is collected for one semester A181 on students enrolled in *Islamic Accounting Course*. This research is divided into 2 phases throughout the semester, in which the first phase resembles the pre-intervention stage i.e. before service learning is introduced in the course. In this phase interviews with the students on their expectation and ways of learning as well as concepts on Islamic contracts, zakat and accounting as well as financial reporting are collected. Introduction about the proper accounting system that needs to be followed (the need of evidence such as receipts etc.). Students need to understand the problem faced by the community. Input on accounting procedures will be given by the instructors to the students before they work with the community. Second phase, feedback from the students are collected. The students are interviewed on (1) the benefits acquired when applying service learning in accounting and reporting based on Islamic principles, and (2) the challenges faced by the students when applying service learning in accounting and reporting based on Islamic principles.

Findings and Discussions

Benefits of Service Learning Activities

This section presents the benefits based on interview with students who involved with service learning activities for Islamic Accounting Course (i.e. Zakat Accounting) in University Utara Malaysia.

> KSMH: *"Very good activity for every student who joins it because they will get more benefits from the activity. This service learning is fun. There is a lot of things to gain rather than to loose".*

The benefits of service learning activities include (1) understanding the course content of zakat accounting; (2) appreciating discipline of accounting and reporting; (3) enhancing students' affections towards community and (4) improving communication skills.

Understanding the Course Content of Zakat Accounting

Followings are the findings based on the interviews with students who believe that service learning activities could provide understanding the course content of zakat accounting.

> AK: *"In my opinion to learning how to become a zakat consultant, this is a very valuable experience because we learn not only in class but we learn by doing it directly to the community".*
> *"I never find program like this in my hometown country. There are programs like this,*

but students only help in the process of recording accounting in the business, but have not yet reached the process of calculating the zakat.

NA: "I was able to find out how the shopper expenses to run business every day and how to calculate the real business zakat"
"Helps to apply of what have been taught in class by lecturers directly can do it practically, thus increase the understanding"

DF: "Real income, real expenses and real deduction on zakat that give us ability to make the zakat calculation more accurate"
"Gained how to calculate zakatable amount on the earnings based on real business activities unlike already prepared the syllabus"

KZ: "It helps them about zakat"
"I learn more clearly about the method of calculation also applied in the real world".

MN: "Service learning really help me a lot to understand more about how to calculate the zakat payment and the important of it"

DF: "Real income, real expenses and real deduction on zakat that give us ability to make the zakat calculation more accurate".

FAA: "I gained more knowledge about how to calculate the zakat payment from this service learning"

Appreciating discipline of accounting and reporting

In general, applying service learning activities in accounting and reporting course seems to make students more appreciate the discipline of accounting and reporting. The followings are the findings based on interviews with the students.

NA: *"I implement all that I learn in class to prepare the accounts and this give me more understanding what I was learn in class"*,

NNJ: *"I get to know better about business such as on how it is conducted the challenge and obstacle that need to overcome and closer look at the calculation process in business. She further added "before this I have only learn thus theoretically and this program has opened my eyes about it".*

ADF: *"Could show the draft of financial statement to the stall owner and made figure confirmation from her".*

NAZ: *"I felt happy as we can apply our knowledge that we have learnt to analyze and reason the financial figure and information".*

SMK: *"Gain many new knowledge about the real way to make an accounting statement rather than on just learn it theoretical way".*

SSR *"I can know a little bit how the business starts and how much capital. This makes me get new knowledge about the business.*

CSW *"The service learning is a good platform to me to apply my accounting knowledge.*

LGG: *"A chance to enhance our practical skills in preparing the profit and loss statement for the owner".*

KZ: *"How we applied our accounting skills by helping the food store owner to prepare a set a financial statement.*

NSAR: *"For me, this activity is very good as is 100% related to Islamic Accounting subjects. It can strengthen our memory in order to prepare the profit and loss, balance sheet statement and how to calculate zakatable amount".*

HDS: *"Really assist the student to enhance the understanding in accounting".*

ADH: *"Studying in the lecturer room for whole semester, practical by doing that activity would help students to be prepared to face with the real world of business".*

SRT: *"Each of us can understand more and not only about zakat part but also the accounting process".*

NFMA: *"I do also learn appropriate way to interview people to get some important information to relate what I have learnt in class with the real situation like Profit and Loss Statement and Balance sheet. I can understand more about accounting process".*

YJY: *"Exposed to how to gather real time business information from the business owner and calculate for profit or loss as well as the statement of financial position".*

FAA: *"I am a little bit confused because I have less knowledge about the financial statements".*
"I manage to understand to understand how to calculate the income statement after getting help from other members".

MMB: *"Before this program, I'm bit confused about balance sheet statement"*
"But now, I get to know theoretically and practically about the account statement which is important to calculate the zakat payment".

Enhancing students' affection towards community

The third benefit discovered by students who participated in the service learning activities is related to enhancement of students' affection towards community. Among the findings are as follows:

MNH: *"This is new thing that I found and I first did a service learning program here. It is very positive for us as students have experience like this because later we will go into the community and have to get used to them".*

SAR: "Think the service learning give us an experience of contributing and communicating with the society using the knowledge from classes as the medium.

NA- "Know better about business such as on how it is conducted the challenge and obstacle that need to overcome and closer look at the calculation process in business. I have only learned this theoretically and this program my eyes about it.

NAY: "I learnt how to communicate with community who are unfamiliar with accounting process, how to get information from them where we will process the information into an annual financial report for the business and calculate the zakat".

WAWK: "Students can actually contribute a lot to society and they don't have to wait until the time you have end your studies and works to contribute to people around you. A lot of people willing to learn but they might not get a chance or shy to ask, so it was our role to help and share some important knowledge to the society".

Improving communication skills

The last benefit realized by students when they applied service learning activities in accounting and reporting course (i.e. zakat accounting). Following are thoughts given by students.

BM: *"learn to be more confident and belief myself, we have to be flexible with the situation, at first, I feel nervous and after that, I feel more confident to involve in new task and activities, I learned the important of team work, respect each other and be cooperative attitude, I gain a lot a new experience and knowledge in the shop through this training"*

NA: *"Improving my confidence on communication with stranger as I am shy person".*

KSMH: "Actually improving our confidence when we need to confront with the owner and talk about accounting though she graduated in the accounting major".
"It's improving our communication skills when we successfully persuade her on showing"

MDSKA: "Have gained new experience and knowledge on how to interact and cooperate with people to get the data of his business".

FMK: "I am excited in receiving concept is different with the usual group project".
"It helps us to know our group members closely especially regarding the commitment and their responsibility toward their tasks".
"A lot in communication skill and about a small business in details".

FAA: "I found that this service learning is quite difficult".
"After getting more guidance from the lecturers, this task is not as difficult as I think".

"Learned how to communicate with other people especially the people that I meet for the first time".
"Improve my soft skill".

Based on the above findings, students have generally acquired benefits when applying the service learning for accounting and reporting course in UUM. They have understood the course content of zakat accounting, appreciated discipline of accounting and reporting, enhanced students' affection towards community and improved communication skills. Nevertheless, these students need to address the challenges while conducting the service learning activities.

Challenges of Service Learning

Students had faced challenges in completing the service learning activities with the food stall owners. Interviews with students have resulted the followings challenges that comprise (1) meeting the food owners; (2); collecting accounting documents and (3) preparing financial statements and determining zakatable amounts.

Meeting the food stall owners

The students claim that meeting with the food stall owners is the main challenge for them in completing the activities of service learning. Followings are their comments in relation to the first challenge.

SSR: *"I find a difficult to make this activity because it needs to interact with the shop owner. I wonder if the owner of the shop can cooperate. Way to communicate with the shop owner, how to deal with the owner to ask about starting business".*

SIP: *"The limited time that students have to manage between assignment, food owners and the service learning, is complicated".*

KZ: *"It is very difficult for him to share information about his business.*
"Our challenge is to make an appointment for the next session because he said it was difficult to meet him while his business is operating because have a lot of customer".

AK: *"The problem is each of us have different timetables and plans, so web have difficulties to set a perfect time for a meeting with the owner".*
"hard to the other international member (from Yemen) to understand and got difficulty to catch the point easily, as well as the other Malaysian and Indonesian members".

MAH: *"Have different schedule and not everyone staying in the campus, it was quite hard for us to manage our time to meet and make discussion at the time where the food owners available too".*

NATH: *"Have the different class in different time".*

NAMG: *"Quite hard sometimes to steal her time for our formal meeting on Tuesday for this activity".*

Collecting accounting documents

Another challenge faced by students is related to collecting source documents for accounting and reporting from the food stall owners. The students had shared the following challenge.

> *KZ: "the challenge which the stall owner did not retain any transaction documents that are needed for our financial statement construction".*
> *"We get the price of the item by asking the owner's estimate and placing it through the amount or information given by the business owner".*
> *"We only assume the price of the item based on the owner's customer of purchasing the goods every day or every week".*
> *FAA: "Got all the information and try to prepare the profit and loss statement based on the estimation that has been given".*
> *"Take the average amount of the daily transaction and come out with the yearly amount of Profit and Loss Statement as the transaction seems the same each day".*

> *LGG:" Collecting the details of balance sheet statement, the current asset been confirmed with the owner on the amount of cash on hand or in bank owned by her business while she discussed about the estimation of the amount fixed asset as she did not keep the receipt or document on the particular item".*

> *CSW: "This service learning is we do not have any original receipts. We cannot find any certainty of the actual amount of inflow of this business.*
> *"Do not have a receipt for the daily transaction.*
> *"Retrieve some basic background and operation information of the business.*

> *FAA: "Lack of information in some step of collection the information from the owner which was sometimes obstructing to continue record the process and to solve it".*

> *NAL: "Not keeping the receipt the payment and they do not do recording for every day".*

> *MAHF: "Collect the information for preparing.*
> *"Asking the question about the business.*
> *"Does not really keep all the receipt of transaction and rarely jot down the information of her business, but she still has some notes about her daily expenses on the business.*

> *"Collect the receipt only due to the lack of preparation by the food owner and the lack of knowledge about how to manage the business"*

> *STSK: "Did not get any documents to see the inflow and outflow of money by this company".*

> *KZ: "Receipt is one of the important business documents that need to be recorded in the financial statements".*

AK: "The other data and information regarding the owner and her business should be collected I order to complete the report".

NAL: "Asked the relevant parties to keep their purchase receipts for our use to make us record their expenses for his business".

NAMK: "We have to estimate the amount for some of the items".

KSMH: "Asking the food owner the document that involve during the buying process of cost of goods sold".

Preparing financial statements and determining zakatable amounts

Next challenge faced by students who involved with service learning activities is related to preparation of financial statements and determination of zakatable amounts. The students who had studied basic accounting course in the early year of their Bachelor program seem to have less experience and skills related to accounting and financial reporting. Followings are views among students who found that service learning activities create challenge in preparing the financial statements and determining the zakatable amount.

NSAR: "Calculate the zakat payable amount which is the net current asset method and net growing capital method.

ADF: "Statement are indispensable to assist in the calculation of zakat on business that must be paid by the owner".

SMK: "Asking the food owner either he agree or not with the figure and amount in the profit and loss that we issued in order to determine the zakatable amount".

SSR: "Some of us facing problem while competing the balance sheet and the profit and loss statement as some of us do not have strong basic of accounting"

MMT: "We have difficulty determining the amount of the item to be included in the balance sheet and income statement".

YJY: "We managed to prepare the financial statement which is Statement of Profit and Loss, Balance Sheet and Zakat Calculation".

MNH: "Sorting out the document in preparing the financial statement as the documents or information might be not completed as what we expected".

FAA: *"Quite challenging for us to estimate the profit and loss for the whole year business".*

NFMA: "Quite challenging for us to look for each item that we need".
"Combines her business account together with her personal account".
"Helping them to carry out an exact figure on zakat or preparing the financial statement for one-year business".

HDS: Have shown the completed balance sheet statement to the food owner to get his confirmation and approval for our data numbers in the balance sheet statement".

Collecting accounting documents, meeting the food owners and preparing the financial statements and determining zakatable amounts are among the challenges faced by the students in applying the service learning activities for Zakat Accounting course. However, the students manage to address these challenges in completing their activities.

Recommendations and Conclusions

Students seem to address the challenges and take the benefits of service learning activities in accounting and reporting course based on Islamic Principles (i.e. Zakat Accounting). Hence, service learning activities should be continued in future due to a lot of experience and skills acquired by students through the programs. Followings are students' opinions in relation to service learning activities.

AK: "These activities need to be continued as it enhances the confidence of interacting, gain more experience and making me as a dedicated person in carrying out such group activities".

NNKB: "For my opinion this program gives me exposure how to work with the society and give a real picture for work field. I hope this program will be continuing in the future".
NAZ: "I have learned a lot of things and get precious experience. The service learning should be go on in the future to help the stall's owner in UUM".

HFL: "Service learning is a fun activity and I like it. I got to know more people and gain new knowledge. Get to apply my theoretical knowledge to real life situation".

MAMZ: "A really good new experience, understood and mastered students but also the implementation to be active and learn how to communicate about the accounting terms".

NFA: "A lot of experience and lesson".

ADG: "This very valuable experience because we can learn not only in class but we learn by doing it directly".

NSAR – *"For me, this activity is very good as is 100% related to Islamic Accounting subjects. It can strengthen our memory in order to prepare the profit and loss, balance sheet statement and how to calculate zakatable amount".*

FAA: *"Studying in the lecturer room for whole semester, practical by doing that activity would help students to be prepared to face with the real world of business".*

NAL: *"I realized that this service learning is does not make much time if all members of group take part in this process. I am very happy because can take part in this project*

and hope all students participate in this project".

In conclusions, service learning activities in accounting and financial reporting course based in Islamic principles (i.e. zakat accounting) should be further continued in future given that the activities are considered as fun and enjoyable learning. As a result, educators and policy makers should promote and support these service learning activities which are regarded as one of the high impact educational practices in Malaysia.

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Fostering Engagement in Learning Mathematics among Foundation Students in Universiti Utara Malaysia

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Abstract

The challenging task for educators is to keep students engaged in deep learning subject matter. Thus, in this study, we embedded activities to be included in several topics such as in Inequality, Sequence, and Function. During solving these activities, the students are being coached to use structured methodology that follow the sequence Explore, Discover, and Develop (ExDiD). Based on these activities and structured methodology, the findings suggest improved engagement among foundation students in learning mathematics. Students showed high level of motivation, active engagement in class activities, and more aware on the importance of mathematics as tools for problem solving activities through active learnings and problem-based learning.

Keywords: motivation in learning mathematics, student's engagement, STEM activity, paired-*t* test.

Introduction

Teaching mathematics is a thought-provoking task to educators. In order to engage students in deep learning of the subject matter, innovative ways of teaching are crucial in designing teaching plans. An early study of teaching mathematics focuses on the difficulties in learning mathematics related to ability to translate normal language into mathematical notation, and vice versa (Clement, Lochhead & Monk, 1981). A more recent study suggests that semiotic representation is crucial in learning mathematics. This means that the most important factor in learning mathematics is not only the representation of semiotic representation, but on its transformation - on how learners should also work on mathematical objects and with them (Schoenfeld, 2009). The vast compendium of study also discusses teaching mathematics via embedding technology through visualization (Zimmerman & Cunningham (1991), Nardi & Ionnone, 2003; Presmeg, 2006; Saha, Ayub & Tarmizi, 2010; Presmeg, 2014).

Beginning the millennium, active learning has been taking root in education. Boaler (1999) highlighted that students' ability to see the applications in problem-based learning (PBL) of mathematics makes a difference in learning, as opposed to them seeing mathematics as a set of isolated skills. He also noticed an increase in motivation and interest in the real-world problems and projects. Similar findings are reported by Bell (2010), Burguillo (2010), Padmavathy & Mareesh (2013) and Remijan (2017). Besides improved motivation in mathematics learners, stronger engagement in the taught subjects (Chao, Chen, Star & Dede, 2016), enhanced academic skills development (Holmes & Hwang (2016)), improved mathematics performance (Jenkins, 2017), and increased interest in STEM careers (LaForce, Noble & Blackwell, 2017) were evident.

How best to construct activities that effectively support active learning? Some argued that knowledge and skills needed in this current age must be closely linked to learners' interests as to improve their motivation to study (Beetham & Sharpe, 2013). In this digital era, it is only natural to assume the youngsters who actively embark in learning mathematics are those whose interest lie in the digital technologies as well. Among activities best suited include the utilization of digital resources (Drijvers, 2015), interactive and online teaching materials (López, 2010), flipped classroom (Clark, 2015), and digital games (Van Eck, 2006; Takeuchi & Vaala, 2014).

To foster an active learning environment, a variety of ways should be introduced to mathematics learners. Such activities include the use of games such as board games (Afari, Aldridge, Fraser & Khine, 2013; Laski & Siegler, 2014; Abdul Jabbar & Felicia, 2015), project-based activities (DeJarnette, 2012; Capraro, Capraro & Morgan, 2013; Rijken, 2017), and even storytelling (Yang & Wu, 2012; Chun-Ming, Hwang & Huang, 2012). Based on the aforementioned discussions, the need to design activities for mathematics subject is deemed necessary so that the students are engaged in the subject matter. In this study, we will highlight the use of activities to assist the learning of mathematics to improve the level of engagement among students in their early university life. These activities are tailored specifically to students undergoing Fundamental Mathematics 1 course in Universiti Utara Malaysia Foundation Studies program. These activities are constructed to support three topics in their current syllabus i.e. Inequality, Sequence, and Function.

Methodology

This research will adopt mixed methods in multiple case studies in all six classes of AQ0013 Fundamental of Mathematics I. The mixed methods include data collection, interviews, document analysis, and comparison analysis. An established questionnaire analysis will be adopted from Carey, Hill, Devine & Szucs (2017) to test engagement in learning mathematics. It consists of two sections; Section A has simple demographic data, and Section B includes items based on the modified abbreviated math anxiety scale (mAMAS), focusing on items involve in engagement criteria. A semantic scale format is used to rate items in Section B (1 = strongly disagree, 7 = strongly agree). The population is made of all foundation students at Centre for Foundation Studies, UUM. Participants include all the students taking AQ0013 Fundamental Mathematics I in the first foundation semester AP 2018/2019.The questionnaire is given in two phases – pre (Week 1) and post (Week 13) for comparison analysis purposes. Assessment criteria will be performed involving a pre-test question, post-test question, classroom observation, students' reflection, and researcher's reflection. Paired t-test will be carried out for comparison analysis to assess the effectiveness of the newly problem-based modules in AQ0013 Fundamental Mathematics I course.

The activities are constructed based on the followings structured methodology:

Explore	In this phase, the students need to understand the scenario given to them. They have to brainstorm (mind mapping or drawing) the idea to move further.
Discover	While in this phase, the students start to enumerate several examples to see pattern of the solution. This stage is very crucial to make sure student engage in discussion and ignite their curiosity to find the solution.

Develop In this final stage, the students construct formula, model or procedures for the scenario given to them.

During the semester, students are given three activities that are constructed based from their current syllabus. These activities are from three selected topics – Inequality, Sequences, and Function. In this article, we will only introduce a sample of activities conducted, which is inequality. In this activity, students are given a real scenario, where they need to use the guided structured methodology – Explore, Discover, and Develop. We present the example of inequality topic as follows:

Scenario

Your study in the foundation programme is nearing the end. You have approximately 3 months of free time after the end of the semester, and before the new semester of undergraduate programme begin. As most of your friends will choose different programmes for their undergraduate study, you and some friends decide to plan for the last getaway together before each of you embark on your own separate way. You are able to persuade another three of your friends to join this getaway. With your limited pocket money and savings, you need to strategically utilize all combined funds collected from each of you/member and arrange for the best holiday getaway that you can/could possibly have. Each of you can only afford to spend RM500 for this trip.

From this scenario, students need to follow the Explore, Discover, and Develop (EXDiD) methodology. In Explore, they need to work in a team by doing in depth exploring the scenario by sketching ideas and use mind mapping. In Discover, the use of spreadsheet is utilized, where they will need to identify suitable variables with their limitations or constrains and transfer the calculation based on the spreadsheet's format and visualization. This segment tests students' understanding of inequality concept to be used in everyday life, and they are also able to incorporate technology into the assessment of simple mathematic problems. In Develop, a proper framework should be able to be developed, where the changes in budgeting variables can be automated, synchronized with the automation in visualization means. In the end of this activity, students will need to reflect the findings. Figure 1 shows a sample of A3 poster that illustrates the output of this activity.

Similar concepts are applied with two other topics – Sequence and Function, with variety of outputs such as A3 poster presentation, MS Excel file, and video presentation. These activities were showcased in the end of the academic semester through 'Fly with Math' program, in which competition is being held to recognize students' effort throughout the semester.
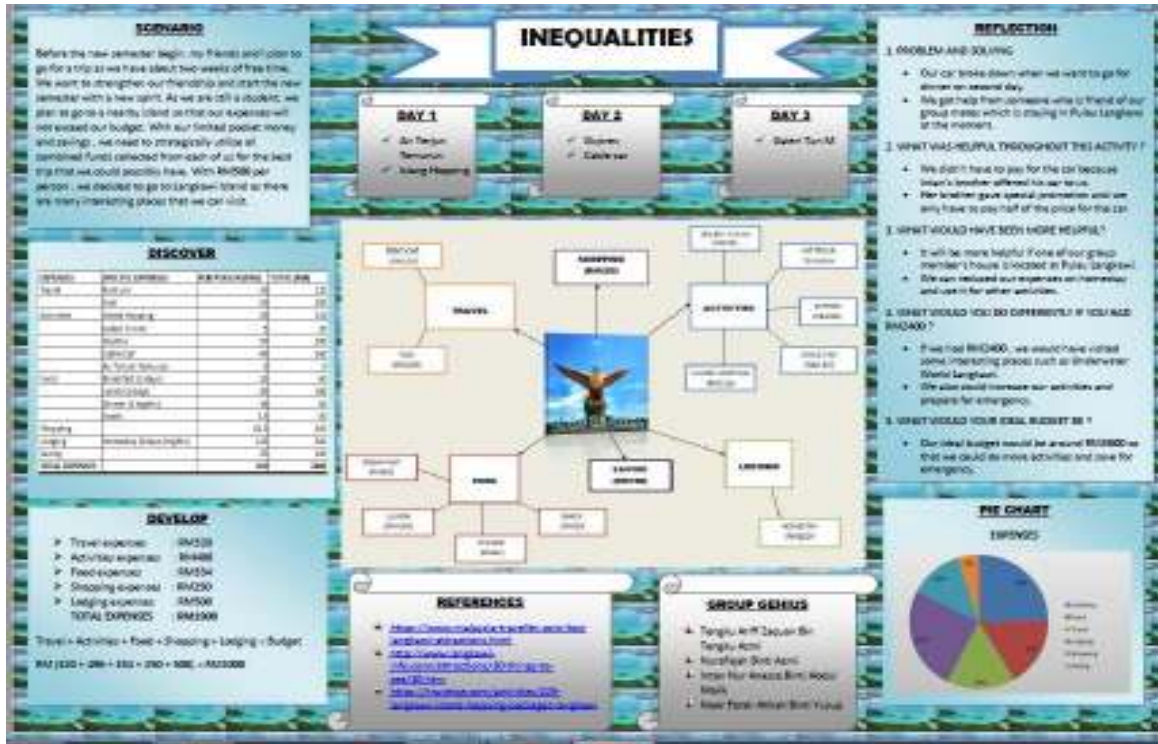
Figure 1. Sample A3 poster for topic inequality

Figure 2. One day program to showcase activities throughout the semester

RESULTS

This chapter contributes to the discovering of students' engagement in learning mathematics in Universiti Utara Malaysia (UUM). The data were analysed by comparing the students' responses before and after interventions. The research perspectives more over to identify if there is a change in before and after in relation to the mathematical learning engagement between them. A total of 204 respondents (N=204) were participated in the study. The finding revealed that about 25.49% were male (n=52) and the rest of the respondents were female about 74.51% (n=152) respectively.

Classroom's Reflection
Based from observation in classrooms, students show significant interest in the subject matters. In-class communications are actively conducted, with strong participation from students. Figure 3 and Figure 4 shows the difference in perception towards mathematics at the beginning and at the end of the semester, respectively.
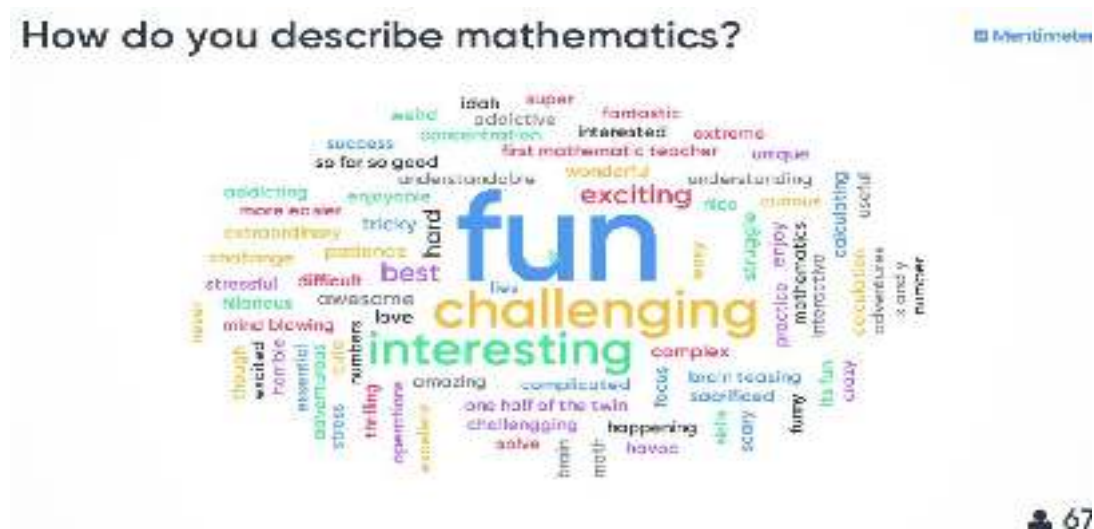
Figure 3. The result of mentimeter in July 2018
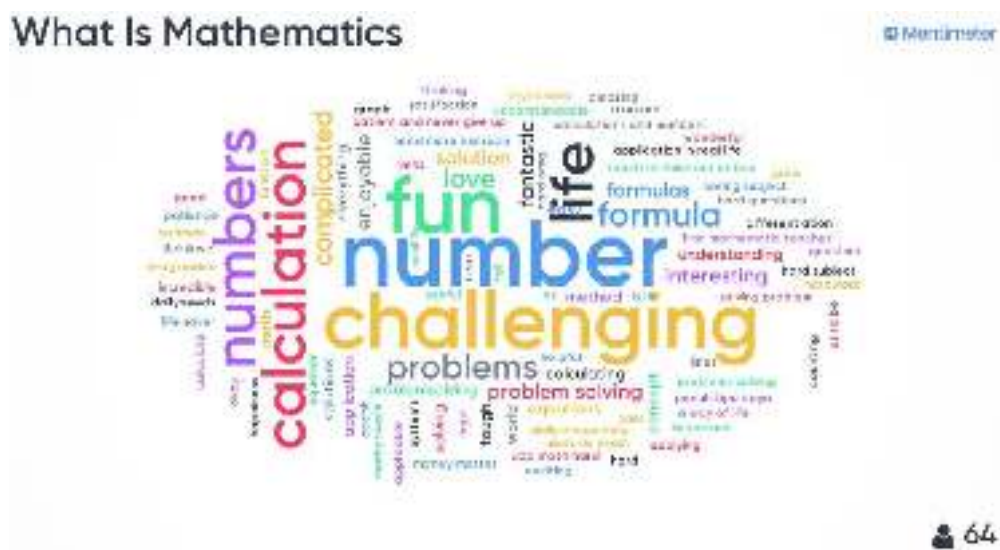
Figure 4. The result of mentimeter in October 2018

From these figures, the highlighted importance is on the emergence of words '*problem solving*', '*problem*', '*life*', '*applying*', '*application in real life*' in the end of the class. Such finding shows heightened perceived awareness among students about the value and importance of learning mathematics, other than simple expectation such as perceived subjects as challenging, fun and hard. Though some words such as '*hard*', '*tough*' and '*stressed*' are still visible, it carries less weights (*very small*) compared to other prominent positive words such as '*fun*', '*love*', '*enjoyable*', and '*understanding*'. Such outputs are welcoming, as Mata, Monteiro & Peixoto (2012) believed that changing of students' insight and perception is an achievement in improving engagement in learning mathematics. During the 'Fly with Maths' program, Positives remarks both from the professionals (academia, judges, and management officials) and also students are obtained. Generally, feedbacks recommend these activities to be continued for the upcoming semesters, with all participants believe that active learning is the way forward in teaching dry and difficult science subjects such as mathematics.

Before proceed with the statistical data analysis, the normality test was done between the levels of agreement score for the same group with aimed at before and after scored data. An inspection of histogram between the 15 questions (after – before) indicated that the level of agreement mean score had a mild skewed to the left for variable A8_B8 to A15_B15. Furthermore, an analysis of goodness of fit for normal distribution revealed that *p*-value = 0.000 based on the Kolmogorov-Smirnov test of normality. These indicated that the data were not normally distributed.

Table 1
Test of normality

Variable	Kolmogorov-Smirnov[a]		
	Statistic	*df*	Sig.
A1_B1	.179	204	.000
A2_B2	.177	204	.000
A3_B3	.173	204	.000
A4_B4	.187	204	.000
A5_B5	.157	204	.000
A6_B6	.199	204	.000
A7_B7	.174	204	.000
A8_B8	.150	204	.000
A9_B9	.226	204	.000
A10_B10	.178	204	.000
A11_B11	.177	204	.000
A12_B12	.302	204	.000
A13_B13	.395	204	.000
A14_B14	.282	204	.000
A15_B15	.157	204	.000

a. Lilliefors Significance Correction; *df* =Degrees of Freedom

As the normality assumption were not satisfied, the nonparametric test was then carried out for further data analyses. Analysis of the level of agreement for before and after intervention showed that there is some changes in term of scoring for each questions. For example, there is a change in position in scoring for the level of agreement in the question 1(Figure 5) and 2 (Figure 6) as shown below.
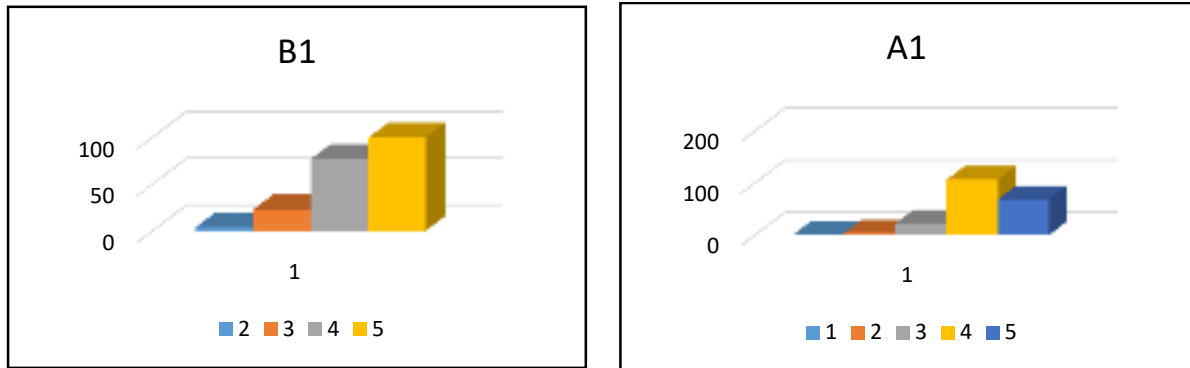
Figure 5. Comparison of level of score for question 1
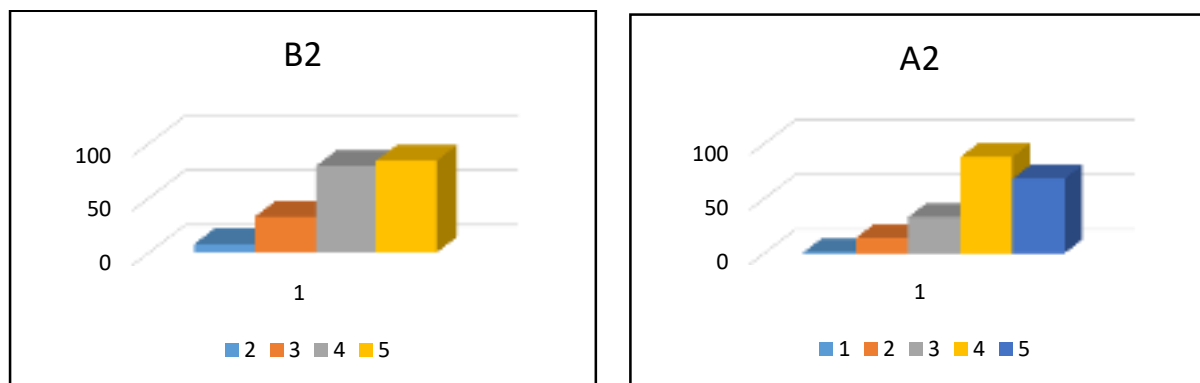
Figure 6. Comparison of level of score for question 2

As shown in the Figure 5 and 6 above, the distribution of the score rated by the respondents were changed after the appropriate intervention done. The variations score had changed to score 1, 2, 3, 4 and 5 after the intervention implemented. The remaining 13 questions shows more or less the same trend as an example above in term of changes in the level of agreement rated among the UUM student's in term of their engagement towards mathematical subject. These results were observed across the 15 questions rated by the respondents exhibited the same distribution of score yielded.

Further data analysis was done by comparing two sets of data on the same or related subject over time. The Wilcoxon Signed Rank Test were executed on the before intervention and after intervention data. The result is illustrated as in Table 2.

The result demonstrated the significant changes (p-value < 0.05) in the score for level of agreement in question 1, 4, 5, 6, 7 and 15 in the study. A Wilcoxon Signed Rank test indicated increasing level of agreement score in question 7 from before (Median=2.00, IQR=1) to after intervention (Median=3.00, IQR=2) as well as positive rank in question 5 for before (Median=4.00, IQR=2) to after (Median=4.00, IQR=1). For question 4 for before (Median=4.00, IQR=1) showed negative rank to after (Median=4.00, IQR=0). However, the question 6 is vice versa which is indicate reducing in score for before (Median=2.00, IQR=1) to after (Median=1.00, IQR=1). In addition, the results indicated that there is no significant

difference in term of improvement in students' engagement in mathematics before and after intervention for question 2, 3, 8, 9 10, 11, 12, 13 and 14.

Table 2
Level of mathematics engagement among UUM students

Variable	Before Intervention Median (IQR)	After Intervention Median (IQR)	Z statistic[a]	P value[a]
1. I am interested in learning mathematics	4.00 (1)	4.00 (1)	-2.269[b]	.023*
2. I like mathematics	4.00 (1)	4.00 (1)	-1.578[b]	.115
3. I enjoy mathematics courses	4.00 (1)	4.00 (1)	-1.756[b]	.079
4. I am looking forward to attend mathematics classes	4.00 (1)	4.00 (0)	-4.549[b]	.000*
5. I use mathematics in my everyday life	4.00 (2)	4.00 (1)	-3.352[c]	.001*
6. Mathematical thinking is not applicable in my life outside classroom	2.00 (1)	1.00 (1)	-3.188[b]	.001*
7. I get frustrated going over mathematics test	2.00 (1)	3.00 (2)	-3.727[c]	.000*
8. I am scared of mathematics	2.00 (2)	2.00 (1)	-1.685[c]	.092
9. I hate mathematics	1.00 (1)	1.00 (1)	-.239[c]	.811
10. I am under stress during mathematics class	2.00 (2)	2.00 (2)	-1.465[c]	.143
11. Mathematical knowledge will make me more employable	4.00 (1)	4.00 (1)	-.951[c]	.342
12. Mathematics is irrelevant in my own life	1.00 (1)	1.00 (1)	-1.053[c]	.293
13. Mathematics is worthless	1.00 (0)	1.00 (0)	-1.226[c]	.220
14. Mathematics is boring	1.00 (1)	1.00 (1)	-.980[c]	.327
15. I rather study other subject than mathematics	2.00 (1)	2.00 (2)	-2.116[c]	.034*

Note: a. Wilcoxon Signed Ranks test   IQR=Interquartile range; *p-value <0.05
     b. Based on negative ranks.
     c. Based on positive ranks.

Conclusion

The main intention of the study was to measure the level of improvement for students' engagement in learning mathematics. The study had compared before and after intervention with regards to the level agreement rated by the respondents. As been described above, various study had been done before in comparing on the same or related discipline over time. Thus, this study was expected to deliver the information acquired from the UUM students' point of view in relation to learn mathematics. The study described the initial intervention that being introduced to increase the students' engagement towards learning mathematics subject. In this respect, the before and after intervention data were analysed in order to measure as such improvement.

Results from the recent study revealed that majority of the respondent were females (74.51%) and males indicated about 25.49%. This situation illustrated that nowadays majority of the Universities student were conquered by the females with respect to the denial of gender biases. However, in this study the gender not very much influence in determining the engaging students' in learning mathematics. The present study also tries to relate the statistical finding with the overall comment by the students'. There is a positive trend before and after comment by the students' based on their engagement in learning mathematics during the course. However, based on the feedback from questionnaire given there were no changes in term of their feeling in mathematical engagement after intervention.

In relation to that, the results were expected to see the increasing score after post intervention. However, in this particular study, the result was not much appear different in term of level of scoring rated by the respondents. From the 15 questions assessed, question 4, 5, 6 and 7 appear to have changes in the before and after intervention in mathematical engagement. This condition was related to the feeling of the student in mathematics in general. According to Kong, Wong & Lam (2003), described that previous experience of achievement or frustration were very much affected by the affective engagement in learning mathematics. This is shows that in the present study some of the intervention contribute to positive impact towards their feeling in undertaking the mathematics test. Even though, there is no significant increase in scoring by level of agreement, most of the question being rated by the student had changed from score 2 to 3 and 3 to 4 in 15 questions answered by them. This indicated that there is some improvement occur in learning mathematics.

Relating to the current findings, there is a statistically significant found in the several questions. This indicated that there is a difference in scored in term of students' interest, liking and enjoying the mathematics classes. In relation to this, students often stated that they really like the subjects when they encounter the easy topic however when they need to solve more complex problem some of them feel discouraged. Through this study, it is beneficial to add learning intervention that suits students' preferences in order to increase their participation and enthusiasm in learning mathematics (Zhao & Kuh, 2004).

Apart from that, there is no statistical difference in relation to negative feeling such as scare, hate, stress, unenjoyable as well as feel worthless and boring considered by the students. The results much related with the feeling of mathematical anxiety which often influence the students to engage in maths further (Whyte & Anthony, 2012). The students also considered mathematical is not applicable in their life as well as mathematical knowledge will make them employable perceived to be no different in the test. The finding suggested that the student general behaviour toward mathematical subject will influence the students expressed in learning accountability (Kong, Wong & Lam, 2003). In overall comment by the student, they described that they generally need to accept the fact that mathematics is very prominent in their daily life. The data revealed that, there are changes happen after the intervention in term of

improvement from negative aspect to positive response in agreement. By comparing analysis of scoring rated by the students' indicated that most of the question were rated increasing or changing in score in student's engagement.

Changing in motivation will lead to improvement in mathematics engagement. This apparently considered as achievement in changing their insight towards engaging in learning mathematics. This is consistent with the previous study (Mata, Monteiro & Peixoto, 2012). This changing in motivation also support by their overall comment after the intervention that strong teacher or lecturers' character and support were very much influenced them. They described that their having fun doing mathematics because there is some new activity emphasized by the lecturers at the end of the class. The cooperative learning will encourage students performing positive interaction and sharing new idea with others (Herrmann, 2013). This indicated that there is a positive outcome by implementing new techniques or methods in mathematical teaching thus will encourage students to engage in learning mathematics.

Acknowledgement

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The Relationship between University Role, Entrepreneurship Curriculum, Assessment of Teaching Methods and Business Simulations

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Abstract

The primary purpose of the paper is providing an insight into present landscape of the role that universities are playing through entrepreneurship curriculum and assessment of teaching methods of students using business simulations. The underlying theories of Experiential Learning Theory, Constructivist Learning Theory and Bloom's Taxonomy are described in relation with the objectives of the research. The students enrolled in the First Semester Session of 2017/2018 under the Basic Entrepreneurship Course at Universiti Utara Malaysia consist of population frame of the present study. 250 students were randomly selected, and questionnaires were personally administered on the randomly selected target respondents. A total of 187 questionnaires were returned making it a response rate of 74.80 percent; however, out of the returned questionnaires, only 178 questionnaires were used for further analysis making a valid response rate of 71.20 percent. The results of PLS-SEM illustrate that there is a significant positive relationship between assessment and teaching methods; entrepreneurship curriculum and content; and university role of promoting entrepreneurship on business simulations. The present study aimed at providing an overview of the role that is assumed by the institutions of higher education whereas recommendations have been proposed for practitioners and researchers to cope with the challenges that higher education is facing currently. The future agenda of the research on similar lines has also been proposed.

Keywords: IJLLCE, Business Simulations, Curriculum and Contents, University Role, Assessment and Teaching Methods, Teaching, University Utara Malaysia.

Introduction

The importance of entrepreneurship has been recognized in many parts of the world, especially in developing countries due to numerous factors. Firstly, entrepreneurship has been acknowledged as a probable catalyst and incubator for technological development and product and market innovation (Mueller & Thomas, 2000). Secondly, entrepreneurship is considered as an engine of economic growth, the creation of employment, and fostering economic growth. Keeping in view the significant importance, entrepreneurship is considered as one of the finest economic growth strategies to develop country's economy and competitiveness in emerging challenges of globalization (Venkatachalam & Waqif, 2005).

Universities and higher education institutions play an essential role by providing support in improving the societal and regional economy through strengthening

entrepreneurship education (Co & Mitchell, 2006). Malaysia being a developing country has placed a great importance on the role of entrepreneurship, which can play in the development of the country. It seems very clear from the government initiatives that entrepreneurship is getting multiple support initiatives, policies, and supports for physical infrastructure, advisory services for business and funding opportunities for young and emerging entrepreneurs which reflect the required attention from the government (Sarimah, Armanurah & Amir. 2013). According to Economic Planning Unit (2010), the Malaysian government is striving to join the elite club of developed nations by 2020, keeping in view the vision, human capital development is given prioritized on higher order and special attention has been given for producing proficient, self-motivated, and resilient graduate entrepreneurs.

The ultimate responsibility for producing skilled, self-motivated, and resilient graduate entrepreneurs lies on higher education institutions. For this purpose, university role of promoting entrepreneurship, curriculum and content of the program, evaluation and assessment of the courses, and pedagogical methods are important elements (Shabbir, Shariff, Salman, & Shabbir, 2017). Pedagogical approach has an essential part to inculcate the qualities in prospective entrepreneurs. From this perspective, there are numerous research studies which propose different pedagogical methodologies should be adopted while imparting entrepreneurial knowledge and skills to the students (Fiet, 2000). For example, Levie (1999) explained that the choice to apply a certain pedagogical approach while teaching entrepreneurship is commonly rotates around that decision whether the programs are *about entrepreneurship* (case studies, guest speakers, group projects, group business plans and class participation assessed) or *for entrepreneurship* (lectures, individual essays and individual end-of-term written exams).

According to a number of studies (Oyugi 2014; Rengiah & Sentosa, 2016) it has been established, that entrepreneurship curriculum is one of the vital elements in provision of learning and training models. Essentially, it is a process to develop entrepreneurial competencies and mindset. However, several pedagogical methods with variety of models, methods, and modalities have been adopted in the field of entrepreneurship (Rengiah & Sentosa, 2014). Moreover, the conception of pedagogical model incorporates a number of dimensions related to both the ontological and educational levels (Rengiah & Sentosa, 2014). Therefore, most of the business schools use blend of theoretical and applied methods in entrepreneurship programs.

The role of universities in promotion of entrepreneurship is considerably important in developing the individual' entrepreneurial career. The university environment is the most dominant factor in students' perception of an entrepreneurial career and inclination (Fekri, Shafiabady, Nooranipour, & Ahghar, 2012; Lorz, 2011; Vanevenhoven, 2013). Individuals who experienced entrepreneurial activities at university were seen to be more likely to become self-employed (Shariff, & Peou, 2010; Rengiah & Ilham Sentosa, 2015). The enterprises and entrepreneurship are therefore, learned phenomena and higher education institutions can play a vigorous part in inspiring individuals by providing entrepreneurial opportunities to flourish.

Keeping in view the problems facing by higher education institutions, having practical experience is an essential qualification for securing a position being graduated (Kobenhavan, 2010). Accordingly, business simulation and gaming that would be both pedagogical useful and provide theoretical-research perspective conceived as useful for entrepreneurship. This suggest that there is a need to explore both side of equation, how much students learn, and separately, whether what they learn is relevant.

Objectives

The basic motivation behind this study is to examine the role of university through entrepreneurship curriculum, assessment of teaching methods on the impact of business simulations is also ascertained during the course of the study.

1. To examine the relationship between assessment and teaching methods and effectiveness of business simulations of students learning basic entrepreneurship course at Universiti Utara Malaysia.

2. To examine the relationship between entrepreneurship curriculum and effectiveness of business simulations of students learning basic entrepreneurship course at Universiti Utara Malaysia.

3. To examine the relationship between university role of promoting entrepreneurship and effectiveness of business simulations of students learning basic entrepreneurship course at Universiti Utara Malaysia.

Underlying Theories

Experiential Learning Theory

As an intergrative theory, Experential Learning Theory (ELT) bases on a wider set of theoretical traditions, including Dewey's pragmatism, Lewin's social-psychology, Piaget's cognitive-development, Rogers's client-centered therapy, Maslow's humanism, and Perls' Gestalt therapy (Kolb, 1984: 15). Kolb's theory covers the life cycle of human development from young childhood to adulthood and comprises activities such as career choice, education, problem solving, and interpersonal relationships. We focus here on the theory's application to entrepreneurial learning. ELT advocates a comprehensive theory grounded in the humanistic concept that entrepreneurs have a natural capacity to learn. Experience act as the catalyst for engaging in the process of dialective inquiry- a process that is based on and focused to the data of human experience.

Learning as "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984:41) rests on six assumptions; Learning (a) is a process, not an outcome; (b) derives from experience; (c) requires an individual to resolve dialectically opposed demands; (d) is holistic and integrative; (e) requires interplay between a person and environment; and (f) results in knowledge creation.

The cornerstone of the ELT, that depend in creation of knowledge and thus learning through transformation of experience, is derived by Virtual Business or Practice Firm simulation game. This game promotes a learning environment through a Practice Enterprise that accommodates the four modes of the learning cycle (Kolb, 1984), catalyzed by the specific characteristics of students and instructor. To be able to run through these four modes (experiencing, reflecting, thinking and acting), students need to experience and be engaged in Practice Firm game actions, so their involvement enables reflection, conceptualization and knowledge creation.

Constructivist Learning Theory

As mentioned in the earlier paragraph, constructivism supports the experiential cycle by advocating that learning is based from constructed understanding through prior knowledge and knowledge, going beyond the information provided, and this prior knowledge is in itself constructed instead of retrieved from memory. It acknowledges that individuals have different learning paths, and recognizes that each learner, no matter if young or old, is unique in terms of his/her own contribution to how learning takes place. In this regard, constructivism emphasizes group environment in learning, by taking into account collective learning, where different individuals bring different experiences and perspective (e.g. motivation, background, culture, social aspects) to form the basis for reflection and learning. Team interaction reflects reality and empowers group members to take responsibility in managing the learning experience.

In the context of group environment, not only prior knowledge and experience, and cognitive processing are important to construct learning, but also the social, cultural and historical settings (e.g custom, rules, law, roles) where learning occurs plays a role in the construction of learning. Contextual and collective learning is thus prioritized through these social systems represented by virtual or simulation games.

Virtual gaming is a constructive process, where imitation and accommodation of new experiences, including failures, support in constructing new knowledge. This process considers constructing and reconstructing interpretations in respose to situational demands and opportunities faced in the simulated environment (Lainema, 2008). In the case of virtual games, this environment reproduces characteristics of the real business world, accommodating the understanding of the interaction and dependencies among team members, competitors and other stakeholders (Lainema, 2003). The inclination is for the students to be able to apply knowledge in the future based on understanding and perception of business processes they have self-experienced; in other words, the "*whole idea is to give the participants knowledge that can be transferred to environments beyond the learning situation*" later on (Lainema, 2008, p.16 of 19).

In regards to the role of the instructor, the constructivism theory supports that the instructor should play the role of being a facilitator, guiding, advising, supporting, and challenging, instead of lecturing. By facilitating a dynamic environment where students are exposed to the sophistication of realistic environment, rather than the presenting of answers or his/hers experiences, the instructor is providing students in constructing knowledge.

The constructivism theory also revels into the process of learning by analysing the learning processes and effects that might occur as a result of serious game playing, a goal familiar to the experiential learning theory. While constructivism and the experiential learning theory hold close similarities in regards to how learning occurs (i.e. knowledge is created instead of communicated), these theories differ in terms of the factors influencing knowledge creation and the related process one undergoes. Basically, constructivism is more holistic and broad theory that takes into account environmental factors such as social cultural and historical settings, as well as emphasizes collective learning and the transfer of learning to environments beyond the learning situation.

While being broad and theoretical can assist in developing a comprehensive understanding of the realistic interplay of different factors impacting learning, it also presents drawbacks in terms of considering intangible processes that may be difficult to assess and therefore may be difficult to function as measurement tools. This trade-off is the challenges that both the ELT and constructivist learning theory face.

Literature Review

Assessment and Teaching Method

The assessment and teaching methods are essential part to inculcate the qualities in prospective entrepreneurs. Most business schools appear to use combination of theoretical and practical methods in entrepreneurial studies. From this perspective, there are numerous research studies which propose different pedagogical methodologies should be adopted while imparting entrepreneurial knowledge and skills to the students (Fiet, 2000). For example, Levie (1999) explained that the choice to apply a certain pedagogical approach while teaching entrepreneurship is commonly rotates around that decision whether the programs are about entrepreneurship or for entrepreneurship. Different entrepreneurship education programs are aimed at different objectives, these objectives may be short term and immediately measurable or more abstract and complex in nature. As far as the teaching and assessment methods are concerned, no specific pattern or method is generally applied. The review of the existing literature on entrepreneurship (Denanyoh, Adjei, & Nyemekye, 2015; Phelan, Chris & Sharpley, 2014) indicates some variations in conventional teaching of entrepreneurship to modern methods based on "action learning" (Kyro 2003b).

Entrepreneurship Curriculum and Content

Entrepreneurship Curriculum in the institutions of higher education has been taken as an imperative factor in enhancement of skills, knowledge, training, and world-class learning that focus of the development of students (Oyugi, 2014). Entrepreneurship education has now been considered as an important area in most industrialized countries through providing courses related to curricula. Entrepreneurship education is generally concerned with learning and facilitating entrepreneurship (what to do and how to make it happen) and less studying about it. These approaches are not sufficient for a wider concept of high –level entrepreneurship education and often conceived as having highly practical subject matter with a functional curriculum. Discussion regarding entrepreneurial education distinctions between a "traditional" and an "entrepreneurial" ways of teaching and assessment. A common way is to demonstrate the differences by showing a table with two columns contrasting the two methods of teaching, advocating for a paradigmatic change from traditional to entrepreneurial teaching and assessment (Ollila & Williams-Middleton, 2011). Standardized, content focused, passive and single-subject based curriculum in traditional education is contrasted with an individualized, active, process-based, project centric, collaborative, experiential and multidisciplinary approach in entrepreneurial education. Most of this discussion is, however, being held without reference to the century-long debate between traditional and progressive education (Labaree, 2005), and the corresponding debate in philosophy between positivism and interpretivism. A few number of researchers have pointed out the striking similarities between entrepreneurial education and constructivist education (Löbler, 2006), but general awareness is very low. Other pedagogical approaches and movements with similarities to entrepreneurial education are experiential learning (Kolb, 1984), situated learning (Lave and Wenger, 1991), service-learning (Meyers, 1999), problem and project-based learning (Helle, Tynjalla & Olkinuora, 2006), adult learning (Jarvis, 2006), cognitive apprenticeship (Collins, 2006) and social constructivist learning (Steffe and Gale, 1995).

University Role in Promoting Entrepreneurship

The role of universities in promoting entrepreneurship were considered due to organizational and societal changes (Rengiah & Sentosa, 2014). This increased the interest to teach through entrepreneurship using the new venture creation processes to involve students in business understanding, and transferable skills and competencies. Universities and academic institutions can reap numerous financial, societal and reputational benefits through successfully engaged in entrepreneurship as an academic entity (Woof, 2011). There has been considerable research on the role that university needs to play for the promotion of entrepreneurship in the context of academic milieu.

Bharat and Mulloth (2017) proposed and discussed different theories on the role of the university and key ideas for entrepreneurship. In addition to the overall summary of the research discussion based on the role of the university and key ideas for entrepreneurship, Bharat and Mulloth (2017) also proposed a model of university entrepreneurial competency in relation to overall entrepreneurial on different dimensions.

Business Simulation

The use of business simulations can be traced into early 1960s (Kibbee, Craft, and Nanus, 1961). Thavikulwat, (2009) explained the business simulations as "a simulation is an exercise involving reality of function in an artificial environment, a case study but with the participants inside". Business simulations can help students to envision, discover, and coherent explanations for complex phenomena that otherwise would be very difficult to observe, comprehend and manipulate. Alongside the importance of business simulations, the impact of the business simulation and experiential learning has been discussed in the research literature (Tawil, Hassan, Ramlee, & K-Batcha, 2015). Rhude (2009) states the fact that by applying business simulations in learning and teaching can help is development of workplace competencies and also enhance the skills and knowledge in the students. Business simulation games are a performance-based environment where learning through performance requires active discovery, analysis, interpretation, problem-solving, memory and physical activity which results in the sort of extensive cognitive processing that deeply rooted learning in a well - developed neural network (Foreman, 2003).

Hypotheses Development

Based on the aforementioned studies resulted in the development of a number of hypotheses. Based on the objectives of this study and available evidence in the literature, the following hypotheses were developed.

H_1= Assessment and teaching methods have significant effect on effectiveness of business simulation of students learning basic entrepreneurship course at Universiti Utara Malaysia.
H_2= Entrepreneurship curriculum and content have significant effect on effectiveness of business simulation of students learning basic entrepreneurship course at Universiti Utara Malaysia.
H_3= University role of promoting entrepreneurship has a significant effect on effectiveness of business simulation of students learning basic entrepreneurship course at Universiti Utara Malaysia.

Methodology

Sample and Data Collection

This paper followed a qualitative case study and a quantitative methods of survey research design. For the case study, the Business Simulation training was done on 25 students. The students enrolled in Basic Entrepreneurship Course at University Utara Malaysia consist of population frame of the present study. About 350 students were presented and explained about the simulation process as a learning process for entrepreneurship education. A thorough discussion session was conducted to ensure the students understand about business simulation approach of teaching and learning about entrepreneurship. About 250 students were randomly selected and questionnaires were personally administered on the selected target respondents. A total of 187 questionnaires were returned making it a response rate of 74.80%: however, out of the returned questionnaires, only 178 questionnaires were used for further analysis making a valid response rate of 71.20%. It was done because out of the 187 questionnaires collected, nine questionnaires were identified as wrongly filled, and thus excluded from further analysis.

Questionnaire Design

The constructs of business simulations, university role of promoting entrepreneurship, entrepreneurship curriculum and assessment of teaching methods were adapted from Sorensen (2010). The questionnaire formed in two languages of Malay and English to reflect the multilingual society. Research scales of this study were operationalized on the basis of prior work. Consequently, modifications were also made in order to fit the current research context and purpose.

Findings

The outcomes of BS showed steadily improvement for the trainees in their soft skills. What caused the apparent progression? There are many factors, some relate to the theory of experiential learning. While others are unique to the simulation pedagogy. With respect to H_1, the results provide the support of significant effect of assessment and teaching methods on business simulation ($\beta 0.3$; $t=2.703$; $p> 0.00$); so H_1 is supported. With regards to H_2, which suggests that entrepreneurship curriculum and content significantly related to business simulation. Equally, the result also provides evidence of such relationship ($\beta.5$; $t=2.43$; $p> 0.01$), accordingly H_2 is also accepted.

Table 1
Results of Hypotheses Testing (Direct Relationships)

	Hypothesized Path	Path coefficient	Standard Error (STERR)	T Value	P Value	Decision
H_1	ATM -> BS	0.34	0.11	2.703	0.00*	Supported
H_2	ECC -> BS	0.52	0.27	2.43	0.01**	Supported
H_3	URPE -> BS	0.07	0.21	0.13	0.89	Not Supported

*p<0.00**p<0.01***p<0.05

However, the third hypothesis H₃ assumed that there is a significant effect of university role of promoting entrepreneurship on business simulation, the result also contradicts the hypothesized relationship (β.09; t=0.13; p<.89), thus H₃ is rejected. As shown in Table 1 hypotheses H₁ and H₂ were supported, though hypothesis H₃ was not supported.

Discussions

Limitations

Keeping in view the time, capacity and resource contrasts, the present study have multiple limitations. Firstly, the current study was focused on the data gathered from the university students in Malaysia, so the implication of the study will also be limited to the Malaysian context, future research can be aimed at replication of the current model to any other territory in order to contextualize the results. Secondly, the data was collected from one university future studies may be conducted to gather data from more than one university so that more rigor results can be sought and also the comparison can be made. Thirdly, the current study is aimed on the investigation of the proposed impact of pedagogical methods of business simulations on the decision to opt entrepreneurial career, these was only factor which have been examined under this research, future study can broaden the spectrum by adding more contextual variables into the research study.

Recommendations

Considering the limitations of the current study, there are promising avenues for future research. It is proposed that further research should consider the following areas or aspects. Future research may be conducted by amending some of the dimensions found in the present study. Such studies could enrich knowledge on variables in the evaluation of business simulations. The present study employed the case study and survey method that used a set of questionnaires as measurement scale. Further studies could consider the use of other tools, such as interviews and focus groups, to collect the required data for examining the role of business simulations.

Conclusion

Based on the Experiential Learning Theory and the Constructive Learning Theory, three hypotheses on the positive relationship between assessment and teaching methods and business simulation; entrepreneurship curriculum and content and business simulation and university role of promoting entrepreneurship and business simulation. The result of data analysis showed that there was a significant effect of assessment and teaching methods on the effectiveness of business simulation H₁ and entrepreneurship curriculum and content on the effectiveness of business simulation H₂. The results of the study confirmed the previous studies that considered assessment and pedagogical methods have an essential part to inculcate the qualities in prospective entrepreneurs (Ibrahim, Bakar, Asimiran, Mohamed, & Zakaria, 2015; Keshodarah, 2013). From this perspective, there are numerous research studies which also proposed different pedagogical methodologies to adopt imparting entrepreneurial knowledge and skills to the students (Fiet, 2000). Furthermore, a number of studies also recognized the substantial impact of assessment and teaching methods in entrepreneurship education (Ibrahim et al., 2015; Tawil et al., 2015).

Furthermore, the results were also in line with the number of studies which has been published to determine the effectiveness of business simulations at helping students achieve

learning objectives (Malik & Howard, 1996, Anderson & Lawton, 1997). In terms of pedagogical value, business simulation significantly contributes to the development of decision making (Wellington & Faria, 1991). The results were also confirmed the previous studies (Oyugi, 2014, Gottlieb & Ross, 1997), which considered entrepreneurship curriculum is one of the vital elements in provision of learning and training models and prepare individuals for decision making. Essentially, it is a process to develop entrepreneurial competencies and mindset.

Nevertheless, the hypothesis which examined the effect of university role of promoting entrepreneurship on effectiveness of business simulation H3, the result fail to provide statistical support of such relationships. The findings of this study may affected from the population selected for the empirical analysis, and according to these results, it might be said that the insignificant direct effect of entrepreneurship curriculum and content on developing entrepreneurial inclinations of the students can be explained by two reasons. Firstly, entrepreneurship would not be valued as a feasible career option, leading to low closer valuation. Secondly, entrepreneurship curriculum and content were not satisfactorily developed among the students, leading to low desirability towards entrepreneurship.

The findings of this study may affect from the targeted population (students learning basic course of entrepreneurship) selected for the empirical analysis, and according to these results, it might be said that the insignificant effect of business simulations on university role of promoting entrepreneurship and developing entrepreneurial inclinations, can be explained by two reasons. In university, students with initial involvement in business simulations activities are not confident to show their inclinations to become entrepreneurs due to low level of university support, which results the lower inclinations. Secondly, the understanding and involvement in business simulations not allowed students to show their inclinations to start their own business, which leading to low desirability towards entrepreneurship.

Based on the findings of this paper, it is therefore, suggested that the more involvement in business simulations activities increase the inclinations of an individual to be entrepreneur, which in turn, provide the base for flourishing entrepreneurial activity in the society. Furthermore, it is also recommended that in the context of Malaysian Higher education institutions, universities should focus on facilitating students by providing them learning by doing opportunities, which will help to make the entrepreneurial activity more desirable and feasible and the entrepreneurial environment can be flourished.

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Critical Writing through Online Collaborative Reflective Practices: Issues and Way Forward

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Abstract

Scholarship of Teaching in Learning involves an investigative process in improving the quality of teaching and learning. Effective SoTL practices also include partnering with students into inquiry and reflective practices. Implementing SoTL in online collaborative environment could make the process of reflective inquiry strong and enhances student learning. Therefore, this study attempts to include students into a novel reflective practice through online collaborative critical writing in order to investigate its effect on improving student's critical writing skills in terms of the issues faced by students in producing critical writing, the processes involved in producing critical writing, and how students perceive the meaningful learning experience that they have gained during this process. This study adopted a qualitative participatory action research to identify ways that would improve student's critical writing. Data for this study were gathered from a variety of sources such as evidence of student's work, rubrics for assessment, student's and instructor's reflective writings. This paper focuses on students' critical writing performance of the first critical writing task and the issues faced by students in producing the critical writing. It was found that most students did not perform well in their first critical writing due to limited understanding and prior knowledge, lack of academic writing skills, and difficulties in using the online collaborative tool. These findings alarmed the instructor to conduct an intervention in the instructional design of this SOTL project to further improve student's critical writing in the next task.

Keywords: Critical response, SOTL, reflective writing, corrective feedback, online collaboration

Introduction

Extensive studies on what constitutes good practice in teachings have been carried out and known as scholarship (Laksov, McGrath & Silén, 2010). This Scholarship of Teaching (SoTL) in Learning involves an investigative process in improving the quality of teaching and learning. According to McKinney (2006), Scholarship of Teaching and Learning (SoTL) "involves systematic study of teaching and/or learning and the public sharing and review of such work through presentations, performance, or publications" (p. 3). Effective SoTL practices also include partnership with students into inquiry and reflective practices (Felton, 2013). It is suggested that by implementing SoTL in online collaborative environment makes the process of reflective inquiry strong and enhances student learning.

Reflecting instructional practices are opportunities where students could revisit topics in a manner that they are comfortable to understand. There are many ways to understand a topic such as seeking help from their peers. Other than that, the internet could be a resource or alternate way to understanding a topic. While there is enough evidence to prove that

differentiated instruction greatly helps students in learning, they still need to develop more of their creative thinking in order to prepare them for the future.

As stated in the Malaysian Education Blueprint (2015-2025), students must possess 21st Century learning skills which include leadership, teamwork, communication and critical thinking (Ministry of Education, 2012) for them to compete with others in the near future. To effectively participate in the future, students also need to be lifelong learners and develop transferable skills which will enable them to contribute meaningfully to society. Therefore, this study attempts to include students into a novel reflective practice through the use of collaborative knowledge creation and sharing in order to investigate its effect on improving student's critical writing skills.

SGDB 5073 Teaching English to Young Learners (TEYL) is one of the subjects offered to M.Ed (ELT) students in Universiti Utara Malaysia. This subject focuses on fostering language development related to language learning, handling TEYL classes, teaching spoken and written English to young learners, and critical understanding of how the optimal classroom environments are created for young learners, how they can enhance the four skills, how syllabus design can be approached and realistic teaching materials and resources can be created for TEYL classes. This subject also exposes how evaluation and assessment can be managed and carried out and how professional development in TEYL arena can be promoted. Finally, students will be given the opportunities to apply what they have learned to the real classroom setting through practical activities. According to the syllabus, the aims and objectives of the course are to: 1) Explain the theoretical concepts in the teaching of English to young learners; 2) Design teaching materials to meet the needs of young learners based on their performance and different sociocultural contexts; 3) Design lesson tailored to a specific classroom setting; and 4) Develop appropriate assessment strategies for TEYL classes.

Responding to academic papers through critical writing can be challenging for students as they will be involved in reading a variety of forms and genres. The experience can be pleasurable and at the same time painstaking. Students will also have to consider the strategies and techniques, encourage timely compliance with course reading requirements and foster critically engaged, well-argued responses. In addition, students will have to think about the critical theories model to be used in producing their critical writing. In order to achieve all the above, the students will have to complete several assessments including producing critical review of academic articles and producing reflective writing. The objectives and learning outcomes mentioned above require students to interact, engage and respond to literary texts.

This paper is part of a larger SOTL research and only discuss the following questions;

    (i)   What is the level of student's critical writing performance at the beginning of the project?

    (ii) What are the issues faced by students in producing critical writing?

Literature Review

Responding to critical literature and producing critical writing

Critical writing is an involvement in an academic debate. It requires a refusal to accept the conclusions of other writers without evaluating the arguments and evidence they provide. Critical writing is more complex, and involves more discussion, analysis and evaluation than descriptive writing. Critical writing activities include: engaging with evidence; open minded and objective enquiry; presenting reasons to dispute a particular finding; providing an alternative approach; recognizing the limitations of evidence: either your evidence or the

evidence provided by others; thinking around a specific problem; applying caution and humility when challenging established positions.

In this study, critical writing is produced in response to academic work. Responding to literature is the way in which one reacts to something that has been read or listened to (Cooper, 1993). By giving a written response to academic papers, students are learning to construct meaning through writing; they are further developing their ability to think critically. This process begins before reading as one think about what is to be read and continues during and after reading (Martinez & Roser, 1991). The purpose of a response to ELT academic papers is to state an opinion about issues, problems, practices, theories, models and principles, strategies and techniques. Many responses include connections to the readers own personal experience, the world, as well as personal reflection that reveal how the work impacted the reader. Responding to academic papers helps students construct their own meaning which may not always be the same for all readers. By responding to academic papers also, students see models of writing that they will ultimately incorporate into their own writing.

Typically, the essay in critical writing is organized with a brief summary of the story, followed by an opinion that is supported by evidence from the text. In this process, students will critically engage with complex written materials and with the ideas of others. Students also learn to place their critical work in a professional context, and to express their powers of analysis across a variety of literary forms. This allows students to engage in self-directed study and independent thinking which will help them to develop their skills in project management, working to deadline, working to a brief, creative collaboration, and problem solving. By using online tools in teaching critical writing in the classroom bridges the gap and reduces the tensions between digital and traditional ways of reading and writing.

Teaching critical writing through reflective practices is a challenging task to the teachers even though they have lots of knowledge about the subject matter. This is mainly because reading is active task and potentially critical, ethical, creative, hospitable, transformative and pleasurable but students needed to be scaffolded to acquire the skills needed to decode complex texts and respond to them. Most often, the aim of teaching critical writing is to make the students able to express themselves to the different forms and genres. A teacher needs to devise writing tasks to the students so that the students will be engaged and self-motivated to write frequently. Hence, a way to improve their skill and ability of language.

Some of the issues and challenges that teachers might have in teaching critical writing are critical analysis, formation and structure, wider area, individual variation, untrained English teachers, insufficient time for instruction, lack of resources and materials. Harmer (2008) suggests, "The kind of writing we ask students to do (and the way they we ask them to do it) will depend, as most other things do, on their age, level, learning styles, and interests" (p. 112). Academic papers involve many types of genres. According to Harmer (2008) "A genre is a type of writing which members of a discourse community would instantly recognize for what it was. Thus we recognize a small ad in a newspaper the moment we see it because, being members of a particular group, or community, we have seen many such texts before and are familiar with the way they are constructed" (p. 113). Apparently, these genres have their own rules, regulations, norms, values, principles, theories, structural patterns, features, types, formations and so on. Therefore, the teachers have to build critical writing skill. To be able to do this, they have to engage the students with appropriate critical writing activities which are interesting to take part in. So that it can help students to achieve success in their writing. When students have gained sufficient knowledge of critical writing, they can develop writing habit. Therefore, teacher should have the knowledge to teach different genres to make his/her students able to write.

In Malaysia, writing is one of the four most important language skills (reading, writing, speaking and listening) to be learnt in a language classroom. Writing is also tested in examination and is allocated as a separate paper. Students are taught many types of writing including argumentative, informative, creative writing etc. Writing is taught in English Lesson as part of English Language learning. Teachers use their creativity in teaching writing, and it can be very challenging. It involves a long, arduous and tiring process. Students may find writing boring and dull. In addition, untrained English teachers could also affect the delivery of writing lesson. Untrained teachers will not be able teach the process of different genre of literature as equal as trained teacher. This is because they lack proper knowledge and as a result, they will not be able to provide good ideas to write critically and use different strategies and techniques to get the students involved in critical writing. Thus, teachers need to be exposed to the latest strategies to teach critical writing and to find ways to make writing lesson more interesting and meaningful by integrating online collaborative tool in the writing classroom. One of Web 2.0 tools that can be used in the classroom is 'Weebly'.

A focus on critical writing is essential in this 21st century teaching and learning practice to prepare students for the more challenging future. It is essential for them to be able to apply thinking skills and strategies critically and creatively in a variety of situations, not only during their studies but also for their future teaching practice. Nevertheless, it is important to acknowledge that each individual is different and may produce equally good results through widely different process. This means that there is probably no one 'right' system of writing that we should recommend; rather, we suggest possible strategy such as digital knowledge creation and sharing in encouraging individuals to experiment in the search for one that is personally effective for them.

Online critical writing tool

There are many ways teachers can engage students in the teaching and learning process. In the recent development of Internet technology, there are many online applications that could be integrated in the classroom to support critical writing activities. Importantly, the emergence of Web 2.0 technologies enables knowledge creation and sharing in the critical writing process. With the advent of Web 2.0 tools, writing skills can be enhanced through collaboration with other writers. Young and inexperienced writers would display distinguishing characteristics as they get connected with other writers via online writing communities (Olthouse & Miller, 2012). Besides, teachers can make their teaching of writing more interesting with the use of digital tools, such as *Weebly*.

Weebly is one of the Web 2.0 technologies that support knowledge creation and sharing in a collaborative way. Using *Weebly*, one can create a diary entry, essays and produce reflective writing. In spite of plentiful studies on digital storytelling (Conrad, 2013; Sadik, 2008, Sukovic, 2014), literature pertaining to critical writing using online tool is still scarce (Cobo, López-Herrera, Herrera-Viedma, and Herrera, 2011; Menezes, 2012; Wertz, 2014) and a lack of research done in exploring on the in-service teachers' view towards using *Weebly* in critical writing.

Earlier studies reported that technology alone did not promise good learning is taking place, but the teachers' techniques and approaches in using technology plays an important role in determining successful teaching (Paterson et al., 2003; Bus & Jong, 2000; Yaacob, 2006). Teachers needed support not only in terms of the content knowledge but also in terms of pedagogical strategies. Thus, this study aims not only to improve students' critical writing skills

using *Weebly* but also to encourage teachers to design their instructional strategies and materials to suit their learners' needs.

Meaningful learning approach named *Create-Share-Collaborate* (Sailin & Mahmor, 2017) is employed in this SoTL project as an underpinning model in designing the instruction. Through this strategy, students have opportunities to create their own knowledge in the form of digital content, share their content creations with their peers and work collaboratively in the development of the digital contents. This *Create-Share-Collaborate* instructional strategy would benefit students in several ways. Research findings reveal that through this strategy, students engage in an active knowledge construction that involve gathering, analyzing and synthesizing of information to come up with the digital content on the given topic (Sailin & Mahmor, 2017). Through this strategy, students would also communicate and share their ideas with peers. This knowledge construction and sharing would help them to better understand the topic discussed. As a result, students would improve their 4C skills; Critical thinking, Communication, Collaboration and Creativity. Apart from that, *Create-Share-Collaborate* instructional strategy also advocates a focus on learners through meaningful and experiential learning. As our students are digital natives, it is crucial to design our instructional strategies that suit our students' needs, as well as to promote meaningful and active learning by using digital technologies. This study, therefore, employ *Create-Share-Collaborate* in another context which is critical writing, using different Web 2.0 tools.

Methodology

The method for this study is anchored in the principle of Scholarship of Teaching and Learning (SoTL) which encourages systematic academic inquiry into teaching and learning practices within the classrooms and sharing the findings with other academicians and practitioners for wider benefits (Felton, 2013). There is a wide range of methodological approaches for conducting SoTL, and it can be either quantitative or qualitative in nature, or combination of both (Hudball & Clarke, 2010). This study adopted a qualitative participatory action research to identify ways that would improve student teacher's critical thinking. Action research design is chosen because it provides a systematic procedure for "teachers (or other individuals in an educational setting to gather quantitative and qualitative data to address improvements in their educational setting, their teaching and the learning of their students" (Creswell, 2012, p. 22). Action research involves problem identification for planning an action, observing and reflecting on the action taken and revising plan of actions (Harland, 2012; Mills, 2011; Zuber-Skerritt, 2001).

Following action research approach, in this study, the first phase or cycle of data collection will begin with identifying the problems related to the issue under study, i.e., student's level of creative writing. A rigorous literature will be reviewed to identify the interrelationship between the previous research and the current issues faced. This is to enable the researchers to refine ideas about the issues under study and to prepare a more systematic investigation. This is followed by the planning of data collection methodology and procedures and identifying suitable approach that may help the instructor to provide effective facilitation to enhance student's creative writing. In this participatory action research, the instructor will be participants of the study and will get involved with the students to improve the teaching and learning process.

Participants of this study

Participants of this study are those who enrolled in SGDB 5073 Teaching English to Young Learners in the Masters of Education programme being taught by instructors who are the second and third author of this study. The first author is an instructional designer and educational technology expert who acted as a member check for increasing the validity of the study. 20 students involved in this study. This study was conducted through a cycle of an action research design with emphasis on teaching and learning reflection with active participation of the students and the instructor.

Data collection and analysis

Data for this study were gathered from a variety of sources such as evidence of student's work, rubrics for assessment, student's and instructor's reflective writings, and interview data from students. Reflection is the heart and soul of SoTL. Therefore, this study also emphasis on the importance of reflection as part of the teaching and learning process as well as to improve student's creative writing. The reflective practices adopted in this study are based upon the cycle suggested by Gibbs (1988). The participants' reflections are evidence of their own learning and very important data sources for this study. The reflections were guided by statements or questions given by the instructor.

Findings

Student's critical writing performance

In this study, participants were required to produce a critical writing which is often known as critical review of a journal article. A critical review of a journal article evaluates the strengths and weaknesses of an article's ideas and content. It provides description, analysis and interpretation that allow readers to assess the article's value. The table below presents the tabulation of marks obtained by students from two tasks: unguided critical writing (pre-test) and guided critical writing (post-test):

From the first unguided critical review task, it is found that students scored marks within range 2-4 marks out of 10 (mean = 2.91). This pre-results revealed that the participant's scores were unsatisfactory/ weak. Student lacked clear understanding of the article and may or may not have expressed a personal response. Table 2 is the rubric that explain the participants' scores and performance.

The rubric was set to cover several aspects or descriptors such as: (1) knowledge and understanding which translate as the summary of the article; (2) thinking and inquiry which refers to analysis, evaluation; (3) quality of content of required areas and evidence which refers to supporting forms; and finally, (4) formatting which are citation, mechanics, organization and length. There were four categories: 0 marks for no submission; unsatisfactory (mark range 1-3); adequate (mark range 4-6); good (marks range 7-8); and excellent (marks range 9-10).

It can be noticed that most students did not perform well in their first critical writing. This is because the students were required to write based on their own limited knowledge and skill as well as without any facilitation and guidance. After producing a critical writing, they were requested to write a reflection on their experience and the issues and challenges that they faced while completing the task.

Table 1
Participants' Marks for Critical Writing 1 and Critical Writing2

No.	Pseudonym	Critical Writing 1 (Pre) 10 marks	Critical Writing 2 (Post) 10 marks
1	Meranti	3	7
2	Rose	3	7
3	Cinnamon	3	7
4	Tanjung	3	7
5	Clove	4	9
6	Jasmine	3	8
7	Akasia)	3	7
8	Sakura	2	5
9	Star Anise	2	5
10	Hibiscus	2	6
11	Marigold	4	9
Mean		**2.91**	**7.00**

Table 2
Rubric for Critical Writing Task

MARKS RANGE	DESCRIPTIONS
EXCEPTIONAL 9-10	• Student evidenced clear comprehension of the article and articulated a thoughtful response. • All main ideas and facts from the article are included. Summary is presented in objective view and referencing to the article is provided. Author and source are named. • Content is clear & all required issues are addressed with supporting or significant detail • Extensive analysis provided. Well informed & thorough. Demonstrates clarity & substantial insight • Well within required word length (900-1000) • Writing is clear & concise. Sentence structure & grammar are excellent.

	• Required areas fully addressed • Accurately cited in the desired APA format or some minor violations.
GOOD 7-8	• Student evidenced considerable comprehension of the article and articulated a thoughtful response. • Most of the main ideas and facts from the article are included. Summary is presented in objective view and referencing to the article is provided. Author and source are named. • Most of required content is addressed with some supporting details • Analysis is good. Demonstrates sound understanding of the article • Good word length for information (750-899 words) • Sentence structure and grammar are good. Few errors • Most areas sufficiently addressed • Accurately cited in the desired APA format or some minor violations.
ADEQUATE 4-6	• Student evidenced some understanding of parts of the article or did not express a personal response. • Some details from article are missing. Summary is not objective OR minimal referencing to the article is provided. Author OR source are not named. • Addresses some required issues. Limited supporting details • Some analysis included. Demonstrates adequate understanding of article • Adequately meets word length (600-749 words) • Writing is adequate with some errors in sentence structure & grammar • Some areas addressed as required but vague • Attempted but incorrect. Limited knowledge of APA
UNSATISFACTORY 1-3	• Student lacked clear understanding of the article and may or may not have expressed a personal response. • No summary is provided OR a verbatim of the text is provided. Author and source are not named. • Limited information addressed • Analysis not clear • Does not meet required length (< 600 words) • Serious problems with writing mechanics • Very limited info presented • Little evidence of attempt at correct formatting or not included
0	NOT SUBMITTED

Issues Faced by Students in Producing Critical Writing

In the participants' reflections regarding the first critical writing task, three emerging themes were found related to the issues that they faced in conducting the critical writing using the online tool. They admitted that they were unable to produce critical writing due to (i) lack of prior knowledge, (ii) lack of academic writing skills and (iii) difficulties with online collaborative tools and features.

Lack of understanding of the prior knowledge

In terms of lack of understanding of prior knowledge, participants found that it is not an easy task to give critical response to any topic discussed because they need to have competent knowledge regarding the topic being discussed. This is because critical response requires factual input and cannot be discussed based on participant's own understanding only. For example, Rose reflected that she did not insert significant points in her first draft such as the thesis statement and her stand in the article. Other than that, instead of writing critically, she only summarizes the article due to limited understanding of the topics.

In another instance, Melati reflected that one of the problems that she faced in giving critical response is to relate the discussion with her prior knowledge in order to strengthen her own opinion and discussion. She further elaborated that:

> *Although it looks quite simple yet it is really challenging for me to meet the requirement of a good critical review. One of the key elements in creating good critical review is to have fully understanding of the main issue or the problem statement of the article itself. To elaborate and give decisive statement on the article being reviewed, we need to synthesize the core point and issue of the topic in the article. For now, I think that it is still one of my weaknesses as I have to be more attentive and specific in underlying the main talk/ point of the article.*

Without a clear understanding of the prior knowledge, students are unable to articulate their thinking in reviewing and critiquing the article. It also sometimes leads to misunderstanding by the students and thus them only able to provide a summary of the article rather than critically review it.

Lack of academic writing skills

It was found that from the first critical writing activity, students were lacking in terms of the academic writing skills. These can be seen based on the rubrics where students only provide verbatim of the text rather than summarizing or synthesizing the article. In addition, no proper referencing was made in which the author and source are not named in their writing. Students also provide only limited information to address the issues discussed. In addition, their analysis is not clear. In most cases students were not able to meet the required length of less than 600 words. Having serious problems with writing mechanics and show very little evidence of attempt at correct formatting of the writing.

In one of the student's reflections, Tanjung, he admitted that in terms of the content of his critical review, it was arranged in a scattered manner as the ideas are not organized accordingly. He reflected further that:

However, if I want to review three different methodologies, I should divide the body of the article into three sections, whereby discussion should be done one by one. In another aspect, the analysis regarding the article was not done thoroughly as I did not answer the question regarding the suitability of the information found, whether it is well researched or is it unsupported.

Another student, Marigold admitted that she focuses more on getting the mark and only provide information to fulfil the requirement of the task. She also concerns about her ability to make an argument based on other sources to make the critical review sound more cohesive and convincing.

Difficulties with online collaborative tool and features

Participants of this study also concerns about their ability to deal with the technical issues such as online connection and getting familiar with the online features of the collaboration tool. These issues have influenced their participation in the online critical writing activities.

In terms of the online connection, Melati reflected; *"Good online connection is required to respond and have critical view of mine been posted via it without any problem"*, whereas, Clove reflected;

One thing I realize is that I need to give myself more time apart from the writing and thinking time. This is because the online platform might be down and me myself having difficulty because the platform was unresponsive or problems with the internet connection which is related to technical issues.

Other student, Marigold felt that the online critical response allows less space to manoeuvre compared to writing. She also reported that it became problematic when her speech became a bit lengthy. Whereas, Hibiscus reflected, "the problem that I faced when tried to criticize the online critical response was that lack of the exact facts because it was online facts and it was hard to undo them". In addition, Melati noted;

Not sure what does it means by online critical response but I would say finding the suitable article to support my critics on a certain article would be the problem I might face. It's hard to find a credible and good article for free. Most articles online require payment and the free ones are limited and sometimes are not credible enough to be used in academic writing."

Discussion

This study has found three emerging themes to the issues that students' faced in participating in the critical writing using the online tool that are (i) lack of prior knowledge, (ii) lack of academic writing skills and (iii) difficulties with online collaborative tools and

features. The instructor of this course; however, in her reflection noted that despite these issues and problems faced by the students, there are some strengths of student's works in the first critical writing task. Their works are free from obvious grammatical or spelling error, able write/ provide own views and perceptions regarding the topic, provide good references, sources and evidence taken from the internet, good essay organization - neat and orderly fashion, and receive support from group discussion to improve writing.

The instructor also found that producing critical writing of academic papers seems to be the most challenging for most students. This is because it involves a lot of reading variety of academic papers works. Most students have problems in comprehending academic papers and responding to them. Majority of these masters' students are in-service teachers and with that it is often assumed that these students are adult or mature learners who are able to do their own reading, think critically and produce a critical writing. However, this assumption seems to be misleading. Most students are incapable to do critical writing according to acquired standards due to lack of prior knowledge and poor academic writing skills. This may also include lack of understanding of the issue, lack of reading skills, lack of critical thinking skills, and lack of language proficiency. These findings are consistent with the views that critical writing involves a complex and dynamic process of thinking informed by deep learning exhibited by the writer requires the (Biggs, 2003; Ramsden, 2003).

In most cases, students do not have the foundation of doing critical writing including lack of analyzing and evaluating skills. Writing is one form of responding to critical literature and producing critical writing (written critical responses) to those academic works due to the complexity of the texts. In addition, the students also have difficulties in speaking and writing about those works including making connections between those academic works to their own knowledge and personal experiences. This situation is alarming, and action has to be taken so that the learning outcomes can be achieved.

In addition, the students are not familiar with online collaborative tools for conducting the critical writing. This result is not surprising as this was only based on their reflection in the beginning of the SOTL proses, in which students were not yet familiarise themselves with the online tools. Although the online tools may provide meaningful learning experience through active collaboration and sharing (Sailin & Mahmor, 2018), the features and functions of the online collaborative tools may be overwhelming at the beginning.

Conclusion and Way Forward

The first phase of this SOTL project had found that most students did not perform well in their first critical writing due to lack of understanding of prior knowledge, lack of academic writing skills and difficulties with online collaborative tool features. Thus, these findings have alarmed the instructor that student's need facilitation and guidance to produce better critical writing. As noted by Rezaee et al., (2012), students can develop critical thinking and writing skills through modelling and explicit teaching. In addition, previous studies argued that specific structured interventions are needed to improve student's critical writing.

Therefore, in the second phase of the SOTL project, an intervention was carried out. The instructor facilitated the process and provide corrective feedback during the second critical writing task. At the same time, students were asked to engage in collaborative discussion and gave comments on each other's by identifying their strengths and weaknesses. This intervention has yielded better results as indicated in Table 1. Future work will discuss the findings of student's reflection and student's critical writing performance during and after the intervention of corrective feedback.

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Designing an Improved Practicum Assessment Instruments for IT Programme

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Abstract

Good Practicum instruments are crucial in ensuring the accuracy of the assessment and how well students to be prepared to face the industry as stated in IR 4.0. Due to the drawbacks of the existing assessment tools, an improved design of assesment instruments are needed. A better version of the tools are crucial in indicating the real situation and indicator of Practicum performance. In this article, we proposed an improved design of the Practicum assessment instruments responsive to unsatisfactory feedbacks from industry regarding Practicum performance and assessment. A combination of Design Science Research methodology and Action Research are employed in designing the improved instruments. The improved design is focusing on student learning needs and policy by integrating Practicum elements, university's expectation and industry's expectation. Emphasises are given on integrating important elements in achieving Practicum learning outcomes. The improved design is hope to be capable in measuring Practicum performance accurately and can be used to further assess many other aspects that reflect Practicum performance in preparing IT experts to face the industry as stated in IR 4.0.

Keywords: Practicum assessment, assessment instrument, Action research, IT assessment

Introduction

Practicum or industrial training is designed as a course of study for the preparation of university students to be supervised to make vital learning connections between theory and practice (Forlin, 1997). Students will be working in the area of study and using the knowledge and skills that have been learned theoretically. It is an important component for undergraduate programs, to the extent that some programs have set Practicum as a compulsory condition to fulfill requirements for bachelor degrees. For Information Technology (IT), Practicum plays and important role in ensuring that graduates are competent and ready to work in the challenging industry with rapid changes of technology. Among purposes of IT Practicum are to expose students to real working environment involving IT practice, to enhance the students' knowledge through exposure to industrial operation and to provide opportunities for students to experience and conduct real tasks in a more challenging environment. During Practicum, students will be assessed on their soft skills while applying their theoretical and practical knowledge.

Practicum can be seen as the most influential component and an indicator of the successfulness of the programme. In Malaysia, Practicum for IT-related programmes is designed at the final year of the programmes, either in the fifth semester or in the final semester. At this stage, students have been equipped with ample fundamental knowledge and theories for

them to face the industry. This is in line with one of the strategic objectives of Institution of Higer Learning (IHL) core business included in the 10th and 11th Malaysia Plan roll-out produced by Economic Planning Unit of Prime Minister office. Based on the listed plan on improving students' outcome, graduate employability has become a national agenda for higher education industry. There is a significant relation between students' outcome and employability; good students who meet industry's expectation will have higher chances to be employed. This objective can be measured by assessing Practicum performance.

Good Practicum instruments are crucial in ensuring the accuracy of the assessment and how well students to be prepared to face the industry as stated in IR 4.0. Focus should be given on integrating important elements in achieving Practicum learning outcomes. The elements are Practicum stakeholders, processes, supervision, assessment (instrument, percentage), industry's expectations, University's expectations, and performance.

Many researchers believed that the development of Practicum model is complex and multi-dimensional. Different researchers suggested different elements to be included in the model and must be aligned to the work-integrated learning framework. Forlin and Gibson (1997) suggested that Practicum should be a collaborative works between university and industry. Their experience in developing a Practicum Model for the Bachelor of Education has emphasized on the involvement of all stakeholders throughout the process especially when involving the assessment part.

Tomaš, Farrelly, & Haslam (2008) focused on interaction in developing and implementing a Practicum model for teaching industry. They suggested on approach to increase interaction by offering Practicum abroad. Ridzuan et al (2005) concentrated on the assessment in Practicum model and listed six elements to be included: employers report, visiting tutors report, student weekly log and summary report, measurement of language skills, and oral report. In terms of duration, researchers suggested the implementation of each model over a period of time to note changes in perceptions after the initial implementation period. Research would ideally access the perceptions of stakeholders; educators, faculty advisors and site supervisors, to determine the perceived benefits and challenges of each model.

Cantalini-Williams (2014) spent at least three years to develop and assessed three Practicum models for teacher education: Peer Mentorship Practicum, Alternative Service Learning Practicum Model, and International Practicum Model. They discussed the benefits, challenges and implementation implications of the three models as well as the guidelines in developing model development. Important aspects are giving more attention to consistent methodologies across the studies in order to facilitate comparisons and analyses of common benefits and challenges.

Due to the drawbacks of the existing assessment tools, an improved assesment instruments are needed. A better version of the tools are crucial in producing the real situation and indicator of Practicum performance. In this article, we proposed the design of the improved Practicum assessment instruments responsive to student learning needs and policy by integrating Practicum elements, university's expectation and industry's expectation. This article is organized by discussing the current scenarios and drawbacks of the existing assessment instruments followed by a detailed discussion on how the improved instruments are designed in the methodology section. The improved design of the instruments is presented by emphasizing on how the required skills are mapped. Finally, concluding remarks are covered at the last part of the article.

Current Scenarios of Practicum Assessment

Practicum or Internship course is different from other courses in IT programme in term of delivery method (Ali & Smith, 2015). Due to a different nature in delivering methods and format, it needs special assessment criteria. Early works on accessing Practicum performance have been conducted for IT programme of School of Computing, Universiti Utara Malaysia involving Bachelor of IT (BIT) and Bachelor of Science in IT (BSc IT). The studies were conducted for two semesters of 2014 academic year; A132 and A141 semesters. In the initial state, the point of analysis in the study were the students' overall performance, expected skills and lacking skills as perceived by the employers. Early analysis of the assessment is depicted in Table 1.

Overall analysis shows unsatisfactory feedbacks from the industry on the lacking skills. They obviously think students are lacking of many skills; both technical and soft-skills. They also concluded that BIT and BSc IT students are not well prepared to work. Despite the feedbacks from industries, the most crucial issue is on the outcome. Students' final grade for Practicum doesnt reflect a real quality of the students. For example, students who scored A received bad overall comments from industry's and university's supervisors and vice versa.

Table 1
Early analysis of IT's Practicum performance

Overall performance	Expected skills	Lacking skills
adaptive	Creative	Poor in response
Fast learner	Proactive	Lack of confident, too shy
Good discipline	Cooperative	Presentation & Communication skill
Hardworking	Independent	English proficiency
Not well prepared for work	Good communication skill	Problem solving skill, critical thinking
Able to plan	Logical thinking, reasoning	Physical appearance
Good leadership quality	require more exposure to latest technology	individual/independent programming skill
Excellent in documentation	sharp observation	structural database design, table normality
Strong will	Technical skills: Java script, HTML, CSS3, C#, .NET	programming skill; VB, ASP, PHP
able to make decision in critical situation		practical programming in Java, C#, .NET

One of the main contributing factors to the unsatisfactory feedbacks received by the insdustry is regarding the assessment instruments used. The existing instruments are not outcome-based (OBE) compliant and not designed to measure the acquired skills by the

students. It can not measure the performance accurately. Constructs on technical aspects are too little that have been included in the existing tools. For example, the capability of practicum students in developing IT systems only measured by asking two questions. Too many contructs on measuring their soft skills and many more drawbacks have been identified. Table 2 depicted the components Practicum assessment instruments (forms are labelled as PRAK01 and PRAK02 for industry's assessment and university's assessment respectively).

Table 2
Mark allocation used in the existing Practicum assessment instruments

PRAK01		PRAK02	
Section A: **Individual assessment**	**10%**	**Section A: Presentation**	**15%**
[a] General questions (2)	10	[a] Content (9)	45
[b] Attitude (6)	30	[b] Delivery (7)	35
[c] Personal capability (9)	45		
Section B: **Project evaluation**	**15%**	**Section B:** **Project proposal**	**10%**
General questions (8)	40	General questions (6)	30
Section C: Presentation	**15%**	**Section C: Final report**	**30%**
[a] Content (9)	45	[a] Draft (25 x 3)	75
[b] Delivery (7)	35	[b] Final report (25 x 5)	125
Section D: **Overall feedback)**	**-**	**Section D:** **Individual assessment**	**5%**
[a] Overall opinion on student's performance		[a] Logbook (2)	10
[b] Expected skills from the student		[b] Student characteristics (4)	20
[c] Lacking skills of the student			
Total	**40%**	**Total**	**60%**

As shown in the table, the existing assessment instruments do not specifically focus on the expected skills that students need to achieve. The mapping of student's perfomance with the Course Learning Outcomes (CLO) and the required skills are not clearly presented. Therefore, an improved version of the assessment instruments to assess student's performance need to be re-designed. Considerations should be given in mapping the targetted outcomes (which are translated in the Course Learning Outcomes (CLOs) of STIX3912 Practicum course syllabus) with the skills acquired through Practicum. The CLOs are illustrated in Figure 1.

Figure 1. Course Learning Outcomes for UUM's IT Practicum programme

Emphasis should also be given in mapping the CLOs with the skills defined stated in the *Rubrik PNGK Bersepadu (iCGPA), Panduan Pentaksiran Hasil Pembelajaran* (KPT, 2016). The skills are spelled in Malaysian Qualification Frameworks (MQF), which has been defined as 'an explanation or description of the national education system that is understood at the international level, which clarifies all qualifications and academic achievement in higher education (post-secondary) and how these qualifications are meaningfully linked, pg 198'.

Methodology

Due to its suitability and compatibility with the scope of study, a combination of Design Science Research methodology (Preffers et al, 2007) and Action Research is adapted to design the research framework. Action research is chosen based on its suitability involving cycles of implementation in a real Practicum situation for evaluation purposes. Research methodology is divided into five main phases; awareness of problem, suggestion of solution, re-design of instruments, implementation, and evaluation as illustrated in Figure 2.
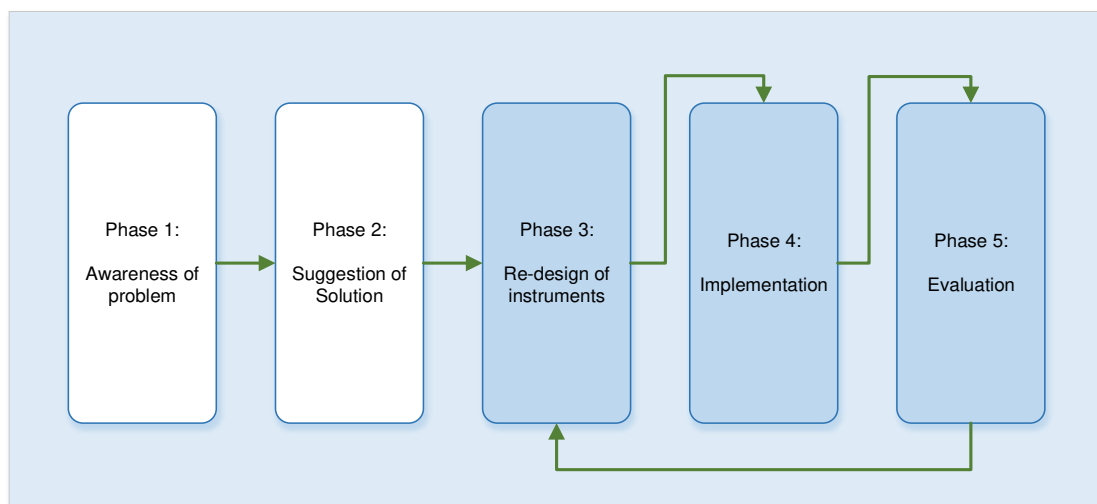
Figure 2. Phases involved in research methodology

Awareness of problem

In this phase, main problems of the existing instruments are identified by using a combination of literature review, series of interview and early analysis that have been conducted during Practicum review workshops. Existing assessment tools and approaches of Practicum implementation from 2011–2016 are thoroughly studied to identify the loophole and rooms for improvement. Content analysis and interview with domain experts were also conducted in identifying the problems of the existing assessment instruments. Domain experts are among experienced Practicum supervisors (supervisors from industry and UUM supervisors), Practicum coordinators, and Practicum committe who have more than ten years experiences in managing Practicum matters. Feedbacks from insdustry are used as the main reference of the problem with the current implementation.

Suggestion of solution

Based on the problem identified in Phase 1, solutions for improving the assessment instruments are carefully designed. Suggestion of solution are designed based on the integration and mapping of Programme Learning Outcomes (PLOs), Course Learning Outcomes (CLOs) and Malaysian Qualifications Framework (MQF) as designed in the *Rubrik PNGK Bersepadu (iCGPA), Panduan Pentaksiran Hasil Pembelajaran* (KPT, 2016).

For action research, five evidences that have been created are; Evidence I (current scenarios of Practicum, feedback, issues, performance), Evidence II (current implementation of Practicum, current approach, existing assessment instruments), Evidence III (improvement plan to change Evidence II), Evidence IV (implementation of Evidence III), and Evidence V (evaluated Evidence III).

Re-design of Practicum assessment instruments

Based on the identified suggestions and evidences created in Phase two, Practicum assessment instruments are carefully redesigned. Focus are given on the the contributing elements in achieving the learning outcomes; stakeholders, assessment criteria, percentage and weightage of each element, industry's expectations, university's expectations, and performance (result-based).

Early version of the improved instruments have been evaluated by the domain experts focusing on the content. Among domain experts involved are Practicum Coordinator, Practicum Committee, Practicum Supervisors (both from UUM and industry) with at least ten years experiences with Practicum. Evaluation are conducted for several cycles. Their feedbacks are used to refine the instruments before it can be implemented in the next phase.

Implementation

The implementation and refinement of Evidence III (assessment instruments) have been conducted for three cycles involving three sessions of Practicum in three academic semesters. First cycle of the implementation was in A172 semester. During the first cyclee, first version of Evidence III which consists of improvement plan and early version of the

assessment model are employed. The outcome for the first cycle implementation are analyzed based on Practicum performance and feedbacks from supervisors (industry's and university's supervisors).

Based on the outcome of the implementation in the first cycle, the assessment instruments are revised and further refined. The refined assessment instruments are then have been implemented for a second cylce of implementation involving A181 semester. The same processes are repeated for A182 semester as shown in Figure 2.

Evaluation

The assessment instruments together with the students' results are evaluated in this phase involving both validation and verification. Instruments, overall performance, and some samples the answered forms are reviewed by the experts (as described in Phase 3) for three (3) cycles. Focus are given on the content of the instruments, learning outcomes, language proficiency and format. Refinement are made for each cycle of the review. This article only emphasizes on the outcome until Phase three.

The Proposed Improvement Design for Practicum Assessment Instruments

In designing the improved version of Practicum assessment instruments, several aspects and dimensions have been taken into considerations. Among the considerations are the university's requirements, IT programme's requirements, and Practicum requirements in order to meet the industry's needs. These considerations are translated and reflected in the course syllabus, ministry's guidelines (KPT, 2016) and feedbacks from industries.

As stated in the syllabus, several transferable skills need to be achieved by students during Practicum. The skills are; knowledge, practical, social skills & responsibilities, values, attitudes & professionalism, problem solving, communication skills, and lifelong learning. Hence, the instruments have been divided into main sections (three and two sections for PRAK01 and PRAK02 respectively). In each section, the suitable skills have been set based on the required transferable skills.

For assessing industry's perception on Practicum performance, we maintained the use of PRAK01 form with several improvements on dimensions involved and its weightage. Emphasis is given on two major components which are individual assessment and project assessment (20% contribution for both components). Realizing the importance of industry's perception on producing competitive IT products from the university, assessment instrument is designed to fulfill all MQF components. A detailed mapping between assessment components, MQF elements and its weightage from industry's perspective is depicted in Table 3.

Compared to the existing instrument which only covered assessment on attitude and personal capability for individual assessment, the coverage of improved instrument is broader. Emphasis is given on measuring student's capability in achieving MQF 1 (Knowledge), MQF 3 (Social Skills and Responsibilities), MQF 4 (Values, Attitudes and Professionalism), MQF 5 (Communication, Leadership and Teamwork Skills), and MQF 7 (Information Management and Lifelong Learning Skills) through individual assessment. For project assessment, emphasis is given on measuring student's capability in achieving MQF 2 (Practical skills) and MQF 6 (Problem Solving and Scientific Skills).

Major improvement is also made for assessing student's performance from university's perspective which translated in PRAK02 form. However, we maintained the total mark

contribution of 60 percent. University's assessment is set higher than the industry's assessment since the responsibility to assess written communication component is given to the university's supervisor. Table 4 listed a detailed design of the assessment and skills together with its weightage.

There major components of assessment are designed to achieve skills associated with seven MQFs. Communication, Leadership and Teamwork Skills (MQF 5) and Practical skills (MQF 2) are mapped to measure student's performance through their project presentation.

Table 3
An Improved design of instrument for industry's assessment

Assessment methods	Percentage	MQF	CLO1	CLO2	CLO3	CLO4
Assignment 1: Organization (40%)						
1. Individual assessment	20					
a. Knowledge		1				3
b. Social skill		3				3
c. Values, attitude & professionalism		4				4
d. Verbal communication		5				4
e. Written communication		5		3		
f. Lifelong learning		7				3
2. Project assessment	20					
a. Practical (project presentation)		2			10	
b. Problem solving		6	10			
3. Overall feedback	-					
a. Overall opinion on student's performance						
b. Expected skills from the student						
c. Lacking skills of the student						
d. Recruitment with the organization						
Total mark	**40**					

Compared to the existing instrument which only covered assessment on personal characteristic and log-book for individual assessment, the coverage of the improved instrument is broader and more organized. Student will be assessed through five components (knowledge, problem solving capability, social skill, values and attitude, together with their practical skill. This will be used to measure student's capability in achieving MQF 1 (Knowledge), MQF 3 (Social Skills and Responsibilities), MQF 4 (Values, Attitudes and Professionalism), MQF 6 (Problem Solving and Scientific Skills), and MQF 7 (Information Management and Lifelong Learning Skills).

Communication, Leadership and Teamwork Skills (MQF 5) will be measured through the assessment of Practicum written components, which are their proposal, report draft, final report, and log-book. However, items for measuring report draft are revised to be more practical.

Table 4
An Improved design of instrument for university's assessment

Assessment methods	Percentage	MQF	CLO1	CLO2	CLO3	CLO4
Assignment 2: UUM's Supervisor (60%)						
Project presentation	20					
a. Verbal communication		5			10	
b. Practical		2	10			
Individual assessment	20					
a. Knowledge		1				3
b. Problem solving		6	10			
c. Social skill		3				2
d. Values, attitude & professionalism		4				3
e. Lifelong learning		7				2
Project assessment (written communication)	20	5				
a. Proposal				4		
b. Report draft				4		
c. Final report				10		
d. Log-book				2		
Total mark	**60**					

Conclusion

The improved designs of Practicum assessment instruments are presented and discussed by focusing on how CLOs and the required skills as defined by MQFs to be achieved and assessed. The improved instruments is hope to be capable in measuring Practicum performance accurately and can be used to further assess many other aspects that reflect Practicum performance in preparing IT experts to face the industry as stated in IR 4.0.

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Enhancing the Social Skills and Lifelong Learning Skills of Accounting Students Through the Use of Mobile Technology

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Abstract

Future education needs to connect students with applicable, real-world experiences. Students need to apply what they learn in classroom to the community, expose them to applied experiences and networks that let them practice and refine their skills in real-world settings. Growing use of technology by students is having an impact on teaching and learning as students are increasingly seeking to use their own technologies to engage in a range of academic activities. Thus, this study tries to understand how the accounting students' social skills and lifelong learning skills with the business community be enhanced through the use of mobile technology. This study employed an action research methodology of 26 accounting students in Universiti Utara Malaysia which went through the pre, during and post implementation stages. The finding showed that this fieldwork experience through the use of mobile technology enhances the students' social skills and lifelong learning skills.

Keywords: Social skills; Lifelong learning skills, Mobile Technology, Action Research

Introduction

This study was done in Seminar in Management Accounting class (BKAM3033). There are 26 students under study. Most of the students are among the second and third year students. It is crucial for the students to engage with the community since they will serve the community or involve with the community when they are working or starting a new chapter of their life after study. Social skills and lifelong learning skills will develop and frame their attitude and perspective in a whole different way. They will more mature and wisely in making decision. Based on experience and observation of teaching 'Seminar in Management Accounting' course, the students are not exposed to the community's environment. Thus, they are lacked of social skills and lifelong learning skills which are very essential for students' development and future undertakings. Currently, the students have to carry a fieldwork project where they need to go to business community and find out their problems in accounting and cost. Once they get the information and data, they start to do the analysis, make recommendations and then they have to submit a report to the lecturer. The whole process is stop after the report is submitted. The lecturer will assess on their report using report rubric.

To my concern, it is a waste of opportunity if this project does not prolong or connect to the business community since it will bring enormous benefits to the students and the business community itself. The report that the students produced can help the business community to improve their accounting practices. This engagement will develop students' social skills and lifelong learning skills. Understanding the students' limited time and packed shedules to meet

the business community frequently, it is suggested that student communicate and interact with the business community through mobile technology. Through this technology, students can give information and fast feedback to the business community effectively. Comprehending the importance of social skills and lifelong learning skills for the students' future career and development, therefore, this study intends to answer these questions:

> *How will the accounting students' social skills and lifelong learning skills with the business community be enhanced through the use of mobile technology?*

Therefore, this study embarks on the following objective:

> *To enhance the social skills and lifelong learning skills of accounting students with the business community through the use of mobile technology.*

Literature Review

Effective Teaching and Learning

In the higher education institutions, effective teaching and learning is an important topic of discussion among the educators to ensure the students get the best learning experience and outcome from the sessions. Researchers in the education field have developed variety of teaching strategies to facilitate the achievement of effective teaching and learning sessions. Among the strategies proposed are the cooperative learning (Johnson, Johnson and Smith, 1989), experiential learning by Kolb (2014), problem-based learning (Albanese and Mitchell, 1993), peer learning (Boud, Cohen and Sampson, 2014), spatial learning (Holley and Dansereau, 2014) and the most current strategies is digital learning through games. Using these various teaching methods, educators found variety of implications on students learning experience and understanding of the subjects under discussion.

Recently, Othman and Chia (2015) proposed another innovation to the teaching and learning strategies that is by applying a coaching technique into the teaching and learning session. Their study indicate that the teaching strategy have a positive effect on the students understanding and skill. However, studies on the integration of coaching model as a teaching strategy is very limited. Coaching is more popular in sports, medical and business industry compared to education. Therefore, this study aims to explore the effects of integration of a coaching model in teaching and learning to students' critical thinking skills.

Service Learning and its benefits to students

Service-learning can benefit all participants, students, faculty, academic institutions and their communities (See Table 1). Students gain academic knowledge and skills, interpersonal skills, and self-confidence. Faculty can enhance the quality of their teaching, find opportunities for research and outlets for professional expertise. Service-learning supports the civic engagement mission of colleges and universities and improves town/gown relationships. Community members receive valued service and institutional support. Student benefits of

service-learning include enhanced opportunities for learning, and personal and social skill development. Students gain increased knowledge of academic materials, their communities, and themselves. Service-learning is a form of experiential education that supports deep learning. Through their service-learning activities, students apply classroom knowledge in practical settings to enhance their understanding of class materials (Eckersley, Tobin & Windsor, 2018; Saylor, Hertsenberg, McQuillan, O'Connell, Shoe & Calamar, 2018).

Service-learning provides students with opportunities to develop civic engagement skills. By working with community members, students can enhance their group, organizational and interpersonal skills. They also can gain important experience working with diverse members of their communities. Learn more about how service learning can be used to connect classroom learning with societal issues. Students can gain better understanding of themselves as they explore and develop ways to contribute to their communities. They can develop self-confidence and an enhanced commitment to public service (Maruyama, Furco & Song, 2018; Soria & Mitchell, 2018).

Table 1
Benefits of Community Engagement

STUDENT BENEFITS OF COMMUNITY ENGAGEMENT	
Learning Outcome	• Positive impact on students' academic learning • Improves students' ability to apply what they have learned in "the real world" • Positive impact on academic outcomes such as demonstrated complexity of understanding, problem analysis, problem-solving, critical thinking, and cognitive development • Improved ability to understand complexity and ambiguity
Personal Outcome	• Greater sense of personal efficacy, personal identity, spiritual growth, and moral development • Greater interpersonal development, particularly the ability to work well with others, and build leadership and communication skills
Social Outcome	• Reduced stereotypes and greater inter-cultural understanding • Improved social responsibility and citizenship skills • Greater involvement in community service after graduation
Career Development	• Connections with professionals and community members for learning and career opportunities

	• Greater academic learning, leadership skills, and personal efficacy can lead to greater opportunity
Relationship with The Institution	• Stronger relationships with faculty • Greater satisfaction with college • Improved graduation rates
FACULTY BENEFITS OF COMMUNITY ENGAGEMENT	• Satisfaction with the quality of student learning • New avenues for research and publication via new relationships between faculty and community • Providing networking opportunities with engaged faculty in other disciplines or institutions • A stronger commitment to one's research

Source: Brandy (2018) https://cft.vanderbilt.edu/guides-sub-pages/teaching-through-community-engagement/

There are many ways to integrate community engagement into an existing course, depending on the learning goals, the size of the class, the academic preparation of the students, and the community partnership or project type. Below are some general tips to consider as you begin:

- One-time group service projects: Some course objectives can be met when the entire class is involved in a one-time service project. Arrangements for service projects can be made prior to the semester and included in the syllabus. This model affords the opportunity for faculty and peer interaction because a common service experience is shared. One-time projects have different learning outcomes than ongoing service activities.

- Option within a course: Many faculties begin community engagement with a pilot project. In this design, students have the option to become involved in the community-based project. A portion of the normal coursework is substituted by the community-based component. For example, a traditional research paper or group project can be replaced with an experiential research paper or personal journal that documents learning from the service experience.

- Required within a course: In this case, all students are involved in service as an integrated aspect of the course. This expectation must be clearly stated at the first-class meeting, on the syllabus, with a clear rationale provided to students as to why the service component is required. Exceptions can be arranged on an individual basis or students can transfer to another class. If all students are involved in service, it is easier to design coursework (i.e., class discussions, writing assignments, exam questions) that integrates the service experience with course objectives. Class sessions can involve agency personnel and site visits. Faculty report that it is easier to build community partnerships if a consistent number of students are involved each semester.

- Action research projects: This type of class involves students in research within the community. The results of the research are communicated to the agency so that it can be used to address community needs. Action research and

participatory action research take a significant amount of time to build relationships of trust in the community and identify common research agendas; however, community research projects can support the ongoing research of faculty. Extending this type of research beyond the confines of a semester may be best for all involved.

- Disciplinary capstone projects: Community engagement is an excellent way to build upon students' cumulative knowledge in a specific discipline and to demonstrate the integration of that knowledge with real life issues. Upper class students can explore ways their disciplinary expertise and competencies translate into addressing community needs. Other community-based classes within the department can prepare the student for this more extensive community-based class.

- Multiple course projects: Community engagement projects with one or more partners may span different courses in the same semester or multiple courses over a year or longer. These projects must be broad enough to meet the learning goals of multiple courses over time, and because of this they may have a cumulative impact on both student learning and community development that is robust. Such projects may be particularly suited to course clusters or learning communities within or across disciplines, or course sequences, say, within a major, that build student capacity towards advanced learning and community action goals.

Technology in Education and Motivation Theory

Students today are part of the millennial generation. They have grown up surrounded by technology and it is being used extensively by this generation. They are spending most of their time online and easily learn new technologies. Interactive media that offer a means to hold two-way conversations with others is preferred over viewing television, reading or any other one-way method of communicating concepts. Students use the Internet for coursework, looking up information on the web and downloading music, software and movies, job searching, shopping and games. The Internet is their favoured medium for social interaction via social web sites like Facebook, My Space, and Twitter (Jones, 2009).

The traditional classroom where teachers are the primary source of information will not keep students engaged in the scholarship process. According to Tapscott (1998), students who are not engaged will not achieve. Prensky (2010) argues that the millennial generation tend to deliver a short attention span or lack of care. He directs to their ability to sit for hours watching movies, playing video games or sitting in front of a computer looking at things on the Internet. The same students that can't concentrate in grade will use after school time to work with computers and the Internet and acquire skills that will be useful to them in the hereafter.

Computers and technology are generally said as being effective in increasing student motivation (Kulik, Bangert, & Williams, 1983; Software Publishers Association, 1995). Recent curricular innovations using the Internet, including particular aspects of telecommunications such as E-mail, can capitalize on students' general interest in computers and social communication or collaboration. For lesson, some Internet science projects link students, teachers, and scientists through E-mail or World Wide Web–based message boards, offering a forum for cross-classroom discussion and communication

Previous studies on technology integration in teaching and learning

The growing availability of media resources is changing teaching and learning, as well as emphasizing the need for finding satisfactory and appropriate materials. Technology integration must (Charp, 2003):

* Meet a broad range of educational goals and needs

* Be available to a variety of learners

* Permit sharing and cooperative endeavours

* Have provisions for assessment and evaluation

Previous studies agreed that the use of technology in teaching and learning increases students' academic performance and may compliment a teacher's existing pedagogy (Callaghan, Long, Es, Reich, & Rutherford, 2018; Shyr, & Chen, 2018; Kareem, 2018; Kale, 2018; Tadesse, Gillies, & Campbell, 2018)

Results from study done by Vannatta and Beyerbach. (2000) indicate that project activities facilitated (1) increased proficiency in technology applications and instructional methods among all participants and (2) faculty integration of technology in education courses. In addition, higher education faculty and preservice teachers felt that project activities enabled a constructivist view of technology integration, as they now see technology as an instructional tool used to engage students in meaningful learning.

In terms of attitude changes, study by Christensen (2002), stressed that the technology integration education is shown to have a rapid, positive effect on teacher attitudes, such as computer anxiety, perceived importance of computers, and computer enjoyment. This type of education is shown to have a time-lagged positive effect on the attitudes of students as well (Niederhauser & Lindstrom, 2018; Tsai, 2018; Tourón, Navarro-Asencio., Lizasoain, López-González, & García-San Pedro, 2018)

While Hoyer (2005) stressed that the proponents of technology use in education cite numerous studies showing how the use of technology enhances learning and allows teachers to address the students' individual learning styles. However, this brave new world is not a solution. Often literature reveals divergence of opinion regarding the benefits of technology in education. Those less inclined to embrace technology often point out weaknesses in studies advocating technology while they cite their own studies highlighting factors suggesting that technology may not be as effective as initially thought in promoting learning.

Research Methodology

This study employed action research. "Action research is a term which refers to a practical way of looking at your own work to check that it is as you would like it to be" (Mc Niff, 2010). Action research is done by the practitioner. It involves oneself thinking about and reflecting on his/her work. Action research is an enquiry conducted by oneself where the practitioner thinks about his/her own life and work. In action research report, it shows how practitioner has carried out a systematic investigation into his/her own behaviour, and the reasons for that behaviour. The report describes the process the practitioner has employed in

order to achieve a better understanding of his/herself, so that the practitioner can continue developing his/herself as well as his/her work.

Action research is open ended where it does not begin with a fixed hypothesis. It begins with an idea that the practitioner developed. The research process is the developmental process of following through the idea, seeing how it goes, and continually checking whether it is in line with expectation of the practitioner. Action research is viewed as a type of self-evaluation. It is used widely in professional contexts such as appraisal, self-assessment and mentoring.

The methodology of action research means that the practitioner has to evaluate what he/she is doing. The practitioner needs to check constantly that what he is doing really is working. This awareness of the need for self-evaluation shows one willingness to accept responsibility for his own thinking and actions. This study employed action research where the data will be collected through rubric assessments, observations, checklists and reflections as well as literatures. According to Mc Niff (2010), action research is done by the practitioner. It involves oneself thinking about and reflecting on his/her work. Action research is an enquiry conducted by oneself where the practitioner thinks about his/her own life and work. In action research report, it shows how practitioner has carried out a systematic investigation into his/her own behaviour, and the reasons for that behaviour.

The study was conducted in BKAM3033 (Seminar in Management Accounting) class in A181 session. This course is a fully theoretical subject and a core subject for Bachelor in Accounting and Bachelor in Accounting (Information System) students. In this course, students need to do a project. The project needs student to go to the business community and search for their practice and problems. To achieve the objectives of the study, the 'Social Skills' and 'Lifelong Learning' rubrics of University Utara Malaysia were used as instrument measurement. In this study, the lecturer is acting or behave as if she is 'the facilitator' in the project carried by the students. There are three stages, Pre-Stage, During-Stage and Post-Stage.

Pre-Implementation Stage

At the pre-implementation stage, the researcher informs the students on the activities to be conducted in their project. The students were asked to search for their business operators. Once the find the business operator, they sent formal letter that stated their purpose of meeting. The students set on the time and date for future meeting. Questions and answers session were held to clarify any inquiries from the students.

During Implementation Stage

There were two cycles involve:

Cycle 1 – In this cycle, the lecturer followed a group of students (Group A) in their project to meet the business operator. The first meeting was held at business operator's premise. The introduction of the project and the expectation of further engagement with the business operator were explained by the students. The students made the interview. The business operator was invited to joint WhatsApp group and Facebook that concern on the accounting and business activities. The business operator was informed on the use of mobile technology in replacing face to face meeting. The business operator would use this opportunity to interact

with the students on any questions and views regarding accounting practices. The lecturer observed and took field notes during the meeting. Soon after the meeting was finished, the lecturer would assess the social skill using social skill rubric for the session, asked students' feedback and did reflection. The lifelong learning skills were assessed through final report by using information management and lifelong learning rubric.

First reflection: Made adjustment/improvement by considering all feedback and observations.

Cycle 2 – In this cycle, the lecturer followed another group of students (Group B) in their project to meet the business operator which was held at business operator's premise. During the second cycle, the same activities as in the first cycle were conducted. The lecturer did improvements based on the reflections, observations and field notes based on the first phase. The WhatsApp group and Facebook that were created with the operator were monitored by the lecturer. The same cycle was conducted in cycle 3 if the rubric assessment did not achieve the required level and more improvement to be made.

Post Implementation-Stage

The reflection on the whole observation, field notes and rubrics, interviews were analysed. Students from Group A and B as well as the business operators were interviewed to understand their perceptions on the community engagement and how they gained benefits or faced obstacles from the activities with the use of mobile technology. The rubric of social skills and lifelong learning were assessed to understand the enhancement of those skills. The WhatsApp group and Facebook that were created with the operator were monitored by the lecturer. All data were analysed and reported.

Students sent the business operator regular electronic updates for feedback. This continual communication positively affected both the business operators' and the students' relationship with each other and the class/lecturer. Students presented the business operator with a final written report and presentation, and also presented their findings to the class and posted in the e-learning forum. Students used screen-based technology throughout the course to facilitate the project and communications. The student's communications with the business community in WhatsApp and Facebook and other electronic applications were discussed online/real time. It would be reviewed every week since the first meeting with the business operators. All discussions were screenshot for evidence of online communication/socialization. Reflection was done to comprehend the whole processed that take place.

Findings and Discussion

CYCLE 1:

In this cycle, the lecturer followed a group of students (Group A) in their project to meet the business operator. The first meeting was held at business operator's premise. The introduction of the project and the expectation of further engagement with the business operator were explained by the students. The students made the interview. The business operator was invited to joint WhatsApp group and Facebook that concern on the accounting and business activities. The business operator was informed on the use of mobile technology in replacing face to face meeting. The business operator would use this opportunity to interact with the

students on any questions and views regarding accounting practices. The lecturer observed and took field notes during the meeting. Soon after the meeting was finished, the lecturer would assess the social skill using social skill rubric for the session, asked students' feedback and did reflection. The lifelong learning skills were assessed through final report by using lifelong learning rubric.

Observations and assessment rubrics were be taken by the lecturer on each group to understand the situation during the discussions. The assessment on Social skills Rubric (See Table 2) showed that in terms of self-confidence, students were frequently demonstrated self confidence in doing tasks. They had hesitation in throwing questions and there were times when silent moment occurred. In term of tolerance and respectful, students showed excellent level of respects, accepted and supported the opinion of others and tried to keep others working well together. In term of social communication, students were in good level in starting, maintaining and ending a conversation in a friendly manner. They maintained good eye contact and took turn to talk with respect to the business operator. The students' etiquette level was excellent where they always ethically behaved when carrying out responsibilities to the group. As far as emotion management is concern, the students showed a good attitude and behaviour when socializing with others, managed emotional distress wisely and received and gave praise and constructive criticism. Lastly, in term of social contribution to the society, the students' level was good. They were still in the learning process and tried to contribute as per student levels.

Table 2

Social Skills Rubric in First Cycle

CONTENT (Social Skills and Responsibilities)					
Criteria	**Poor (0-3)**	**Fair (4-6)**	**Good (7-9)**	**Excellent (10-12)**	**Score**
Self Confidence	Little or no self confidence in doing tasks.	Sometimes demonstrates self confidence in doing tasks.	Frequently demonstrates self confidence in doing tasks. **9**	Always demonstrates self confidence in doing tasks.	9
Tolerance and Respectful	Rarely respects, accepts and supports the opinion of others. Often is not a good team player.	Fairly respects, accepts and supports the opinion of others, but sometimes is not a good team member.	Usually respects, accepts and supports the opinion of others. Does not cause "waves" in the group.	Always respects, accepts and supports the opinion of others. Tries to keep people working well together. **10**	10
Social Communication	• Rarely shows interest to participate in conversations. • Limited eye contact. • Always disrupt or	• Takes part in conversations when initiated by others. • Appropriate eye contact. • Interfere or monopolies conversations.	• Starts, maintains and ends a conversation in a friendly manner. • Maintains good eye contact.	• Starts, maintains and ends a conversation naturally. • Uses appropriate eye contact and body language.	8

	monopolies conversations.		• Takes turn to talk with respect.	• Takes turn to talk with respect and actively listen to others.	
Etiquette	Need guidance to be ethical when carrying out responsibilities to the group/ community/ society	Ethical when carrying out responsibilities to the group/community/ society, but sometimes put self-interest first.	Frequently ethical when carrying out responsibilities to the group/community /society.	Always ethical and promote being ethical when carrying out responsibilities to the group/community /society. **10**	10
Emotion Management	• Need guidance from others to correct attitude and behavior and manage emotions.	• Sometimes able to fix undesirable attitude and behavior by own self. • Able to manage simple emotional distress satisfactorily. • Receive and give some praises as well as criticisms accordingly.	• Fixes undesirable attitude and behavior by own self. • Manages emotional distress well. • Receives and gives praise and some criticism accordingly.	• Always show a good attitude and behavior when socializing with others. • Manage emotional distress wisely. • Receive and give praise and constructive criticism. **10**	10
Social Responsibility – Contribution to Society	Shows little concern and consideration towards the diversity of values and/or beliefs, as well as group/ community/ society wellness.	• Shows concern and considerate towards the diversity of values and/or beliefs, as well as group/community/society wellness. • Socializes and communicates in satisfactory manner (listen, understand, share and provide feedback) with members of the group/ community/ society.	• Willing to guide in order to improve knowledge for the common group/community/society wellness. • Socializes and communicates in good manner (listen, understand, share and provide feedback) with members of the community. • Able to maintain collaboration and cooperation in a multicultural community.	• Willing to guide in order to improve knowledge for the common group/ community/ society wellness. • Socializes and communicates in excellent manner (listen, understand, share and provide feedback) with members of the group/community/society. • Able to nurture and maintain collaboration and cooperation in a multi-cultural	8

				8	group/ community	
					TOTAL SCORE:	55/72

After Group A submitted the final report. Lifelong learning skill were evaluated based on lifelong learning rubric (see Table 3). The group was in good level for information retrieval and management. They demonstrated ability to find and managed relevant information with minimum guidance but not from various sources. In term of autonomous learning, students were able to accept new ideas; able and willing to conduct autonomous learning. In the interest traits, students explored a topic in depth, yielding insight and/or information indicating considerable interest in the subject matter. In term of initiative, students demonstrated moderate initiative in completing a task. While in term of sources and references, all sources (information and graphics) were accurately documented, but a few were not in the desired format. Most references were cited in text and appropriately provided in reference list. Most references used correct style and format.

Table 3

Information Management and Lifelong Learning Skill Rubric in First Cycle

CONTENT (Information Management and Lifelong Learning)					
Traits	**Poor (0-3)**	**Fair (4-6)**	**Good (7-9)**	**Excellent (10-12)**	**Score**
Information retrieval and management	Not being able to find and manage relevant information.	Only being able to find and manage relevant information with instructor's guidance.	Demonstrate ability to find and manage relevant information with minimum guidance but not from various sources. **9**	Always able to find and manage relevant and high quality information.	9 x 2
Autonomous learning.	Difficult to accept new ideas; not able and not willing to conduct autonomous learning.	Need time to accept new ideas; not able but willing to conduct autonomous learning.	Able to accept new ideas; able and willing to conduct autonomous learning. **9**	Always seek knowledge and able to accept new ideas; able and willing to conduct autonomous learning.	**9**
Interest	Merely explores a topic at a surface level with a very basic facts indicating limited interest on the subject matter.	Explores a topic with some evidence of depth with occasional insight and/or information indicating moderate interest in the subject matter.	Explores a topic in depth, yielding insight and/or information indicating considerable interest in the subject matter. **8**	Explores a topic in depth yielding a rich awareness indicating intense interest in the subject matter.	**8**

Initiative	No initiative to complete a task.	Demonstrates limited initiative in completing a task.	Demonstrates moderate initiative in completing a task.	Demonstrates good initiative in completing a task. **11**	**11**
Sources and References	▪ Some sources are not accurately documented. ▪ References are not cited in text, and no or few references are provided in the reference list. ▪ Style and format are incorrect.	▪ All sources (information and graphics) are accurately documented but many are not in the desired format. ▪ Few references are cited in text and in the reference list. ▪ Most references use incorrect style and format.	▪ All sources (information and graphics) are accurately documented, but a few are not in the desired format. ▪ Most references are cited in text and appropriately provided in reference list. ▪ Most references use correct style and format. **8**	▪ All sources (information and graphics) are accurately documented in the desired format. ▪ Complete references in text and reference list. ▪ All references use correct style and format.	8
Total Score					54/60

CYCLE 2:

In this cycle, improvement was made from cycle 1. The lecturer followed another group of students (Group B) in their project to meet the business operator which was held at business operator's premise. During the second cycle, the same activities as in the first cycle were conducted. The lecturer did improvements based on the reflections, observations and field notes based on the first phase. The WhatsApp group and Facebook that were created with the operator were monitored by the lecturer. The same cycle was conducted in cycle 3 if the rubric assessment did not achieve the required level and more improvement to be made.

In cycle 2, observations and assessment rubrics were being taken by the lecturer on each group to understand the situation during the discussions. The assessment on Social Skills Rubric (See Table 4) showed that in terms of self-confidence, students were always demonstrating self confidence in doing tasks. They had confidence in throwing questions and there were times when silent moment occurred. In term of tolerance and respectful, students showed excellent level of respects, accepted and supported the opinion of others and tried to keep others working well together. In term of social communication, students were in excellent level in starting, maintaining and ending a conversation in a friendly manner. They started, maintained and ended a conversation naturally. They also used appropriate eye contact and body language as well as took turn to talk with respect and actively listened to others. The students' etiquette level was excellent where they always ethically behaved when carrying out responsibilities to the group. As far as emotion management is concern, the students showed an excellent attitude and behaviour when socializing with others, managed emotional distress wisely and received and gave praise and constructive criticism. They always managed emotional distress wisely. The students received and gave praise and constructive criticism. Lastly, in term of social contribution to the society, the students' level was excellent. Student were willing to guide in order to improve knowledge for the common group/community/society wellness. They socialised and communicated in excellent manner (listen, understand, share and

provide feedback) with members of the group/community/society. They were able to nurture and maintain collaboration and cooperation in a multicultural group/community/society.

Table 4

Social Skills Rubric in Second Cycle

CONTENT (Social Skills and Responsibilities)					
Criteria	**Poor (0-3)**	**Fair (4-6)**	**Good (7-9)**	**Excellent (10-12)**	**Score**
Self Confidence	Little or no self confidence in doing tasks.	Sometimes demonstrates self confidence in doing tasks.	Frequently demonstrates self confidence in doing tasks.	Always demonstrates self confidence in doing tasks. **10**	10
Tolerance and Respectful	Rarely respects, accepts and supports the opinion of others. Often is not a good team player.	Fairly respects, accepts and supports the opinion of others, but sometimes is not a good team member.	Usually respects, accepts and supports the opinion of others. Does not cause "waves" in the group.	Always respects, accepts and supports the opinion of others. Tries to keep people working well together. **10**	10
Social Communication	• Rarely shows interest to participate in conversations. • Limited eye contact. • Always disrupt or monopolies conversations.	• Takes part in conversations when initiated by others. • Appropriate eye contact. • Interfere or monopolies conversations.	• Starts, maintains and ends a conversation in a friendly manner. • Maintains good eye contact. • Takes turn to talk with respect.	• Starts, maintains and ends a conversation naturally. • Uses appropriate eye contact and body language. • Takes turn to talk with respect and actively listen to others. **9**	9
Etiquette	Need guidance to be ethical when carrying out responsibilities to the group/ community/ society.	Ethical when carrying out responsibilities to the group/community/society, but sometimes put self-interest first.	Frequently ethical when carrying out responsibilities to the group/ community/ society.	Always ethical and promote being ethical when carrying out responsibilities to the group/ community/ society. **10**	10
Emotion Management	• Need guidance from others to correct attitude and behavior and	• Sometimes able to fix undesirable attitude and behavior by own self.	• Fixes undesirable attitude and behavior by own self.	• Always show a good attitude and behavior when socializing with others.	11

	manage emotions.	• Able to manage simple emotional distress satisfactorily. • Receive and give some praises as well as criticisms accordingly.	• Manages emotional distress well. • Receives and gives praise and some criticism accordingly.	• Manage emotional distress wisely. • Receive and give praise and constructive criticism. **11**	
Social Responsibility – Contribution to Society	Shows little concern and consideration towards the diversity of values and/or beliefs, as well as group/ community/ society wellness.	• Shows concern and considerate towards the diversity of values and/or beliefs, as well as group/ community/ society wellness. • Socializes and communicates in satisfactory manner (listen, understand, share and provide feedback) with members of the group/ community/ society	• Willing to guide in order to improve knowledge for the common group/communi ty/society wellness. • Socializes and communicates in good manner (listen, understand, share and provide feedback) with members of the community. • Able to maintain collaboration and cooperation in a multicultural community.	• Willing to guide in order to improve knowledge for the common group/communi ty/society wellness. • Socializes and communicates in excellent manner (listen, understand, share and provide feedback) with members of the group/communi ty/society. • Able to nurture and maintain collaboration and cooperation in a multicultural group/ community/ society. **9**	9
				TOTAL SCORE:	59/72

After Group B submitted the final report. Lifelong learning skill were evaluated based on lifelong learning rubric (see Table 5). The group was in excellent level for information retrieval and management. They were always able to find and manage relevant and high quality information. In term of autonomous learning, students were able to seek knowledge and able to accept new ideas; able and willing to conduct autonomous learning. In the interest traits, students explored a topic in depth, yielding insight and/or information indicating considerable interest in the subject matter. In term of initiative, students demonstrated moderate initiative in completing a task. While in term of sources and references, all sources (information and graphics) were accurately documented in the desired format, completed references in text and reference list, all references used correct style and format.

Table 5

Information Management and Lifelong Learning Skill Rubric in Second Cycle

CONTENT (Information Management and Lifelong Learning)					
Traits	**Poor (0-3)**	**Fair (4-6)**	**Good (7-9)**	**Excellent (10-12)**	**Score**
Information retrieval and management	Not being able to find and manage relevant information.	Only being able to find and manage relevant information with instructor's guidance.	Demonstrate ability to find and manage relevant information with minimum guidance but not from various sources. **9**	Always able to find and manage relevant and high quality information.	9 x 2
Autonomous learning.	Difficult to accept new ideas; not able and not willing to conduct autonomous learning.	Need time to accept new ideas; not able but willing to conduct autonomous learning.	Able to accept new ideas; able and willing to conduct autonomous learning. **9**	Always seek knowledge and able to accept new ideas; able and willing to conduct autonomous learning.	**9**
Interest	Merely explores a topic at a surface level with a very basic facts indicating limited interest on the subject matter.	Explores a topic with some evidence of depth with occasional insight and/or information indicating moderate interest in the subject matter.	Explores a topic in depth, yielding insight and/or information indicating considerable interest in the subject matter.	Explores a topic in depth yielding a rich awareness indicating intense interest in the subject matter. **10**	**10**
Initiative	No initiative to complete a task.	Demonstrates limited initiative in completing a task.	Demonstrates moderate initiative in completing a task.	Demonstrates good initiative in completing a task. **11**	**11**
Sources and References	▪ Some sources are not accurately documented. ▪ References are not cited in text, and no or few references are provided in the reference list. ▪ Style and format are incorrect.	▪ All sources (information and graphics) are accurately documented but many are not in the desired format. ▪ Few references are cited in text and in the reference list. ▪ Most references use incorrect style and format.	▪ All sources (information and graphics) are accurately documented, but a few are not in the desired format. ▪ Most references are cited in text and appropriately provided in reference list. ▪ Most references use correct style and format.	▪ All sources (information and graphics) are accurately documented in the desired format. ▪ Complete references in text and reference list. ▪ All references use correct style and format. **10**	10
Total Score					58/60

Post Implementation-Stage

The Refection

Students were not accustomed to interview the business operator. They tried to build self confidence and develop acceptable communication during the conversation. The students did not have difficulties in contacting the business operator through whatsapp application. Through mobile technology, student were able to ask and get explanation from the business operator without meeting face to face. The recommendations from report were accepted in welcoming manner by the business operator. The use of mobile technology in connecting with the business operators keep the student in touch with them in any time that they desired. There are no barriers in getting or giving the information from each parties. Students feel confident whenever they are using the handphone. They feel less stress and happy with the use of handphone/mobile to undergone their service learning activities. Students had active interaction with the business operators. Mobile technology enable students to communicate and build relationship with the business operators at any time. They can have real-time conversations with the business players. In terms of cost, mobile technology is the cheapest way for the students to interact with the business operators where they do not have to do the real visits every time they want to communicate or give advice/service to the busines operators.

There are things that need to be improved. Students must able to explain clearly on the finished report about the business operator's operation. Students must treat the business operator like a customer were they have to attend any queries from them. These will ensure that the purpose of service learning is achieved.

Conclusion

Findings of the study reveal that accounting students' social skills and lifelong learning skills with the business community are enhanced through the use of mobile technology. The report that the students produced help the business community to improve their accounting practices. This engagement will develop students' social skills and lifelong learning skills. Service-learning improves students with opportunities to develop community engagement skills. By mixing with community members, the students enhance their group, organizational and interpersonal skills as well as gain important experience working with varieties members of their communities. Service learning can be used to connect classroom learning with societal issues. Students gain better understanding of themselves as they explore and develop ways to contribute to their communities. They develop self- confidence and an enhanced commitment to community service.

Students' limited time and packed shedules to meet the business community, communicate and interact with the business community are solved through mobile technology. Mobile technology enables students to communicate and give information or receive fast feedback to the business community effectively. Today's technology has provided flexibility for students to engage in academic discourse irrespective of the location and time. With rapid technological advancements, mobile technology offers incredible opportunities, especially in the area of higher education in incorporating service learning in their programs.

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Cultivating Students' Confidence Level in Public Speaking by Adapting Pathos (Emotional Appeal)

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Abstract

Students have a lack of understanding of the importance of mastering public speaking skills to enhance the level of confidence. However, persuasive communication skills are closely related to individual self-esteem. By highlighting public speaking as an activity that enhances self-confidence, this study takes the initiative to cultivate students' confidence level in public speaking activities by adapting pathos. This study conducts at Universiti Utara Malaysia, with a sample of 12 informants. This study uses qualitative methods of semi-structured interviews. Data transcripts were processed through thematic analysis using NVivo software to produce relevant themes. The findings show that the elements of pathos (emotional appeal) contribute to enhancing the level of confidence among students. The researcher has applied the Elaboration Likelihood Model (ELM) to explain the entire findings of the study. Overall, this study can be a guide to students as a step to enhance self-esteem theoretically and practically to improve their persuasive communication skills, which can help in the future career world.

Keywords: public speaking, pathos, communication, persuasion, ELM

Introduction

Public speaking is an example of open communication where speakers talk in front of a large number of audiences to inform, entertain, persuade, or influence listeners. Beside, public speaking is a form of face-to-face communication which usually applied in the marketing industry to sell goods and services, and corporate communication training to create a mutually beneficial relationship with stakeholders. Public speakers are generally people with a high level of confidence. To present opinions or views in front of a vast number of people is not an easy task. Most people, especially students, will avoid any activity that requires them to speak in front of the public because of lacking confidence, motivation, and stage fright (Hui Ni, 2012). However, students have a lack of understanding of the importance of mastering public speaking skills to enhance the level of confidence. Moreover, persuasive communication skills are closely related to individual self-esteem which would assist student to improve their public speaking skills.

Besides, public speaking is also one of the skills in leadership. Persuasive communication is a technique often used by leaders to gain trusts from their followers because these people are the ones that will support their reign. Aristotle's Art of Persuasion Model is the most common persuasion technique applied in public speaking activity. In my class, a lack of confidence among students becomes my priority to find an excellent solution to enhance their level of confidence in public speaking. As a lecturer, I should think wisely to what extent that my teaching style would assist them to be confident. I trace the problem since the beginning of my lecture and attempt to build rapport with the students, so then they will feel more

comfortable communicating with me. I do treat them as my friends to make our relationship more manageable and smoother. By knowing their name is one of the alternatives that I think very effectively to gain information about them.

Research Objective

This study embarks on the following objective; to cultivate students' confidence level in public speaking by adapting Pathos (emotional appeal).

Research Question

RQ: How pathos (emotional appeal) would help to cultivate students' confidence level in public speaking?

Elaboration Likelihood Model

Petty and Cacioppo in 1986 developed the Elaboration Likelihood Model (ELM) to explain how persuasive communication is applied in public speaking to persuade the audience. ELM draws two routes of persuasion; they are centrally routed messages and peripherally routed messages. ELM suggests that the speaker has to know the audience before deciding on which direction to take. Centrally routed messages are also known as elaborated messages, which the speaker depends on the richness of information, strong evident and rational arguments to create long term impact. There are two criteria to meet in central route persuasion; (i) the target must be highly motivated to process all of the information, and (ii) the goal must be able to handle the message cognitively. Types of elaborated message is known as (a) strong arguments; positive cognitive response in which the audience agrees with the speaker's view, (b) neutral arguments; no presence of cognitive commitment shown by the audience, and (c) weak arguments; a negative cognitive response in which the audience is not likely to display behavior change, instead, substantiate a contrasting view towards the speaker.

Conversely, peripherally routed messages designed for an audience who lacks motivation and ability. Peripheral route creates short term impact on audience cognitive response but still useful because it touches on the emotional connection between the speaker and audience. However, the consequence of the peripheral route is short term change or no change at all. Peripheral cues include authority, liking, commitment, contrast, social proof, scarcity, and reciprocity. Commitment in peripheral route starts as small as the role of someone in the situation to create a sense of belonging to something. For example, voters usually wear a button or badge of a political party they joined in portraying their roles as a member of the club.
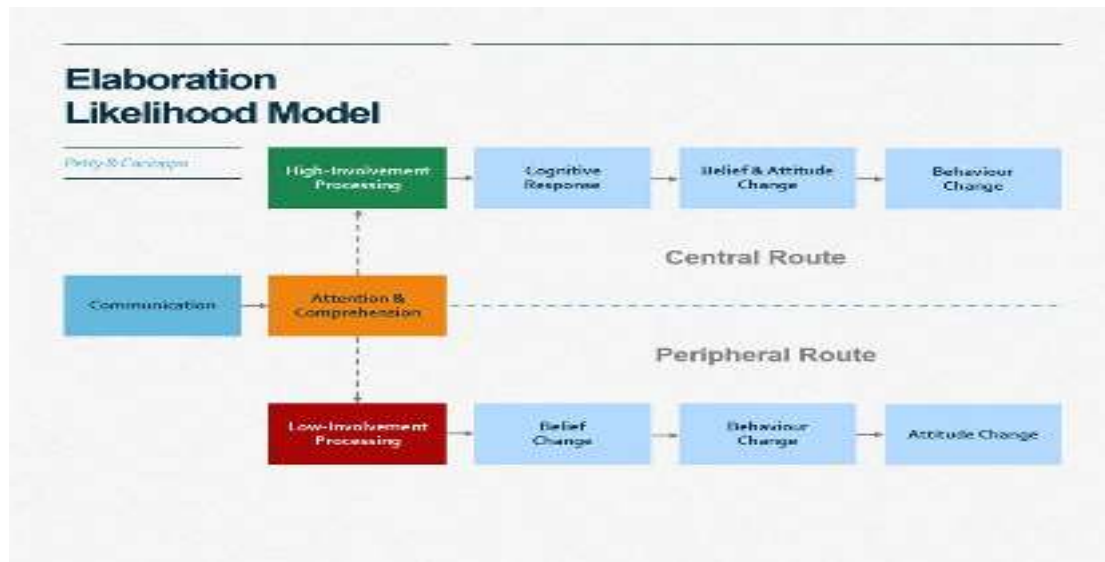
Figure 1. Elaboration Likelihood Model (ELM)

On the other hand, contrast happens when the speaker points out an uneven comparison to achieve a state of acceptance from the audience, thus, making it easier to influence them. Liking, however, depends on the interest of the public towards the speaker. The first impression is essential for the speaker to make the audience 'like' him. While reciprocity relies on give-and-take concept, scarcity aims to create a sense of urgency for the audience. Whereas, authority peripheral cue forces the audience to accept the beliefs or behaviors presented because of the speaker's position (Dainton & Zelley, 2014).

Methodology

This study conduct using a qualitative design method. Semi-structured interview is used to measure students' confidence. To gain trust, we need to begin with a lot of activities which could contribute to enhancing the level of confidence in public speaking. The more students practice, stand in front of people, and the more faith they are in the future. The character as a leader should be a highlight to assure students could motivate them as a good leader. The researcher implements some strategies or activities to assist students in developing their potential in communication skills in class.

Details out of the research procedures includes three basic phases:

Phase 1: Identifying problem/ issue – In the second meeting of the class, lecturer will provide a simple question regarding confidence level to the students (lecturer and students' reflection). They need to answer the questions by also giving any suggestion of activities to enhance confidence in public speaking.

Phase 2: Train students on how to use combination of Ethos, Pathos, and Logos (persuasion communication modes). Explain the benefit of practicing these modes in their daily conversations when dealing with the society. Duration of Phase 2 is considering 3 months (beginning first week lecture until week 14).

Phase 3: By doing observation in every meeting, students participate actively in each of activities during class, the lecturer could measure or assess students' confidence.

Their perception on how they feel their confidence level could be enhancing, will be noted as the assessment tools. At the end of the semester, the students need to answer question in interview session about their confidence while doing public speaking.

Research Instrument

An interview protocol has been developed through adapted and modified questions that are taken from Belegdair Aoutef (2015). There are two parts in the questionnaire, the first part is Teacher's Questionnaire and the second part is Learner's Questionnaire. In this study, researcher only adapts one part which is Learner's Questionnaire. Questions 1, 2, 3, 6, 7, 8, 9, 16, 17, 18, 19 and 20 are not selected because the questions focus on English language proficiency. On the other hand, questions 13 and 14 are combined. The other questions are transformed into semi structured questions which are more suitable for qualitative in order to explore deeper and wider aspects of the study. The questions are accordingly:

Demographic of Informants:

Age, Gender, education background, family etc.

Factors Affecting Confidence Level in Public Speaking

Do you participate in speaking activities? (Yes/No) Why?
How do you feel when you participate in speaking activities? Explain.
You think that the atmosphere in the classroom is relaxed, motivating or boring? Justify.
Do you think your friends support you when you give your own opinion? Explain.
Do you think your lecturer give you opportunity to voice out your point of view? How?

Strategies to Increase Confidence Level among Students in Public Speaking (based on student's own perception).

Do you think you are confident to speak in front of class? (Yes/No)
Why do you think that you are/are not confident to speak in front of the class?
How often does your lecturer ask you to speak?
How do you describe your lecturer?
Does your lecturer praise you when you answer correctly?
Which activity do you like more? For example, discussion, role-play, language games and presentations. Justify your answer.

Literature Review

Adapting Pathos to increase the level of confidence

Pathos share emotions between the speaker and the audience to set their mind on the same page as the speaker's thought. Speakers usually create an emotional appeal through storytelling or sharing experience to build up relational empathy. Students who are perfectionists find public speaking pressures them to present their speech perfectly, resulting

in self-imposed anxiety. Students who experienced anxiety have low self-confidence. Fear dominates not only emotional wellbeing but also shows physical symptoms such as trembling or shaking, cold, clammy hands, shaky voice, rapid heartbeat, sweating, blushing, dizziness, shortness of breath, digestive discomfort, or forgetting something you know or were about to say. Some may experience a panic attack from this phobia (Katz, 2000).

Ismail Rani, Harun, and Sailin (2015) stated that students are most likely to show fear in public speaking during presentations of their work in class. These students, too, only answer questions along with the whole level rather than individually. Generally, students who have phobia in public speaking will encounter difficulties in their social life. Moreover, these students will mask off their talents because they are afraid of being judged negatively or getting themselves ashamed and subsequently make them appear less confident among everyone else's. These students, even if they possess excellent computer skills, will affect their employability chances because they will find it hard to converse in job interviews (Ismail Rani et al., 2015).

According to Kankam and Boateng (2017) found out that 77.5% of respondents agree that lecturers play a significant role in managing speech anxiety among students. A conducive and supportive climate in the classroom will enhance students' confidence in public speaking. A lecturer acts as a moderator that controls the situation. Thus, the lecturers must create an environment where students are comfortable to express themselves and be completely confident to present their views, opinions or ideas in such a way that everyone's voices are heard and respected not only with their lecturers but also among their classmates. Besides, the classroom climate will determine students' ability to listen and even assess their overall performances in class. Moreover, constructive comments will likely reduce speech anxiety among students.

According to Nguyen and Tran (2015), there are five factors that contribute to speaking performance; they are (i) performance conditions which include time pressure, planning, standard of performance and amount of support, (ii) practical factors such as motivation, confidence, and anxiety, (iii) listening ability, (iv) topical knowledge and (v) feedback during speaking activities.

Findings
Adapting Pathos (Emotional appeal) values

Based on Figure 2, pathos, which refers to the emotional appeal given by the speaker to the audience to create shared values (Nation & Newton, 2009). In this theme, lecturer plays a role in portraying emotional appeal. Informant 1, 2, 7, and 11 stated that one of the ways to create harmony between the audience and the speaker is by calling their names. Through this way, the audience will feel appreciated because the speaker has noticed them and continue to develop an interest in the speaker's speech. It appears that called upon audiences' names could be the strategy to establish ethos too.
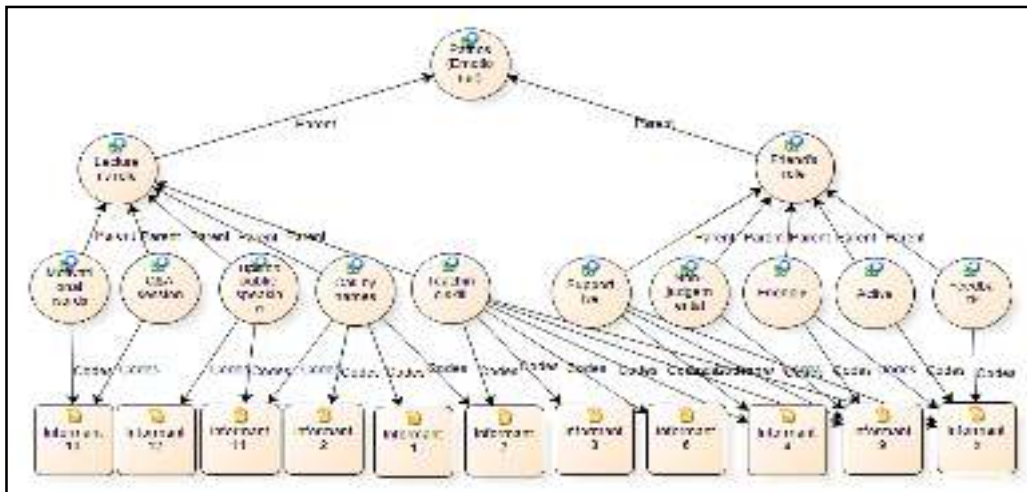
Figure 2. Pathos as strategies to increase the confidence level in public speaking

> I have the opportunity to improve my confidence level because the lecturer always gives us (students) chance to speak in front of the class. However, for me, I will feel pressured because I was afraid of getting called (by the lecturer) and answer (the question) wrongly. I_1

> Dr. Azlina (lecturer) always called (upon) her students by their names. I think this is an excellent way to guide students to be brave and confident in speaking in front of the class. I think if the students are frequently called upon to speak in front of the course, they will be more confident to talk in the future. I_2

> Yes, this class has given me the chance to improve my confidence level through the teaching styles implied by the lecturer by calling students' names to speak or to answer the question in front of the class. Students can share their knowledge and understanding of the same topic that may differ from others. I_7

> Yes, through this class, I will try to speak in front of the course (every time my lecturer call my name), and I could understand what my weaknesses are through the lesson. If I have a chance to speak, I will try my best to present my ideas or information that anyone might need to hear. I_{11}

Moreover, informant 10 stated that the Question and Answer (Q&A) session might help in increasing the student's confidence level because it helps them understand the topic discussed. Also, by sharing opinions, students may find some answers as the others do, subsequently, will make them feel like there is someone who thinks alike. Hence, the shared value was developed to assist the students.

> My lecturer will conduct the question and answer (Q&A) session after each lesson to measure students' understanding of the topic. Plus, the lecturer's personality makes me feel comfortable and more confident to give my opinion. I_{10}

Besides, informant 10 also stated that lecturer gives motivational words which make the students feel highly encouraged to speak in front of a large number of audiences. Saying positive words results in positive moods, which prepare students to feel delighted to express their arguments because they knew someone is paying attention.

> Moreover, the lecturer also gives us (students) motivational words for both mental and emotional support along with speech practices to elevate our confidence in public speaking I_{10}

Furthermore, informant 11 and 12 stated that lecturer always gives tips on how effective public speaking, which makes students more confident in giving a speech. The students appreciate the evaluation given by the lecturer. From the tips provided, they know what to do to improve their public speaking skills. Hence, a value shared through the learning process.

> Also, I get to know the right way to communicate with another individual in the sense that knowing a person's purpose to inform, and he or she is doing it. The activities that are related to public speaking skills have been conducted in this class, too, help the students to increase their confidence level. I_{11}

> Yes, this class has helped my friends and me to speak (our opinion). The lecturer has allowed us the opportunity to ask or express our ideas. My confidence level improved through the activities conducted in class because it contains the skills needed to communicate effectively. Lecturer also taught us ways to improve our speaking skills and to be confident in public speaking. I_{12}

Lecturer's teaching skill also gives an impact on emotional appeal in such a way that she or he makes the students feel unpressured to express their opinion. The relaxing teaching environment has helped students to argue on topics discussed the following statement support.

> Besides, I feel that confidence can build through lecturer's role in giving lectures in such a very relaxing way, which can create a conducive environment for the students. In my opinion, when the students are comfortable with the environment they are sitting in, they are more likely to be outspoken. I_4

> In my opinion, this class has helped me to increase my confidence level because my lecturer's teaching style is relaxed and not strict. I might become nervous if my lecturer is a very formal and rigorous person because then, I will be afraid of what I am presenting is not up to my lecturer's expectation. I_5

Likewise, the way lecturer applied public speaking skills while discussing a topic has indirectly taught students how to deliver a speech effectively. Exemplification technique can be implemented in any teaching and learning process to provide minimum effort but maximum impact on the target audience. Information 6 and 9 stated that:

Yes, this class has allowed me to boost my confidence. My lecturer discusses more on interpersonal communication skill, focusing on the broader aspect of human interaction between individuals, group, and organization, and not only limited to teaching syllabus. Other than that, the way of lecturer disseminates information has become an example for us to sharpen our skills in public speaking. I_6

This class has helped me to boost my confidence level because lecturer's teaching style which always encourages students to participate along allowing students to be 'opened' about their opinion and ideas which make them comfortable to speak out. I_9

The implementation of two-way communication by the lecturer during the lesson is also significant in increasing students' confidence level in public speaking because two-way communication involved student's participation in the learning process. Thus, create shared value through the exchange of opinions.

"Besides, the conducive learning environment with the implementation of two-way communication helps to increase my confidence level. I_7

Dr. Azlina (lecturer) always gives a chance for each student to share their experience and their opinion freely. On top of that, I feel like the usage of two-way communication by a lecturer can elevate students' confidence level. I_8

On top of that, informant 4, 5, and 9 agree that friends' support makes students more confident in public speaking. My friends have known us personally, especially friends who shared the same interests and hobbies. Friends' opinions matter as much as their attention throughout the public speaking activity. Thus, friends play a crucial role in elevating confidence level because they shared mutual values.

Furthermore, (supportive) classroom situation and the support I get from my classmates when I speak in front of the class help to increase my confidence. I_4

Friend's support influences the way each of us expresses our own opinions to each other. I think anyone who enters this class would be very delightful to join our open debates. I_9

Active listening can be done through nonverbal cues nodding, maintaining eye contact, and question repetition. All these cues indicate that the audiences or speakers are listening. Eventually, active listening makes both speaker and audience feel appreciated because he or she has acquired the attention needed. These types of nonverbal feedbacks are essential in supporting the speaker because it will boost the speaker's confidence level. Informant 5 stated that:

Besides, I think that having supportive friends is crucial in improving my confidence level because they will listen actively to my speech and give positive responses, which make me feel very confident. I_5

Likewise, friends who are friendly and non-judgmental create a favorable atmosphere for the speaker to present his or her speech without having to worry about comments that will be questioned upon them because the positive environment makes the speaker carefree and willing to accept any critics.

> It feels so easy to speak in front of the class when I have active, friendly, and cheerful classmates.   I5

> This class has allowed the students to answer and ask questions freely without feeling shy because all of us (classmates) are not judgmental and have been very friendly. I9

Discussion

In discussing pathos, the study developed two subthemes which informants agree lecturer and friend play a role in creating shared value among speaker and audience. Emotional involvement is vital in persuading the audience to affirm with the speaker. In university, students rely on friends and lecturers as the closest people. Thus, Questions and Answers, motivational words, tips on public speaking, and teaching skills conduct by the lecturer are effective strategies to increase confidence level. While having active and nonjudgmental friends who offer great support and give positive feedback during public speaking activity are essential to help the speaker gain confidence.

In the communication context, public speaking is a type of persuasive communication activity to influence the audience to change their behavior. This study has chosen the Elaboration Likelihood Model (ELM) developed by Petty and Cacioppo (1986). In their theory, the scholars suggested two ways to persuade people, through central route message and peripheral route message.

Central route message creates through strong evident, rational arguments and immense information. Study finds that through the activities conducted to achieve logos; debate, games, and group discussion are also ways to create centrally routed messages. However, these messages only efficient if audiences are highly motivated and can understand the speech. In other words, the audience is people who 'see' the expression in the same context and are interested enough to participate in a public speaking activity. For example, informants are students who attend the Leadership Communication class, which also means that they are in the same context of learning. Thus, the audiences can understand the speech because they know the terminology, subject, or jargon used by the speaker. Eventually, when the viewers the issue, it makes them motivated to participate in the public speaking activity because they are aware of what is being delivered by the speaker. Following this, the speaker shall present no substantial evidence, rational arguments, and information thoroughly to give long term cognitive impact on the audience.

Likewise, the peripheral route requires the speaker to know their audience before designing emotionally driven messages to create a short term impact on the audience. However, there is little possibility for the audience to show emotional response in this technique, even if it exists, it does not exist for long. There are several cues in constructing peripherally routed messages; authority, liking, commitment, contrast, reciprocity, scarcity, and social proof. Study finds that lecturer's role in class fit the authority cue of ELM. In a classroom, the lecturer has the power to assign students with tasks. Furthermore, the lecturer also can direct them to speak

in front of the class. Calling students by their name should be the most effective way to encourage confidence level in public speaking. When a lecturer calls upon his or her students to give opinions or to answer questions, they could not avoid the lecturer's favor. In Asian culture, the students must respect their lecturers. Similarly, students who are being called to present or give a speech will feel appreciated knowing their opinion matters; hence, pathos achieves because lecturer cares about his or her students' emotional wellbeing.

Besides, calling students by their name also promotes emotionally manner because the chance of getting called upon will make them ready and prepared to present in front of the class as stated by Katz (2000), students are afraid of looking silly or being judged when they are the center of attention. Moreover, lecturer's role in portraying a right image of being a speaker is one of the indirect strategies to increase the confidence level in public speaking because people learned best through imitation; the act of copying the behavior of someone observed (Schlag, 2011). Thus, being a lecturer – who students will look forward to – fits the role in personality shaping. In liking cue, the scholar suggested that it is easy to persuade the audience when they 'like' the speaker. For instance, Pepsi advertisement in 2010 uses Beyoncé, Pink and Britney Spears, top artists in Hollywood as the models for the product to persuade their customer to purchase Pepsi because of the people 'like' them. In the same way, students like when lecturer shows professional characteristics.

Furthermore, ELM suggested that peripheral cues include commitment and social proof. Based on this study, being a student means you cannot escape from assignments and presentations. The degree of responsibility enforced through these tasks in class. Informants agree that students' confidence level can cultivate through group discussion. Hence, their awareness of being a member of the group makes them committed to the tasks given. In explaining reciprocity, group tasks contribute to overall course performance, meaning that students have to perform their best in class to get excellent marks; thus, the give-and-take concept. Social proof, on the contrary, is the influence of peer pressure in a situation. Study finds that informants acknowledge the presence of supportive, friendly, and active friends make them feel confident in public speaking.

Conclusion

In conclusion, public speaking is an activity that requires a high level of confidence, which can enhance through internal and external efforts. Internal efforts include overcoming anxiety through breathing technique, practice speech, and adequate preparation. Whereas, a public speaking phobia can be overcome externally through motivational words from lecturers, support from friends, and blending in the situation to create a conducive environment.

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Teaching and Learning of Malaysian Nationhood Course Based on Problem Based Learning at Universiti Utara Malaysia

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Abstract

This study discusses the implementation of Problem Based Learning (PBL) in teaching and learning Malaysian Nationhood course at Universiti Utara Malaysia (UUM). This course is a core course and should be taken as a prerequisite in the process of graduation. However, the significant challenge faced by instructors of the course is the course itself which is tedious and uninteresting. The number of students in classrooms and traditional teaching approach caused students to feel bored and uninterested. PBL is a Student Centered Learning (SCL) based model and it is able to produce a conducive learning environment. Aware of the constraints facing in delivering this course, PBL model is applied to increase students' interests and enhance the level of students' achievement for this course. This study is a simple descriptive analytical approach using information gathering through observation, SCL-focused activities and focus group discussion. The study found that the method of SCL is able to increase the interest and level of achievement of the students in the Malaysian Nationhood course at UUM.

Keywords: Problem Based Learning, core courses, traditional, focus group discussion

Introduction

The SADN 1033 Malaysian Nationhood course is a core course and should be taken as a prerequisite for graduation at Universiti Utara Malaysia (UUM). This course is offered to build students' identity as Malaysian citizens. Therefore, the underlying essence is focused on the factors that have shaped the development of Malaysian History. In addition to listing the factors that have been the major turning point in the country's history and explaining the consequences of the turning point. The course is also intended to provide knowledge, basics and facts on Malaysian history that are fundamental to the knowledge of Malaysian Nationhood courses. Students are also expected to list factors that influence the continuity, change and socio-political development of Malaysia. This will also enable students to apply their knowledge of nationhood in an effort to build their identity and have a high patriotic spirit. It further identifies the implications of the changes that have taken place on the socio-economic and political development of the country.

The end goal of this course is to apply the knowledge of Malaysian Nationhood in fostering the spirit of patriotism, nationalism, volunteerism and leadership among students. Therefore, the teaching strategies for learning Malaysian Nationhood course should be contemporary and student-centered. Teachers are fully responsible for determining learning objectives, designing teaching assignments and selecting learning resources for their students

for student-centered learning. In these teaching and learning, students are 'autonomous' and they are fully responsible for determining the direction of the learning process. Therefore, the strategy towards teaching using student-centered learning is that teachers should create learning experiences that will interest the students and encourage their involvement in the learning process (Ismail Said, 2014: 15).

The most commonly used teaching and learning method is teacher-centered. This learning is associated with traditional classroom management. Weimer (2002) argues that student-centered learning requires a change in the role and function of teachers to just being facilitators (Gloria Brown Wright, 2011). In this regard, to ensure that the learning objectives and CLO of Malaysian Nationhood course are achieved, *Problem Based Learning* (PBL) is a teaching and learning model that fosters and promotes lifelong learning. Among the key features of PBL are problem statement, focus oriented, authentic research exercise, findings generation, collaboration and coorporation.

Research Objective

The objective of this study is to look at the detailed teaching and learning methods of Malaysian Nationhood (SADN 1033) course at Universiti Utara Malaysia. This is because the course is often considered boring and burdensome. Teacher-centered teaching and learning methods make students bored and lazy. This study was conducted to determine how the use of *Problem Based Learning* can help in teaching and learning Malaysian Nationhood course at Universiti Utara Malaysia. Next, the main focus will be to study how the use of *Problem Based Learning* can improve students' interest and achievement in the course.

Literature Review

Gaming/role playing activities provide opportunities for students to fulfill their needs of curiosity, as well as enhance their knowledge, experience and skills. Vygotsky (1962) states that games selected by a child which is supported by a teacher or adult through discussion and question-and-answer sessions will promote higher cognitive achievement.

Kitson, in turn, submits and expresses different and dynamic views in the teaching and learning of history. According to the author, teaching and learning should be intertwined with research, discussion and practice (Kitson et al., 2011). The current flow of education in Malaysia is changing the approach and methods of teaching and learning in schools. A lot of changes can be seen lately. This is in line with the changing values, mindsets, desires and technological advances that are pursued in the national context. In schools, changes that occur in the implementation of education are not only related to administration and management, but they also include the focus and content of the curriculum; emphasis on curriculum implementation; approaches, strategies and methods for implementing the teaching and learning process; and the use of the latest technology (Abu Bakr Nordin and Ikhsan, 2003).

In line with national aspirations, various changes are seen in school learning activities. Learning is one of the most important activities in one's life. According to Atkinson et. al. (1964), learning is said to be a constant link in the change of behavior which is reproduced repeatedly. Learning takes place when someone accepts something new, or modifies their behavior pattern. It also has an impact on future attitudes or achievements. Discovery is one of the learning processes that can help students build new experiences and knowledge through exploration. According to Mohd. Uzi Dollah (2000), learning mathematics towards new

discoveries has always been a difficult task for students. This is because the failure to make the findings is actually due to the learning process that emphasizes on the results of examination (Mohd Uzi Dollah, 2009: 29).

Several possible causes of examination-oriented learning deficiencies have been identified. Among the cause of these weaknesses is students are seen as if they were formed through 'machines'. Students are viewed as products created through the 'machine' which is the learning that contains the materials (curriculum). Students seem to be forced to make excellent results. Therefore, coercive learning will not help students develop their self-confidence.

Another factor identified is the increased learning emphasis focusing on books as secondary reference materials, after the teacher. Concept of selective abstract is strongly emphasized in learning. The mastery of the concept is through drill practicing. Students focus only on existing concepts and are limited only to solving certain problems. This method looks as if the learning that takes place is not integrated with the outside world. Such learning process does not take into account the current issues which is separated by learning. This further separates learning from the real world.

Problem Based Learning is an active learning method based on the theory of social constructivism. PBL is a learning that starts with problems and students develop new ideas using existing support materials, information and knowledge. PBLs are collaboratively implemented where this process will help students develop some skills and encourage students through the problem solving process. Current studies show that PBL are widely practiced at the tertiary level, especially at college and university levels and are rarely performed at school level.

Duch noted that PBL is a learning method that helps students develop argumentative and communication skills. This method requires students to think creatively and critically, analyze real problems and be capable of communicating. He added that this method also requires students to work together in groups so that they can share their thoughts and ideas in solving the problem. Through group discussions, students organize existing knowledge to connect with the problem. Students organize related topics according to the importance and identify the questions that need to be discussed in the group. Students need to connect new ideas or concepts with the old ones before making a decision (Duch et al., 2001b).

The PBL approach depends on the character of the students, the learning environment and the problems presented. The atmosphere of PBL gives students the opportunity to shape their ability to adapt to the given problem situation. Students have more opportunities to learn about the problem-solving processes related to various skills. PBL requires students to study and explore issues related to a given problem. Past experiences will help students to make their decisions. Students will be constantly exploring new materials so that ideas among group members can be consolidated. Students' mastery of the problem will facilitate them to link their knowledge with new ideas. This will facilitate students to solve problems systematically.

Samy Azer writes about problem-based learning. This book describes the importance of providing students with case-based research (Samy Azer, 2008). An interesting and comprehensive book is Robert Delisle's writing. This book provides a good overview of the need to use this method. The author emphasizes that the use of problem-based learning models can enhance students' overall skills. This is because students will apply the skills learned to solve a given problem or topic (Robert Delisle, 1997: 14).

John Barell (2007) argues that *Problem Based Learning* is an inquiry process. This means that students will try to solve the problems given on the basis of some planned process. PBL can trigger students' curiosity and thus motivate students to study something that is given to them (John Barell, 2007). Ann Lambros quotes Joseph Payne as *"The teacher's part, then, in the process of instruction that is a guide, director or superintendent of the operations by*

which the pupil teaches himself". This statement reinforces that PBL can stimulate students' interest and motivation to research and develop a curiosity to solve problems (Ann lambros, 2002).

The implementation and impact of PBL on students is widely discussed in journal writings. Bengi Birgili addresses the need for creative and critical thinking in everyday life. This competence is very much needed in today's challenging situation. These knowledge and skills are also needed as a component in *Problem Based Learning*. Whereas creative thinking can be defined as a set of cognitive activities that individuals use based on specific objects, problems, circumstances based on specific situations (Bengi Birgili, 2015: 71-72). Marit Wijnen and colleagues state that in the early stages, lecturers will face some difficulties in managing PBL. In the end, however, students and teachers reacted positively to their active participation in the classroom climate (Marit Wijnen, etl. September 2017, Volume 11. Issue 2: 1).

Manfred Muhlfelder, Tobias Konermann, Linda-Marie Borchard explain about the "Train the Tutor" (TtT) program to develop metacognitive skills, facilitator and tutor skills in managing PBL. The goal of this program is to train graduates in year two and three in psychology to become PBL tutors. Evaluation of the program is carried out in summative and formative formats before and after the training session. This training is also the basis of *curriculum re-design* to promote PBL in psychology courses for undergraduate students. This article is very useful in illustrating the importance of metacognition especially in the preparation of PBL tutors (Manfred Muhlfelder, etl, Vol. 3, No. 2, 2015: 1).

Katarina Pazur Anicic and Renante Mekovec write an article about the response and satisfaction received after the implementation of PBL for First Degree Information Technology students. Although the students face some difficulties in the early stages in understanding the concept of implementation and learning of PBL, it continued to change upon completion. It turns out that the result of PBL creates a conducive learning climate and prepare students for the future job market (Pazur Anicic and Renante Mekovec, 2016: 16). While Greg Blundell and Victor Berardi in their study focus on today's world-class challenge of producing a competent generation of students. The curriculum adopted should be relevant to the current environment in the pursuit of producing holistic graduates. Thus, PBL is a method that can meet the current needs (Greg Blundell and Victor Berardi, 2016: 71).

Edy Suprapto1, Fahrizal1, Priyono1 & Basri K.1. Emphasize the effectiveness of the implementation of PBL. This study is more focused on PBL which is used as a strategy to improve Higher Thinking Skills (HTS) among students in vocational schools. This study was conducted because graduate students from vocational schools do not meet the level of competency set by the industry nor able to set their own business. The results of this study indicate that PBL element introduced during the TnL session can increase the level of HTS. In addition, the level of team work and problem solving skills can be instilled (Priyono1 & Basri K.1., 2017: 123).

According to Sherry Fukuzawa, Cleo Boyd & Joel of Cahn University of Toronto Mississauga the motivation aspect and student feedback about PBL effectiveness are elements that should be taken seriously. This article argues that the formed PBL group can solve problems using multi-discipline techniques and methods. In addition, the positive impact of PBL in particular is on the aspect that involves increased motivation compared to conventional learning methods (Sherry Fukuzawa, Cleo Boyd & Joel, 2017: 175).

The same were said by Sri Winarno, Sonai Muthu and Lew Sook Ling. The author points out that the TnL approach at the highest level has changed in line with the development of time. Conventional TnL methods do not encourage the development of students' creative thinking and group involvement. Thus, PBL is the solution as it is capable of generating new

ideas and fostering personality development (Sri Winarno, Sonai Muthu and Lew Sook Ling, 2018: 119). PBL is an approach that can also be applied in many disciplines such as sports science. PBL can be implemented in the preparation of training for athletes up to the assessment process. Normally a facilitator will teach in terms of theory and be one-way in nature. PBL is a two-way model and is capable of holistically developing the athlete's potential (Cordial M. Gillette, 2017: 195).

Based on the findings of the relevant studies, it is evident that TnL based on *Problem Based Learning* will have a positive impact on student achievement and interest in the course being taught. Therefore, based on the highlights which were discussed in previous studies, PBL will be applied in this study.

Methodology

This study is a simple descriptive analysis that utilizes information gathering approach through observation, SCL-focused activities and focus group discussion (FGD). The FGD discussion also involves several lecturers involved in the teaching and learning of Malaysian Nationhood course. A total of 73 students of Group F, Session 2017/2018 was used as the study sample. The lecture was conducted by the researcher for 14 weeks. Observation methods will be used to identify the interests and problems encountered by students in the course. The problems faced by the students were interpreted in the form of examination results from a few previous semesters. The *Problem Based Learning* model will be used to evaluate the effectiveness of the teaching learning stages that will be conducted. While information gathering techniques (*Brainstorming, Buzz Group, Syndicate, Three Minutes Each Way, or Snowballing*) will be used until the course learning outcomes (CLO) are achieved. The reflection session is aimed at assessing the achievement of the research objectives and CLO through *Problem Based Learning* activities.

The Effectiveness of Problem Based Learning in the teaching and learning of Malaysian Nationhood Course

Research Findings

The PBL becomes an important element in delivering the teaching and learning of the Malaysian Nationhood course in Group F. The description of the implementation of the PBL in the first lecture received very conflicting reactions. Some students were excited and enthusiastic to learn more about PBL. While others have stated that they prefer conventional TnL. The initial task of the researcher was to explain the benefits of implementing PBL in TnL activities, particularly the Malaysian Nationhood course. Thus the researcher as facilitator began to design the *Entry Document* to be used. PBL is also a pilot study in Group F lectures with the aim of its effectiveness being measured and passed on to other groups. Two topics were selected from the syllabus of Malaysian Nationhood course, Chapter Three (Colonialism) and Chapter Six (Emergency). The choice of these two topics is also based on discussions and views of colleagues and students. Both of these topics are categorized as difficult topics. Students often have trouble understanding and appreciating these topics. These reactions are also translated into the end-of-semester examination when they are unable to master them. As

such, the researcher argues that students' perceptions can be altered when PBL becomes a catalyst to generate interest and improve achievement.

In order for the TnL activities to be carried out according to plan, Group F was divided into five (5) members. Each group would appoint a group leader, recorder, reporter and facilitator. These tasks need to be carried out in rotation and systematic manner. The team leader is responsible for ensuring that the assigned tasks are performed as best as possible with the full involvement of each member. The recorder would record the discussion data, strategies and unresolved discussion issues. The reporter would prepare a report on the entire discussion and monitor the overall writing of the assigned task. The final assignment is the facilitator who ensures the maximum level of understanding of each group member and seeks out relevant materials.

The evaluation sessions are divided into several segments. These include reports / discussions (75%), presentations (15%), peer ratings (5%) and engagement / logs (5%). The overall score is 100%. Whilst assessments for assignments in the form of reports / discussions, presentations, peer ratings and engagements will be evaluated based on rubric scoring system. To ensure that PBL is systematically implemented, some documents to record the TnL process are created. These include Work / Assignment Forms (Team), Learning Process Form (Team), Group Assessment Form, Self Assessment (Individual) and Rubric Scoring Sheet.

Frequency and Percentage Findings of Chapter Three (3)

Topic Three is related to Colonialism. A total of 16 structured questions on the topic were presented to a group of 73 students attending the lecture. All questions are related to each other and arranged chronologically to help students understand. The results of this analysis are a combination of views and responses provided by each group upon completion of PBL-based TnL activities. The analysis showed students' responses to the PBL sessions conducted for Chapter 3. This feedback was also obtained individually and in groups. The majority of 41 students (56%) responded positively that PBL provided the skills to formulate and obtain detailed information on colonialism and imperialism. The implemented PBL was able to chronologically improve the scope of TnL. This can be proven when students stated that the content of the course conducted with PBL is clear and detailed. A total of 18 students (24%) responded that they acquire knowledge about the colonization of Malaya and a total of 21 students (29%) understand colonialism and imperialism clearly and effectively. However, based on a student's opinion, the PBL session should be intertwined with additional information from the lecturer when the activities are taking place. This is evident when 1 (1%) person reacted in this way. On the other hand, 72 students (99%) stated that information can be obtained from other sources such as journals, articles, books, videos and information sharing to enhance their understanding. This shows that PBL can effectively develop self-learning.

PBL is also useful in ensuring that the objectives of TnL are fully realized. This was illustrated when 52 students (72%) responded that the objective of TnL was achieved by implementing the PBL. Meanwhile, 5% said the objective was achieved with the help of other resources. Another 1% responded that the objectives of TnL were achieved through the help of the lecturer. In contrast, 16 students (22%) stated that PBL makes them understand Chapter 3 better as a whole. The majority comprising of 36 students (49%) responded positively that PBL assisted the TnL of Malaysian Nationhood course. PBLs also succeeded in shaping students' social skills. A total of 62 students (85%) responded that working in groups and exchanging opinions was an interesting strategy in PBL. While 5 students (7%) said that analyzing

reflection forms, discussing and arguing became an attraction. 6 students (8%) stated that the questions asked to attract their interest to participate in the TnL session.

Table 1
Frequency and Percentage of Chapter Three (3)

No	Item	Frequency (No. of students)	Percentage (%)
1.	What have you produced?	41	56
2.	What do you think about the content of this topic?	21	29
3.	Are the materials for teaching and learning systematic?	73	100
4.	What other information is needed to make this subject more complete?	72	99
5.	Have the learning objectives been achieved?	52	72
6.	Has PBL helped the TnL of Malaysian Nationhood Course?	36	49
7.	What are the strategies that interest you in PBL?	62	85
8.	What are the strategies that bore you in PBL?	17	23
9.	Does PBL generate new ideas and why?	58	80
10.	Does PBL help you become a critical student?	56	77
11.	How do you relate with your friends during the PBL session?	72	99
12.	How do you relate with the facilitator during the PBL session?	73	100
13.	What strengths of PBL have you exercised?	70	96
14.	What weaknesses of PBL have you exercised?	34	46
15.	What improvements can be made to the PBL?	20	27
16.	What is your overall view of the implementation of PBL?	35	48
Total		**73**	**100%**

However, there are some students who are still unable to participate effectively in the TnL session. This question was asked to students to gain a transparent view about the implementation of PBL. The majority of 17 students (23%) responded that PBL was boring because they needed to find information. Another 21% said they did not receive detailed guidance and directions from the lecturer. Meanwhile, 11% are tired of being in the same place until the discussion is over. Another 15% said they were tired of having to read long articles or references. However, a minority of 2 students (3%) responded that they were not interested in history-oriented courses. This happens because previously the lecture system was teacher-centred. Students also feel comfortable attending classes without having to move. SCL-based TnL s have forced them to move and work together in groups. This boredom factor also stems from the implementation of PBL for the first time in courses that have large student capacity.

However, 58 students (80%) responded that the PBL conducted in the classroom was capable of generating new ideas. This is because each student gives a different opinion. This is also part of the strengths of PBL. While 9 students (12%) said new ideas could be generated when they needed to find learning materials from other sources. In contrast, 6 students (8%) stated that they received answers from sources that were already available in the books.

A total of 77% responded positively that PBL could help make them think critically as students. However, 15% said they disagree and only 5% responded that they were only focused on completing the task. PBL is also capable of forming a cooperative attitude (99%) although the students might have different opinions (1%). Responses on the teaching staff were also obtained from the students. All students (100%) responded that the facilitator was able to explain and complete the task well. It also provided positive feedback that PBL activities led them to seek additional materials to complete the assigned task.

PBL also have a positive impact in enhancing student's interest and motivation. This was evident when 70 students (96%) stated that one of the strengths of PBL is that students can learn and develop the skills of appreciating each others' views and problem solving. However, the majority of 34 students (46%) stated that the disadvantages of PBL are when they understand and interpret information differently from other groups.

As groups, students also provide various responses to improve PBL. Among them, 27% suggested adding references from various sources. On the other hand, 25% suggested that the questions given should be more specific and easy to understand. Meanwhile, 20% of students suggested that the time allocation for PBL sessions should be increased. Only 14% suggested more challenging questions should be given to students.

The last question raised was to get an overall response about the implementation of PBL in studying Chapter 3. A total of 48% responded that PBL could deeply enhance students' knowledge. About 31% said that the role given made each of them had their own role and task in problem solving.

Frequency and Percentage Findings of Chapter Six (6)

TnL of Topic Three (3) triggers a variety of reactions among students. Therefore, some changes were implemented so that Topic Six (6) can be presented chronologically and easily understood by students. In pursuing the learning sessions of Chapter 6, a majority of 78% students stated that they could provide a detailed summary of emergency topics. A total of 37% of the students responded that they can understand about the communist to legitimize their power in Malaya. Another 26% said that the topic was able to instill a sense of love for the country and create awareness for the younger generation. While 99% explained that the structured TnL process was systematic with the use of additional reference materials consisting of textbooks, internet materials and articles. While only 1% responded with less systematic response.

Chapter Six (6) requires additional basic reading from students. 99% of students agreed that additional learning materials are needed to make this chapter more complete. As much as 1% stated that clarification was also required during a face-to-face lecture session. While 71% agreed that TnL objectives were met and 29% said students acquired a deeper understanding of Chapter 6. All students provided positive feedback that PBL had helped the TnL of Chapter Six and the Malaysian Nationhood course as a whole. 34% said solving the problem was very rewarding. 49% can increase students' understanding of emergency events. While 4% said that the TnL on this topic had successfully injected patriotism and national love. Only 13% said that PBL was particularly helpful in revision for the purpose of final examination.

Students are also very interested in group work and exchanging ideas. This is reflected in the response rate of 85%. Students also noted that information seeking activity is a boring part of PBL operations. This reaction represented 37%. The reaction was translated when 11% said they needed to read long articles. Another 7% of the students had opposite views with their group members. While 5% of the respondents did not like to answer the reflection form and

staying in the same place until all discussion was completed. The figure of 9% indicates time constraints and 11% responds they were left without detailed guidance and direction.

Students gave 88% feedback that PBL generates new ideas as each student presents a different opinion. Meanwhile, only 7% of the respondents disagree because the answer is already available from other sources. Only 5% gave feedback that PBL was only focused on completing assigned tasks. On the other hand, 85% agreed that PBL is capable of shaping the students to think critically. Overall 100% agreed that PBL is capable of developing good relationships with friends. 100% of students also agreed that lecturers helped as facilitators and provided clear explaination during PBL sessions.

Table 2
Frequency and Percentage of Chapter Six (6)

No	Item	Frequency (No. of students)	Percentage (%)
1.	What have you produced?	57	78
2.	What do you think about the content of this topic?	27	37
3.	Are the materials for teaching and learning systematic?	72	99
4.	What other information is needed to make this subject more complete?	72	99
5.	Have the learning objectives been achieved?	52	71
6.	Has PBL helped the TnL of Malaysian Nationhood Course?	25	34
7.	What are the strategies that interest you in PBL?	62	85
8.	What are the strategies that bore you in PBL?	27	37
9.	Does PBL generate new ideas and why?	64	88
10.	Does PBL help you become a critical student?	62	85
11.	How do you relate with your friends during the PBL session?	73	100
12.	How do you relate with the facilitator during the PBL session?	73	100
13.	What strengths of PBL have you exercised?	58	80
14.	What weaknesses of PBL have you exercised?	21	29
15.	What improvements can be made to the PBL?	28	39
16.	What is your overall view of the implementation of PBL?	72	99
Total		**Total**	**100%**

PBL has the power to accept other people's ideas and opinions, and to work together to solve problems. This is reflected in the findings of 80%. The students also responded that 29% of the implemented PBL's weaknesses was caused by students understanding and interpreting different information among group members. About 28% found it difficult to understand the assigned tasks and questions. Another 16% said that time constraints caused the tasks given to be unfulfilled. Only 3% responded to no cooperation among group members. A total of 28 students (39%) suggested that the questions given should be more specific and easy to understand. 16% said there should be additional references from various sources. Only 16% suggested that the PBL handling time should be increased. The data also shows that 99% of

students agreed that the PBL implemented can add new knowledge to them. Students have also successfully delegated their tasks systematically. However only 1% of respondents gave poor feedback. Based on the analysis of the data provided above, it is clear that PBL is an effective method for conducting the TnL of Malaysian Nationhood Course at Universiti Utara Malaysia.

Improved Students' Interest and Level of Achievement Based on *Problem Based Learning.*

Students' Reflection Based on Group and Self Evaluation Forms

PBLs which was being implemented for the first time in Malaysian Nationhood lectures was able to attract students' interest. Therefore, a few questions were asked to all students to find out their interests and achievements after the TnL in two topics of Malaysian Nationhood. A total of five (5) questions were asked and the individual assessments were cross-examined. This means that the assessment will be performed by other students in the group towards their peers. The purpose is to make the assessment transparent and avoid bias. In reviewing the contribution of each member of the group, the students responded differently. Complete printed preliminary information is provided during the PBL operating session. Distribution of tasks is also given in detail. Each group comprises of only five (5) members. Among the responsibilities given are the appointment of team leader, recorder and reporter. What is interesting is that these responsibilities need to be carried out on a rotational basis without exception. Distribution of responsibility also gives students the ability to access other relevant materials from the library, internet and so on. Students are also satisfied that they can contribute ideas as well as additional materials needed. On the whole, all students have succeeded in carrying out their responsibilities as efficiently as possible. Students' movement and space for discussion sparked students' interest during the lecture session.

However, in the early stage, team members also responded that they have some difficulties to work as a group. The group is composed of students from various background and each group's activities are different from one another. As such, they were awkward at the beginning when the group was newly formed. In the early stages of the implementation of PBL, students also do not want to assume the role of group leader and recorder. They were concerned and expressed their worries that PBL is a new method to be implemented in the TnL of Malaysian Nationhood course. But when it was explained that the roles they play will change, they were forced to accept. There was also group members who provide feedback that they are more comfortable completing the tasks individually. They also acknowledged that shyness and passive attitude causes discomfort within the group.

Majority of the students provided feedback that they had difficulties communicating the content of their discussion to other members of the group. This caused each member of the group to have a different understanding and opinion. However, there were students who tried to present their ideas repeatedly with strong arguments until they were accepted. There was also a view of some students who said that their friends are "too smart" and they cannot compete in the group. The use of non-uniform language was also voiced out by the students. This is because they get information from sources in both Bahasa Malaysia and English. However, the researchers determined that the final report should be written in Bahasa Malaysia.

However, as proactive learners they can change it by making a paradigm shift within the group. From the very beginning of the implementation of PBL the researcher has explained the importance of celebrating the diversity of ideas. However, the total involvement of group members led to the sharing of ideas and facilitating understanding. The diversity of ideas needs

to be addressed in order to reach a shared decision. It is also a place to meet friends from different courses and culture backgrounds. This led the group leader to successfully lead the group members to the learning process until the end of Chapter 3 and Chapter 6.

Group members also responded that they need to make some changes to make the group more effective. The Group Leader must take such action to ensure that at the end of the TnL session the group achieve its objectives. There is also a *Whatsapp* technology medium used by the students to facilitate them to explore new ideas outside of the classroom. Students also provided feedback that different roles within the group can make them and the group to become effective. Their attendance and participation in the TnL session was also full.

As a whole, students seemed to respond positively to PBL operation. The majority of students think that PBL provides them with new skills. They are given the skills to work together in a group of different cultural backgrounds. The reciprocal role provided also creates leadership talent among students. They are capable of giving their opinions without being influenced by others. The element of patience in accepting others' views has also been successfully applied. It is undeniable that incorporating ideas from all team members is difficult. But students have the ability to refine ideas and make decisions in determining priorities. This key idea is expressed as the overall essence of the skills learned through the implementation of PBL.

Group F Final Semester Exam Results, 2017/2018 Session for SADN 1033 Course was also found to be improving. A total of 22 students received A, 38 received A- and 10 received a B + out of a total of 70 candidates. This number is higher compared to the previous semester's exam results. Based on the analysis and discussion above, it is clear that PBL is able to assist TnL as well as stimulate student interest and achievement in the Malaysian Nationhood Course at Universiti Utara Malaysia.

Conclusion

The large number of students and traditional approaches also limit students' interest and understanding this core course. Therefore, the goal of the students attending classes is purely to pass the exam rather than out of duty as a citizen. *Problem Based Learning* (PBL) is a self-learning model that engages students in problem solving. PBL is able to shape the way students think and TnL works in a collaborative and participatory way. Based on the observation and implementation of the TnL, PBL has the advantage of developing students to effectively appreciate the teaching and learning (TnL) sessions. Additionally, PBL also has the advantage of incorporating student's talent and skills. Students of various abilities were able to contribute their ideas and creativity to the tasks given. Self- learning in PBL can also empower students to plan activities and build a sense of responsibility.

Implementation of PBL turns the task of lecturers into facilitators and challenge the students to study independently. PBL is also very suitable in producing students who are critical, innovative and self-confident. It also honors the team's collaborative skills so that they can share their opinion and ideas to solve a problem. Active discussions would activate the use of existing knowledge to relate to the solution of the problem. Students are also able to organize related topics according to priorities and identify questions that need to be addressed in a group.

PBL is able to effectively integrate pedagogy and teaching techniques. The best element it can develop is the ability to communicate effectively. Assignments that focus on the inquiry process are able to spark and stimulate students' interest and motivation to research, inquire and solve problems. Therefore, PBL can also create a good environment and produce good moral individuals. Good values produce admiralbe and excellent individuals. Attitudes and values are intertwined and complement each other. Therefore, values and attitudes influence

our behavior and thoughts. All good values can be applied when students are in the group performing their tasks. In addition, the presentation sessions can also enhance argumentative skills and help make informed decisions based on context. The end goal is for PBL to be able to maximize student interest at the optimum level. This increased in interest are translated into context of the exam. The improved examination results and the contemporary TnL method have certainly provided a good image especially for the teaching staff and the Malaysian Nationhood Unit. It is noteworthy that PBL is able to bring a conducive TnL climate to the Malaysian Nationhood course at Universiti Utara Malaysia.

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Simulated Problem-Based Learning: Teaching International Law in Exciting Way

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Abstract

This paper aims to demonstrate that teaching International Law can be an exciting subject to the students. This paper is drawn by the instructor's experienced in adopting simulated problem-based learning, transforming it from traditional teaching and 'rote learning. This teaching method is increasingly popular among academicians, particularly in western universities. This paper is based on qualitative methods based on student's reflections of A182 academic session. 23 students participated in this research. This paper found that SPBL significantly helps students to comprehend the complexity of International Law, deepen the interest of students in this subject and nurture their generic skills for future endeavours.

Keywords: Simulated Problem-Based Learning, International Law, reflection, experiential learning.

Introduction

International law is a subject that centres on the study of law within the international context that is a part of International Affairs course program at University Utara Malaysia. The subject deals with the complex system of international system and law, which is decentralized and anarchical. It deals with the high politics of international system. The subject taught in international law covers the relationship between state and non-state actors, responsibility of state, jurisdiction of state, treaty-making, law of war and armed conflict as well as dispute settlement mechanism. Due to complex nature of international system and law, students had difficulty comprehending the essence of international law and its applicability and the use in international system. According to Ambrosio (2006), student is hard to connect the legal principles of international law and international issue and apply in classroom discussion. For example, the issue of South China Sea. This is related to the prior knowledge of the students, the application of the treaties and other sources and settlement mechanisms. This subject also requires student of higher-order thinking skills, such as problem-solving. Thus, it is challenging subject to a lecturer to attract students and students to comprehend this subject. This subject is often viewed as "killer subject" of BIAM program.

As lecturers for the BIAM program, we often frustrated students' knowledge on international issues, ability of students to write critically and communicate effectively as well as their commitments and participation. However, we need to reflect the way and method of our teaching. The reality our culture of teaching and learning is based on teacher's centered or traditional learning. We always believe that we are the center of universe of knowledge. We expect that our students able to comprehend our knowledge that we transfer to them through

our lengthy notes and lecture in class. To the end, we encourage them to be a 'rote learner' and fail to nurture their enthusiasm.

Traditional teaching is criticized for its inadequacy in transferring knowledge to students and nurture higher-order thinking skills. It limits students to discover knowledge on their own, less engagement and pay less attention during lecture sessions (Kain, 2003). Students always want to be fed with the notes and topics that the need to study for final examination and how to answer them. A similar observation has been done by Emeritus Professor Dr Khoo Khai Khim, who commented that students hoped that lecturers would always tell them what topics or issues they needed to learn, what sort of questions would be used and how they should be answered in tests ("Education System to Blame," 2008). It encourages the 'rote learning' culture as we had experienced with students before. Often that we complain student is not critical enough in writing their assignment and performing well in their final examination. This typical learning culture limits the capability of students in application, analysis, synthesis, knowledge evaluation and higher order of thinking skills (Nazir, Zabit, Karagiannidou, Zubeidah, & Omar, 2016). Therefore, the purpose of this paper demonstrates teaching International Law can be changed from rote learning to student's centred learning by utilizing experiential learning through simulated-problem-based learning. 23 students participated in reflective open-ended survey questions and data is analysed based on qualitative research method.

From Traditional Teaching to Simulated Problem-Based Learning

Transforming teaching from traditional to simulated problem-based learning (SPBL) is one of the innovative ways to nurture student's ability of higher-order thinking skills. SPBL is a combination of simulation and problem-based learning (PBL) that are a part of experiential learning. According to Lantis (1998), simulations are an effective teaching strategy. Students take a specific role in order to address the real problem. Students learn from the process of learning and experience in the classroom. Simulations are particularly good at rendering the abstract concept and theories of International Relations. There are numbers of academician integrate simulations in teaching International Relations program (Asal, Conrad, & Sin, 2019; Baumann & FitzGibbon, 2019; Bridge & Radford, 2014; Ellington, Fowlie, & Gordon, 2013)

'Problem-based learning' is learning that centred on 'a problem, a query or a puzzle that the learner wishes to solve' (Boud & Feletti, 2013). It is an instructional student-centred approach, whereby putting tasks of center of learning to students. Students independently conduct research, integrate theory and practice and apply knowledge and skills to develop viable solutions to define a problem (Burch, 2000). It was first developed by medical school in Canada in the 1960s to replace traditional learning in order to improve the quality of medical education. Today, PBL has transcended in different fields of studies and became mainstreaming in International Relations education (Ala & Hyde-Clarke, 2006; Ambrosio, 2006; Anderson & Lawton, 2004; Burch, 2000; Kaunert, 2009).

PBL can be beneficial to the student of the International Affairs program at UUM. International Relations and International Affairs program interchangeably used, in which, the essence of the study is student learn about world affairs. In UUM, student is not only exposed to the fundamental principle and theories of political science but also International Relations, as a foundation to International Affairs. At the meantime, student is exposed to the world of diplomacy, international law, international political economy, conflict resolution, foreign policy, Southeast and East Asian politics, strategic and security studies, human rights, politics, and business, etc.

One of the benefits is students able to relate to a real problem and link to other subjects (Engel, 1991). For instance, in issue of South China Sea, students need to state country's foreign policy and stance over the issue which intersects with the Foreign Policy subject. On the other hand, students need to identify most concerning issue to the country related to problem in the South China Sea. It requires students to understand the conflict in International Relations subject. Another benefit of PBL is progressive learning whereby students increasingly develop their skills, for example communication skills, research skills and confidence (Engel, 1991). From the observation, at the beginning students were insecure to start simulation and to express their views during the formal session. However, it was gradually changed after running formal and informal meetings for few weeks. Students became more independent, confident and able to communicate effectively.

Simulated problem-based learning is not a new method, but it has been recognized as innovative teaching in International Relations education (Crossley-Frolick, 2010; Ishiyama, Miller, & Simon, 2015; Mcintosh, 2003). SPBL offers active and experiential learning through problem-based learning. SPBL requires students to discover knowledge through active participation and cooperation by placing them in cooperative groups to address specific and concrete problems by placing them to take the role of state representative. It fosters student learning experience by active participation in the learning process and develops critical thinking and problem-solving abilities and skills.

SPBL in Teaching International Law

Student of International law is expected to demonstrate their understanding of the concept, principles, and applicability of International Law to address the world problems. Despite numerous studies, the use of simulations and problem-based learning in the subject of International Relations and Politics, handful of literature demonstrates the applicability of simulations and problem-based learning in teaching international law.

Simulations can be implemented in the International Law classroom. According to Strauss (1997), simulations are useful tools to encourage active dynamic learning in which students are required to think through legal and policy issues in order to resolve problems. Simulations help develop legal skills such as ability to think spontaneously, to spot issues, organize ideas and lifelong learning of individual responsibility. Strauss employs wide range of simulations for international law, for example, the enaction of the US House of Representative's subcommittee, the use of international law for negotiation, simulating International Court of Justice, simulating United Nations Security Councils and the applicability of international law before a domestic tribunal. Strauss recommends the possibility simultaneously use simulations and technology in teaching international law.

Ambrosio (2006) demonstrates the applicability of simulation 'Mock Trial of Saddam Hussein' in International Law classroom for undergraduate students. The purpose is to promote active learning in international law class, transforming the classroom from traditional learning and ideas to the instructor to design, running and assessing mock trials. The findings show that mock trial was a useful exercise that reinforced students' comprehension of the material covered and further developed their research, writing and debating skills. Mock trials are well suited for war crimes, violation of humanitarian law and crimes of aggression, whereby students are exposed to international legal issues. Another aspect of international law could be covered on the issue of territorial disputes, jurisdictional issues and the legitimacy of succession that lend similar simulation. Importantly, introducing PBL and simulations into classroom increases student's interest in learning international law.

SPBL: Student's Feedback

Based on 23 students who responded in survey questions, they have agreed that SBPL is suitable to be adopted in International Law class. They stressed that they are not only learning the theory but the simulation helped them to utilize what they have learned. Example of student's reflective feedback on adopting the SPBL in International Law class.

> *Simulation is suitable for international law class. International law is about negotiation and discussion about diplomatic issues. The discussion cannot be avoided or ignored since it is a compulsory way to overcome international disputes. Besides, the simulation provides a platform for students to learn more knowledge about particular issues. In the simulation, we obtain more information from other sources. We were able to express the knowledge to other peoples. It is very useful in teaching others. For learning, the simulation is a bilateral communication and effective responsive teaching method. The new knowledge and theories might come out and we able to learn it. The way and method we used to collect the information also become important for us to learn in future. I hope that there will be more chances for me to participate in the simulation. It is a very special way to understand and remember the theories and stories of particular issues.*
>
> *From the simulation, we can actually remember easily and this will help to build the basic knowledge of students in terms of principles and examples of cases in International Law.*
>
> *In my opinion, I think the simulation is really suitable in international law class. This is because when studying international law, the student needs to has a wide knowledge of what are the issue happens that related to this subject. For that matter, the student will apply it during the final exam and can get a new experience to become a representative of the state.*
>
> *In my opinion, I think that simulation is suitable for International Law class. This is because we can apply what we learned which is the theory to the situation happened. From there we can know how the jurisdiction of the sea, code of conduct for examples has been used or applied in some situations. Moreover, it also teaches us to be brave to voice out our opinions.*

Respondents have pointed out that the simulation attracts their interest in the subject.

> *In my opinion, simulation is suitable for international law class this is because we can experience the situation that is formally happened. We can understand more about the knowledge of international law. Every case is interesting if we look deep into it. It is very interesting when doing simulation because this is the first experience that we never experience in other classes before. Although we are not doing very well, we would learn something when we are doing simulations. Thank you, Madam Nik, for teaching us International Law this semester. Before taking this subject, I was afraid of very bored because this is law. However, Madam's teaching style is not bored as well as when teaching about theories. It is just like in Modern World History class is very enjoyed because it is not boring. In fact, I don't have interests in history or law because teachers in secondary school are very bored in teaching history. Thank you, Madam, for letting me have interest in history and law. Because if do not have any interest in a particular subject, we will lose interest in studying in that subject also.*
>
> *In my opinion, the simulation is suitable for International law class because students are exposed to actual cases and engaged in the resolution-making process which will tend to raise students' interest to find additional knowledge in order to prepare for their debate. This will actually enhance our knowledge and skills in collecting and articulating data which are related to international law subject. This activity was also able to expose some new terms and concepts related to international law, which is used to justify their claim.*

Respondents have pointed out the SPBL enhanced their knowledge not only the issue but complex issue of conflicting state's interest in achieving final settlement in dispute resolution through their experience in simulation. In fact, it improved their skills such as critical thinking and problem-solving, negotiation and persuasion, diplomatic skills, teamwork, research skills, and communication skills. Moreover, it helped student to gain confidence in expressing their ideas and thought. These generic skills are important for students for their future, hence, promotes life-long learning. Example of the students' reflective feedback on their learning experience.

From the stimulation, I had learned how to actually negotiate, interact, and communicate with the representative from other parties. It is indeed important that stimulation not only involve in the international arena, also in our daily life, including when we are discussing certain issues on how to solve it. Besides that, deliver lasting, quality solutions - rather than poor short-term solutions that do not satisfy the needs of either party also part of the knowledge that I obtain from stimulation. In addition, by negotiating with others, we could avoid unwanted future problems and conflicts between both parties. A good stimulation leaves each party satisfied and ready to do business with each other again. Of course, before encountering stimulation, one must prepare adequate information on a particular issue, in order to avoid an awkward moment occurring.

I had learned ways to communicate with others in a formal situation. This is because we as delegates that represent a country need to negotiate with others from another country. It is not like we can communicate like they are our friends. And I learned that we can think of solutions in any problem although we do not know that solutions are right or wrong. And before we think of solutions, we need to understand thoroughly about the matters. This is the first time we do a different format of assignment which is position paper. It is kind of fresh but also afraid of doing wrong because we are not familiar with the position paper.

From the simulation, I learned active listening, which is essential in solving disputes. This is because, in a negotiation, both disputant parties must pay full attention, understand, respond and remember what is being said. We must always listen for key concepts, figure out the main point and how it can help at the bargaining table. I improved my negotiation skills in the simulation. Negotiation should not be seen as a competition. Good negotiation skills include we have to compromise sometimes and come to a win-win situation. Negotiation is important as there will always be conflicts in life. Negotiation takes time and is an exhausting process thus I learned to be more patient and gained self-confidence. In addition, the simulation provides me hands-on experience in resolving disputes, drafting and debating resolutions based on the principles of international law.

What I've learned from the simulation that was conducted throughout the class is my friends and I conduct in-depth research on the topic of South China Sea disputes which relevant to the United Nations. In fact, I've improved my public speaking which is a fundamental skill in life. During the simulation, I learned how to interact diplomatically by practicing communication skills like cooperation, social dynamics and interactions. Other than that, I also learned how to negotiate, debate, and reach consensus on the motions that were raised by other delegates during the simulation.

The international law (IL) course offers a unique opportunity for undergraduate students like us to engage well in classroom debate or by having a mock conference on crucial topics like the disputes in the South China Sea. Furthermore, the simulation held was a golden opportunity where I had the chance to express myself well in terms of understanding the subject matter and at the same time had to brainstorm to have a mind of critical thinking as well as problem-solving skills to discuss

> *the issue in South China Sea. In addition, I have had the chance to enhance my knowledge with more news and information regarding the disputes in the South China Sea.*

Discussion

The finding of the research supported that SPBL plays a crucial role in transforming teaching from traditional to student's centred learning. The SPBL emphasizes the notion of "learning by experience" by actively taking in the class activity. In fact, it gives spaces to student to explore the learning process through peer engagements. They not only able to apply what they have learned in class but also deepen their understanding and knowledge about the selected issue. This requires them to do a lot of research in their preparation for the simulation. Preparation is important that helps student to gain confidence during the debate session in the formal meetings. This problem has been addressed by student themselves that they are not able actively participate in debate because of lack of knowledge. Therefore, they have learned that they need to improve their research skills and comprehend the issue thoroughly. Even, similar observation by the instructor while observing the activity.

The finding has proved that the experiential learning attracts the interest of the student to deepen their knowledge in International Law, motivates them to learn more about the issue and the subject and comprehend the essential aspect of the subject. Therefore, it promotes meaningful learning and in terms of learning acquisition, it helps student in 'deep learning' and steering them to be passionate about the subject. In fact, the SPBL promotes holistic development in terms of acquisition of skills. The SPBL helps in nurturing their communication, critical thinking and problem-solving, negotiation and persuasion, diplomatic skills, teamwork and promoting life-long learning. These skills are important in which that World Economic Forum (WEF) has listed in top 10 skills need by 2020 in thriving the Industrial Revolution 4.0 (Gray, 2016).

Conclusion

In sum, the reflection from students gives insightful information to the researchers in terms of their learning experiences and the suitability of adopting the SPBL in the International Law classroom. The most important aspect that, experiential learning gives them spaces to explore knowledge acquisition by self-directed learning. It gives room for their creativity in utilizing and applying the concept and principles of International Law in settling complex international issues. By doing this, students are excited and passionate about learning. However, the SPBL is well suited in other subjects in International Affairs programs such as Foreign Policy, International Relations, Strategic Studies, Political Structure and Administration of Malaysia, etc. The one thing that, requires the instructor to thoroughly designed the activity that meets the standards of program learning outcomes and course learning outcomes.

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Are We on the Same Page? Explaining Student Engagement in Online Collaborative Discussion

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Abstract

Student disengagement has long become a major challenge in teaching and learning faced by instructors. The paper suggests online collaborative discussion as an innovative method of teaching which encourages student engagement. It seeks to explain student engagement in online collaborative discussion. Did online collaborative discussion encourage student engagement? How did online collaborative discussion encourage student engagement? A session of online collaborative discussion was conducted in a course of Southeast Asian Politics. Thirty-nine students participated in conducted online collaborative discussion. Data was drawn from group discussion boards of online collaborative discussions, and reflections by students on conducted online collaborative discussions. Its findings demonstrated online collaborative discussion encouraged student engagement. In particular, thirty-four out of thirty-nine students were engaged in conducted online collaborative discussion. Their engagement is illustrated in the forms of behaviour, emotion and cognitive. Of these three engagements, most participants in conducted online collaborative discussion had problems in demonstrating emotional engagement with reference to online belongingness aspect. Another finding shows that online collaborative discussion encouraged student engagement through a well-planned instructional design and placing emphasis on minimal role of instructor and respects of diverse opinion within the context of online discussion. These findings have contributed to a better understanding of how student became engaged in online collaborative discussion.

Keywords: Student engagement, Online Collaborative Discussion, Teaching Politics, Instructional Design, Online Collaborative Learning

Introduction

"I have to cancel my seminar class today. Only small number of students read the two assigned articles. The rest were not prepared☹."

　　　　　　　　　　　　　　　　　　　　　- Confession of Instructor A -

"For my class today, we were supposed to discuss the poll of class perception as shown in the following diagram. To my dismay, only eight out of 35 students responded even though I kept reminded them about the poll in previous classes☹."

　　　　　　　　　　　　　　　　　　　　　- Confession of Instructor B -

"A student was dumbfounded when I asked her reflection about the video that I played earlier in the class. Apparently, she was not paying attention to the video. How am I to do the student-centred learning?☹"

- Confession of Instructor C -

These three confessions highlight the struggle of instructors who conducted student-centred learning activities. For every instructor, be it lecturers or teachers, student disengagement is bothersome. The response of disengaged students in the forms of passive, nonverbal resistance, partial compliance, and/or open resistance, as classified by Weimer (2002:154-157), could affect the learning environment in negative manner. Should the instructor manage poorly in handling the disengaged students, more students of his/her class might turn up to be disengaged students in the long run. It is this problem of student disengagement that the paper seeks to examine further.

There are two factors that contribute to student disengagement. The first factor is due to the learners themselves; that is, the internal factors of learners namely "psychological issues, low motivation, inadequate preparation for tertiary study and unmet/unrealistic expectations" as shown in the works of Chipcase, Davidson, Blackstock, Bye, Clothier, Klupp, Nickson, Turner and Williams (2017:35). Another factor is the outer surroundings that influence the learners; external factors of learners notably "competing demands/financial stress, institutional structures and processes, academic staff factors and online teaching and learning" (Chipcase et al. 2017:35).

In regard to this, the paper argues that an appropriate teaching approach could encourage the student in being engaged. Such teaching approach should not only engage the students but also empowering students to learn more. In this respect, such teaching approach enables students to develop their respective interest in learning, which Brookfield (2013) deemed as 'powerful technique' of teaching. Brookfield (2013) explains: "A powerful technique is powerful not just because it is startling, engaging, or forcefully employed (which is how many texts use the term), but because it increases the learner's perceptions and enactment of being powerful". In this sense, the engagement of learning must be developed from the learners/students themselves based on their respective interests towards the knowledge developed from powerful technique of teaching. The paper, therefore, suggests online collaborative discussion as an innovative method of teaching which encourages student engagement.

The suggestion of online collaborative discussion as a teaching method that encourages student engagement supports the argument of Fredricks (2014:3): "A student's engagement depends on the opportunities a teacher provides for student to be engaged". Opportunities in the case of online collaborative discussion are placed in the cyber realm which enables students to express themselves at convenience hour and place so long as it takes place within the stipulated frame of time. Online collaborative discussion is also considered as a powerful technique in teaching because it takes account of power dynamics between the instructor and students as well as between the students as argued by Brookfield (2013), it supports the empowerment of students in learning by providing flexibility and convenience of cyber space as the platform of discussion, and it encourages the students to express themselves with responsibility. The last aspect encourages students to understand the essence of diverse opinion and respect. This is powerful because it enables students to exert influence on others without coercion. Rather, students present their respective opinions in logic and convincing manner.

Research's Questions

    (a) Did online collaborative discussion encourage student engagement?
    (b) How did online collaborative discussion encourage student engagement?

Research's Objectives

    (a) To determine whether online collaborative discussion encouraged student engagement.
    (b) To examine on how online collaborative discussion encouraged student engagement.

The following section of this paper will discuss some related works on student engagement, classroom discussion, classroom collaborative discussion and online collaborative discussion. This is followed by a brief description of conducted research on student engagement in terms of context of study, participants of study, and data collection as well as respective data analysis. Then, the findings and discussion are presented accordingly before the paper concludes with the gist of the study.

Literature Review

Classroom Discussion

Discussion is one popular teaching approach for any course instructor. In terms of costing, discussion is cheap due to no incurred cost. Discussion also does not entail instructor to set up specific physical venue for discussion as an activity of active learning. What matter most in conducting discussion is involving students? Discussion could occur at anytime, anywhere so long as course instructor and students interact.

However, some students are not comfortable to participate in whole classroom discussion. "Having the opportunity to voice one's ideas in class is empowering; being forced to do so, however, can be oppressive" (White 2011: 261). In addition, size of class significantly influences the quality of whole classroom discussion. With large number of students in a class, it is often difficult for course instructor to guarantee students have adequate opportunity to voice opinions. This resulted into some course instructors opt for classroom collaborative discussion.

Classroom Collaborative Discussion

It is undeniable that classroom collaborative discussion provides better opportunity for course instructors and students to actively participate in discussion. However, classroom collaborative discussion often resulted into an instructor-led discussion rather than student-led discussion because of three factors. First, the limited hour of class session entails some course instructors place priority on the importance of covering required content of subject during the class session(s) as argued by Reynolds and Townsend (2018:1). Secondly, although classroom collaborative discussion enables more students to participate in discussion, quality of discussion become the concern of course instructor because some students are not well prepared for such discussion (West 2018:146). Also, the physical setting of classroom such as a theatre-size class and auditorium hall also affects the quality of classroom collaborative discussion. Drawn from this basis, the paper suggests one alternative for classroom

collaborative discussion which can be held outside class session and can cater the needs of student in terms of prepping for discussion. Such alternative is an online collaborative discussion.

Online Collaborative Discussion

Online collaborative discussion is a form of online collaborative learning. In this study, "online collaborative learning means participants learning together in teams using information communication technologies, in particular, the internet, as the mediating tools" (Ng 2012: 2497). The adoption of online collaborative discussion, as argued in this paper, enables the quiet, reserved disengaged students to be more pro-active.

However, McNamara & Brown (2008) caution: "while online discussion forums are an extremely valuable learning tool ..., they need to be carefully planned, moderated and assessed". In addition, Zong Sun et al (2018) argue that online collaborative discussion with specific designated activities produces students with deep learning because such discussion enables students to construct knowledge as shown in the activities.

Framing Student Engagement

The paper extends student engagement conceptualized by Fredricks, Blumenfeld and Paris (2004). Initially, this concept of student engagement (Fredricks, Blumenfeld and Paris 2004) was meant to examine student engagement in classroom setting. This differs with the paper which examined student engagement in online learning platform. In addition to this, participated students in this paper were the students at higher education (adolescent learner), unlike school goers as in the work of Fredricks, Blumenfeld and Paris (2004).

Nevertheless, the framework of student engagement (or school engagement as termed in their pioneer work) is applicable to the empirical needs of paper in determining student engagement in online collaborative discussion. Student engagement, as argued by Fredricks, Blumenfeld & Paris (2004) comprises of three dimensions notably behaviour, emotion and cognitive. In particular, behavioural engagement refers to "level of participation, task involvement, and prosocial conduct in school activities" (Fredricks 2014:33). Meanwhile, emotional engagement describes "an individual's sense of belonging and sense of identification" and "cognitive engagement refers to the investment, thoughtfulness and the willingness to exert the mental effort necessary in an activity" (Fredricks 2014:33).

Research Methodology

Context of Study

The study of student engagement was conducted in a course of Southeast Asian politics. This course entailed students to produce a critical analysis of countries in Southeast Asia as its learning outcome. In essence, the course employed online collaborative discussion as its teaching method. Its aim was to determine whether this innovating teaching method of online collaborative discussion encouraged student engagement.

Thirty-nine students participated in this study; four participants were male, and thirty-five were female. In terms of academic enrolment, thirty-five students were in their second year and four in their third year respectively.

In forming online discussion group, students signed for their preferred group. It would be treated as first come, first choice basis. Each online discussion group comprises six to nine respondents.

The session of online collaborative discussion took place in approximately two weeks which included a weekend. It used the platform of forum mode in UUM Online Learning, which was assessible to enrolled students and course instructor. To facilitate the discussion, questions were designed based on the revised terms of Bloom taxonomy. This is because online collaborative discussion was conducted in the second and third weeks of an academic semester. Discussion questions were meant to assess Low Order Thinking in terms of understanding and applying concepts of democracy and authoritarianism in Southeast Asian politics. On the same note, the online collaborative discussion also appraised the prior knowledge of students on political systems.

The Design of Conducted Online Collaborative Discussion

The diversified background of students taking the Southeast Asian Politics course has resulted the authors to design conducted online collaborative discussion, which is inspired by Analyse, Design, Develop, Implement and Evaluate (ADDIE) approach of instructional design. "The application of ADDIE to instructional systems facilitates the complexities of intentional learning environments by responding to multiple situations, interactions within context, and interactions between contexts" (Branch 2010:1). However, authors did not closely apply all steps of ADDIE. Rather, authors made use some selective steps of ADDIE, which are more relevant when designing the conducted online collaborative discussion. Performance gap discussed in this paper is student disengagement, as a consequence of inappropriate teaching method. It is the aim of this paper to examine whether online collaborative discussion encourage student engagement.

First, authors conducted an analysis of students taking the course of Southeast Asian Politics based on nationality, gender, and academic enrolled semester. Out of these three, academic enrolled semester is the most important contributing factor when authors design the conducted online collaborative discussion. Even though the course is meant for second year students, this does not necessarily mean that enrolled students would be only in second year. Often, some students in final year (third year) also takes the course. Yet, it is the students in second year that constitute the dominant learner group of this Southeast Asian Politics course.

Next, authors composed performance objectives of conducted online collaborative discussion in terms performance, condition, criteria. In terms of performance, students should be able to discuss with others (other students and course instructor) in UUM Online Learning. In essence, students should have basic knowledge and skills in using forum platform of UUM Online Learning. This posits the condition in which students and instructor must have access to UUM Online Learning. For acceptable criteria, authors produced some rules and regulations concerning the online collaborative discussion; 'what ought to be' and 'what not to be done'. The rules and regulations were revised accordingly (if needed) throughout the duration of conducted online collaboration. Such flexibility is crucial in terms of ensuring students' compliance and commitment in online collaborative discussion.

The following step is to develop the discussion task. Discussion questions were designed based on the revised terms of Bloom taxonomy. The questions are (a) what are the factors that characterize democracy? And (b) how do you classify the following countries – democracy or non-democracy? Why? These discussion questions were meant to assess Low

Order Thinking in terms of understanding and applying concepts of democracy and authoritarianism in Southeast Asian politics.

Questions for Online Collaborative Discussions

When implementing online collaborative discussion, authors conducted two sessions. The first session took place before the actual conducted online collaborative discussion; that is the first week of academic semester. During this period, lead author cum course instructor briefed students about online collaborative discussion via the forum platform of UUM Online Learning. To get students familiarize with the forum platform of UUM Online Learning, students were to form their own groups using UUM Online Learning. Then, students and instructor should introduce themselves via UUM Online Learning.

The second session was the actual conducted online collaborative discussion. The students were given a task to discuss concepts of democracy and non-democracy and their application in Southeast Asian countries. Interaction should take place in the forum mode of UUM Online Learning.

Lastly, authors evaluated the learning of students in online collaborative discussion. Instructor evaluated the student engagement in conducted online collaborative discussion using its rubric assessment, which places emphasis on quality of discussion, quantity or discussion and netiquette. After the completion of online collaborative discussion, students prepared respective reflection papers based on their experience participating in conducted online collaborative discussion. Similarly, instructor also prepared her reflection on conducted online collaborative discussion.
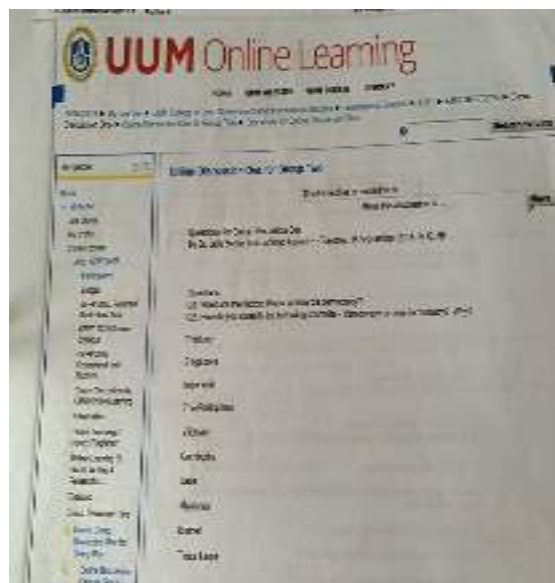
Figure 1. Online Learning

Data Collection and Respective Data Analysis

The study employed two ways of collecting data. First, data was retrieved from the interaction of students based on students' postings on respective online group discussion board. Then, such data was analysed using the rubric assessment of student engagement, which was developed

by the authors of this paper. In particular, the rubric assessment of student engagement placed emphasis on three aspects namely the quality of posting, quantity of posting and netiquette.

Secondly, data was retrieved the students' reflections on their experience of participating in the online collaborative discussion. Data retrieved from reflection produced by students are analysed using ATLAS.ti software based on thematic scopes, which are developed by the researchers for this SOTL research. In essence, researchers employ inductive approach when codifying data. "The initial strategy followed is often open line-by-line coding, and generally codes are applied staying close to the data, with an open and spontaneous approach" (Wijngaarden 2019).

Findings and Discussion based on Postings Posted on UUM Online Learning

Participation in Online Collaborative Discussion

In this paper, participation in online collaborative discussion is measured by quantity of posting and time of posting based on online group discussion boards. The former enables the paper to gain an understanding of behavioural engagement and latter, cognitive engagement which denotes the dedication of students to be engaged in online collaborative discussion. It is important to note that no grade is given for students who engaged in online collaborative discussion.

In terms of quantity of posting, thirty-four out of thirty-nine students posted postings on online group discussion boards. In principle, these students are inferred as engaged students in online collaborative discussion, irrespective the number of posted posting(s). The remaining of five students did not post any posting on the online group discussion boards. The behaviour of these students is considered as student disengagement. Due to its small number of student disengagement, Brookfield (2006:212 cited in Walters 2014:343) argues: "in many situations where students are resisting learning the best we can hope for is to contain resistance displayed by some so that it does not completely take over the [whole online discussion]". In this respect, lead author was in opinion that disengaged students should not be penalized. Rather, it was worth to investigate the reasons of why these students being disengaged and implement strategies of instructional intervention in future online collaborative discussion

The paper found that most students posted their postings in early mornings (from midnight to 7 am) and evenings (7 pm to 11:59 pm). Similar patterns were demonstrated in both weekdays and weekends. The postings posted in early mornings and evenings also denote the dedication and commitment of students in online collaborative discussion because such discussion was not graded for the course. Nevertheless, participation in online collaborative discussion was marked as attendance of two class sessions, which took place in a form of such discussion. Still, this signifies the cognitive engagement of participant in online collaborative discussion.

To sum up, the paper found that conducted online collaborative discussion encouraged student engagement with majority of students being engaged and a few students were disengaged.

Online Belongingness

Online belongingness, as discussed in this paper, is measured by the student online behaviour; netiquette. Rather than determining whether the student behaved or otherwise based on online

group discussion boards, the paper placed emphasis on examining interaction of student as demonstrated on online group discussion boards. This enables the paper to ascertain the recognition of others as an indication of online belongingness in online collaboration discussion.

The paper found that most students did not interact among themselves as shown in the group discussion boards. Only the active ones interacted with both instructor and course mates. In most cases, students merely interacted with instructor. This resulted into twenty-five out of thirty-nine students scored zero in the netiquette session. In infers that only fourteen students were emotional engaged based on the netiquette score.

Deep Learning in Online Collaborative Discussion

An examination of deep learning in online collaborative discussion is based on quality of posting(s) posted by student on online group discussion boards. In essence, the paper analyses knowledge comprehension and critical thinking of participated students. The latter enables the paper to examine student's understanding of knowledge discussed in online collaboration discussion. Meanwhile, the latter places emphasis on student's evaluation of knowledge. By doing this, the paper seeks to analyse the cognitive engagement of students in online collaborative discussion.

In terms of knowledge comprehension, seventeen students demonstrated excellent knowledge comprehension of discussed subject in online collaborative discussion. These students were able to classify political systems using their political interpretation and explanation of democracy and non-democracy concepts. The postings were complemented with their own reasonings on political concepts and systems. Meanwhile, thirteen students demonstrated mediocre level of knowledge comprehension. In essence, knowledge comprehension was acceptable; even though it could be improved in terms of reasoning and argumentation. Lastly, the ones who demonstrated poor knowledge comprehension were the one who deliver learning output in general surface.

Meanwhile, ten students achieved excellent critical thinking skills due their supplemented scholar materials and new ideas. Twenty-two students demonstrated mediocre level of critical thinking skills and two students, poor critical thinking. The latter provides opinion without sound, logic justification/academic argument including repetitive remarks and empty words.

Findings and Discussions based on Students' Reflections

The paper found that online collaborative discussion encouraged student engagement through well-planned instructional design in terms of adopting appropriate duration of online collaborative discussion and exerting minimal pressure on students when participating in online collaborative discussion, as well as placing emphasis on online collaborative learning with reference to minimal role of instructor and respects of diverse opinion.

Instructional Design

For student to be engaged, instructor should design the online collaborative discussion after getting good understanding of students as learners in terms of nationality, gender, and

academic enrolled semester. In this conducted online collaborative discussion, instructor placed emphasis on diversity of student knowledge based on their enrolled semesters. Often, instructor provided some briefings before implementing the session of online collaborative discussion. It is an ideal if instructor could conduct a self-exercise for students in order to be familiarize with the setting of online collaborative discussion. In addition to this, the duration of online collaborative discussion should be synchronized with the syllabus of the course. This enables students to be engaged in classroom and online discussion sessions. Ideally, duration should be appropriate as to enable students could complete tasks given via online collaborative discussion.

In this conducted online collaborative discussion, the online collaborative discussion was designed for eleven days including one weekend. It is important to note that students need to do own research before/when participating in the online collaborative discussion. Respondent 2 from Group Two (the group with highest number of postings) concurred by stating that online discussion entailed students to conduct own research before posting on group discussion board. Even, Respondent 21 from Group Five reflected that she did her own further research after reading her colleagues' posting as to gain a better understanding of discussed subject knowledge in online collaborative discussion. Furthermore, Respondent 7 from Group Two reflected that time convenience and flexibility encouraged him to be more engaged in online group discussion because it enabled him to learn at his own pace. This was concurred by Respondent 34 from Group Four who considered discussion conducted in cyber space was convenience since she could participate at her convenience hour and place. This also encourage more students to be engaged in terms of voicing opinion in online collaborative discussion. Respondent 24 from Group Four pointed that expressing opinion in cyber space were less stressful as compared to the physical space (classroom). Due to no pressure from course instructor and classmates, Respondent 4 from Group Two stated: "I can express my view freely". This infers that conducted online collaborative discussion encouraged those shy, introvert students to actively participate in discussion as well as being engaged at their own pace and convenience hour.

In an effort to minimize the number of disengaged students in online collaborative students, instructor should continuously remind students on the duration of online collaborative discussion. It is important to note that not all students have good time management. In the case of conducted online collaborative discussion, two students posted posting beyond the specified duration of such discussion. They later confessed to instructor that they overlooked the deadline of such discussion.

Online Collaborative Learning

For students to be engaged in online collaborative discussion, the paper found two crucial aspects; minimal role of instructor and respects of diverse opinion. Minimal role of instructor is important in order to encourage student engagement. In essence, instructor should act as an 'invisible' participant in online collaborative discussion. Instructor should watch and monitor the flow of discussion. In a situation of stalled progress of discussion, instructor could play the act of poking as to encourage students to post posting(s) on the discussion board. A simple poking includes compliments to participated students and enquiry of how yet-to-be participants opined on discussed subject knowledge. In addition to this, instructor should answer question from students promptly. This often incurs when students raised issues regarding the online collaboration discussion such as presenting outcomes of online

collaboration discussion and the fulfilment of tasks embodied in online collaborative discussion.

In addition to this, increased student engagement is complemented with the importance of participants in accepting and respecting different point(s) of view. In particular, a student should accept opinion of the others; however, he or she do not have the obligation to agree or disagree with such opinion. Respondent 37 reasoned: "Do not fight when other people disagree with your opinion because there is always pros and cons in all issue". In addition to this, the diversity of perspectives expressed by members of Group Two Enabled Respondent 26 to improve her understandings of subject knowledge. Thus, respect of diverse opinion is an important factor to encourage student engagement in online collaborative discussion.

Instructor should also be aware of the risks in online collaborative learning when conducting online collaborative discussion. One risk is the leadership in online collaborative discussion. In the case of conducted online collaborative discussion, instructor purposely did not nominate or appoint any member as a leader of the group. Rather, having/being a leader and/or being a follower are entrusted to the will of students. In particular, instructor believe in student's individuality in terms of learning capability and ability. This resulted the instructor providing a 'white canvas' to each group as to assign respective role(s) and to delegate task(s). Ironically, Respondent 7 from Group Three reflected: "The leader must carry out his duties well and give directions to the members and all members must do the work that is given in a timely manner". However, there was no indication of the leader whom the Respondent 7 referred to. Worse, the discussion board of Group Three was passive in which participated students simply posted postings without interacting among themselves and with instructor. This differed with the most active discussion board, Group Two, which demonstrated some students poked, questioned and reflected the postings of others irrespective whether they are leaders and/or followers. In essence, instructor should place emphasis on the importance of teamwork and team building.

Another risk to student engagement is poor interaction among group members. Interaction among group members is crucial in catalysing the flow of collaborative online discussion. Even though posting is an individual action, student should employ such posting(s) to interact with others. Respondent 24 of Group Four pointed that some members of her group "should be aware that it is a group discussion and not an individual discussion". Respondent 30 from Group Four concurred with this statement in her reflection: "… I think that there are some of my friends does not understand how this online group discussion works". The problem of interaction is also observed in an active discussion board of Group Two which recorded 51 postings by some members of a group. Apparently, there were some students who preferred to be 'stalkers', those who read the postings but refused to post postings of their own. On the same note, some students even requested to see postings of other groups. Instructor was quite surprised with the request because aforementioned students could always ask other member to show their postings. To address this problem of no and/or minimal interaction as shown in discussion boards, Instructor later reminded students about the important elements of online discussion and explained/highlighted the crucial relations between activities of online discussion and future undertakings of students as future employers in the era of the Fourth Industrial Revolution. In this respect, digital socialization is another important aspect to increase number of engaged students in online collaborative discussion.

Conclusion

In conclusion, the conducted online collaborative discussion has produced more engaged students and a few disengaged students. The engagement was illustrated in the forms of behaviour, emotion and cognitive. Of these three engagements, most participants in conducted online collaborative discussion had problems in demonstrating online belongingness, an aspect of emotional engagement. The paper also found that online collaborative discussion encouraged student engagement through well-planned instructional design in terms of adopting appropriate duration of online collaborative discussion and exerting minimal pressure on students when participating in online collaborative discussion, as well as placing emphasis on online collaborative learning with reference to minimal role of instructor and respects of diverse opinion. In addition to this, the paper has also discussed the implications of conducted online collaborative discussion in terms of instructional design and online collaborative discussion. Future research could examine online collaborative discussion as a teaching approach in the digital age with reference to connectivism learning. This is an important area of teaching and learning in the era of the Fourth Industrial Revolution.

Acknowledgement

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Fostering Engagement via Mobile Learning (M- Learning) Adoption among Accounting Students in Universiti Utara Malaysia

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Abstract

This study examined how mobile learning approach can enhance engagement skills and communication skills among accounting students in Universiti Utara Malaysia. This study employed qualitative action research methodology. In this approach, mobile learning application kahoot! Exercises, quizzes and assignments task adoption of mobile learning during class lecture and outside class activities for discussions. The results showed those students' engagement skills and communication skills among accounting students have enhanced with the use of mobile learning approach. Students had active learning opportunity where effective interaction happens among students and with the lecturer in anytime and anywhere. This study heightens lecturer awareness in identifying the learning tasks via mobile learning that are well developed. This may further be a motivating factor to adopt measures and new strategies for the improvement of students' skills. Statistics revealed a higher engagement rate when courses are delivered using the mobile learning among the students. Mobile learning deals is that of personalization, which adds to the sense of engagement and motivation of the lecturers with the students.

Keywords: Mobile learning approach, engagement skills, communication skill.

Introduction

Online learning is the future of education especially in tertiary education. The method of distance learning eliminates the traditional cassette tape and replace by smart phone for higher speed, interactive, effectively and efficiently. The trends will likely take hold in the next five years, allowing more students access to high quality of education and maintain the engagement with the lecturer from any geographical area.

Among the popular method is Mobile Learning (M-Learning) which defined by O'Malley et al. (2003) as taking place when the learner is not at a fixed, predetermined location, or when the learner takes advantage of the learning opportunities offered by mobile technologies. Without Mobile learning, students in class will remain as passive learners and result in lack of engagement in the learning process. Their lack of involvement in their learning tasks not only in terms on behaviour but also intellectual and emotion. Distractions and interruptions often disrupt mobile learners and task resumption (memory) cues can support users in resuming a learning task. These cues can have multiple forms and designs, but their effectiveness depends heavily on their adaptation to the specific learning use case (Draxler, Schneegass & Niforatos, 2019)

Accounting Information System Course Structure

Rationale for the inclusion of the course in the programme is to provide an understanding on the components of accounting information systems and its roles in an organisation, transaction cycles and its business processes, internal control concept, system documentation techniques, and the use of accounting software for business reporting. The Accounting Information System Course emphasizes the fostering of knowledge, practical, communication (verbal), and information management and lifelong learning culture among the students so that they can embrace these values in their everyday life. Students will be exposed to the important concepts of accounting information systems (AIS). The course contents are divided into five main sections. The first section introduces the basic concepts of AIS including its objectives, components, and subsystems. The second section discusses the emerging issues in computer ethics, computer fraud, and the concept of internal control in the organisation.

The third section covers in depth the common features of transaction cycles (i.e., revenue and cash receipts, purchase and cash disbursement, human resource management and payroll, and conversion) and general ledger and financial reporting systems. The application of internal control and the integration of accounting software in the transaction cycles take place at this stage.

The fourth section emphasizes the students on the techniques of documenting business processes. The implications of information technology evolution to accounting profession are discussed in the last section.

This study will attempt to implement Mobile learning approach in the effort to enhance students' engagement skills in projects activities in group projects during the education and learning course in Universiti Utara Malaysia.

Problem Statement

The Accounting Information System course structure requires the students to complete a group project which involves a lot of discussions and collaboration among team members as well as guideline and guidance from the lecturer. The preparation of group project, as well as the group presentation involve a lot of engagement and discussion in order to come out with a good output hence require the contribution of ideas from each team member and also lecturer advices. Since the project (business plan and website) is in a group, teamwork is the most important thing to ensure a well prepared and good quality product is achieved. It is noticeable that some group having a significant problem in producing a good report due to teamwork factor and there were even the worst scenario where several group of student failed to submit a report on time due to teamwork.

From the observations of the lecturers, Accounting Information System students mostly face this problem due to the lack of time to conduct engagement and discussion face to face among group members. Teamwork engagement and coordination skills are noticeably low which led to the failure to produce a good project report.

Research Question

1. How will M-Learning adoption help to improve learning engagement among accounting students in UUM?
2. Will students be able to engage themselves in courses which adopted M-Learning?
3. What are the problems that are related to students' engagement in M-Learning?

Literature Review

Today's technology has provided flexibility for teachers and students to engage in academic discourse irrespective of the location. With rapid technological advancements, M-Learning (M-Learning) offers incredible opportunities, especially in the area of higher education. However, there is an on going debate regarding the influence of mobile devices on students' academic engagement and performance.

Previous studies showed that teacher and students believe that mobile devices are useful for teaching and learning, especially for M-Learning (Christensen & Knezek, 2018; Kolog, Tweneboah, Devine, & Adusei, 2018; Ott, Magnusson, Weilenmann & af Segerstad, 2018; Vahey & Crawford, 2003)**.** Some teachers found challenges in accessing education resources due to poor Internet connectivity, while others required skills and knowledge about the technology that promote interactive learning (Busulwa & Bbuye, 2018; Baran, 2013) and lack of teachers' values beliefs in technology integration (Vongkulluksn, Xie, & Bowman, 2018). Theory of Planned Behaviour to better appreciates the university students' readiness to engage with mobile technologies for educational purposes and explores the perceived usefulness and ease of use of m-learning technologies (Camilleri & Camilleri, 2019).

In addition, Camilleri & Camilleri (2019) examined whether the research participants were influenced by their friends, acquaintances and educators to engage with these technologies or by the facilitating conditions at their university. The findings revealed that students held positive attitudes towards the m-learning technologies as they perceived them as useful and easy to use (Camilleri & Camilleri, 2019). In Hong Kong, a 61 undergraduate students enrolled at a teacher-training institute who have smartphones with WhatsApp were assigned into experimental and control groups (So, 2016). Besides the traditional classroom learning for both groups, the experimental group was also supported with bite-sized multimedia materials and teacher-student interaction via WhatsApp outside school hours and participants of the control group used WhatsApp only for academic communication (So, 2016).

Key success factors that affect the acceptance of M-Learning within universities are collaboration during studies, the prospect of ubiquitous learning in space and time, and user-friendly application design (Alrasheedi, & Capretz, 2018) followed by teacher efficacy beliefs about technology integration (Perry, 2018). In study by Nouri, Cerratto-Pargman, Rossitto and Ramberg (2014), found that there was no statistically significant difference between the two teaching methods (with mobile support or without mobile support) but that mobile technology could support actions relevant to inquiry-based learning.

Mobile learning Approach in Accounting Information System Course

This course introduces students to the important concepts of accounting information systems (AIS). The course contents are divided into five main sections. The first section introduces the basic concepts of AIS including its objectives, components, and subsystems. The second section discusses the emerging issues in computer ethics, computer fraud, and the concept of internal control in the organisation.

The third section covers in depth the common features of transaction cycles (i.e., revenue and cash receipts, purchase and cash disbursement, human resource management and payroll, and conversion) and general ledger and financial reporting systems. The application of internal control and the integration of accounting software in the transaction cycles take place at this stage.

The fourth section emphasizes the students on the techniques of documenting business processes. The implications of information technology evolution to accounting profession are discussed in the last section. Upon enrolling the course, students are compulsory registered as member of Accounting Information System group for that class. The platform of mobile application used to deliver the engagement and communication between class member and the lecturer anyway anytime about the Accounting Information System assignments, group project as well as individual assignment via wassap group application. This exposes good opportunity to encourage student engagement between class members and lecturer during completing their compulsory task. A part from that, during the lecturing time the lecturer, the lecturer implement pop quizzes with applied kahoot application via Mobile learning from time to time regarding the chapters in the syllabus. This kahoot application attracted the student's attention and high engagement between the lecturer and students. Kahoot application is a for-profit educational technology institution that offers a social online learning platform that can deliver massive Mobile learning or other devices. Just like many social media it provides features such as forums to enable students to comment and receive comments which encourage interaction while learning. In addition, it has other interesting features such as karma points, which are gained via obtaining positive comments from peers, and badges that can be issued either automatically or when a certain learning goal is achieved. Kahoot brings engagement and fun to more than 1 billion players every year at school, at work, and at home and are designed to encourage learning and collaboration throughout the course. Fun quizzes related to each chapter were also embedded to make learning more interesting and fun. All the online students are required to actively involved for all the two way interactive activities and complete all the questions and other activities of the course.

Methodology

Action research (AR) approach is used in this research. Action research by definition is a "systemic inquiry that is collective, collaborative, self-reflective, critical and undertaken by participants in the inquiry" (McCutcheon & Jung, 1990). However, in this research, the definition by Rapoport 1970 is used as it defined AR in terms of its contribution to the practical process. They explained that "action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework" (Rapoport, 1970).

To operationalize the action research approach, we adopt a model by Trigwell and Shale (2004) which is a practice-oriented model that favours a notion of scholarship as activity and is concerned with the articulation of pedagogic resonance, assumes a learning partnership, rather than an instructional relationship, with learners and privileges the work of knowledge creation with students. The model includes three interrelated components, Knowledge, Practice and Outcome of teaching. Each of the teaching components is described by a set of elements (in each of the three overlapping ovals). Together these elements and components describe a teaching system (Patton, 2002).

The primary data for this study will be collected through interviews and students' feedback. The initial interviews will explore their current knowledge, understanding and conception of teaching and learning using Mobile Learning and current problems particularly in the project activities that are conducted by students in their groups.

In the practice of Mobile Learning in Accounting Information System course subject, we will implement the method where all the materials are given online while projects discussions will be conducted in sessions together with the presence of the lecturer in the

classroom. We will examine their methods of learning the subject and how they could benefit the time given for the group discussion. In this phase, the investigation is conducted through reflection, communication and learning process using the Mobile Learning approach. There will also be questions and answers session conducted online which will allow students to interact and ask questions on Mobile Learning platform and really understand the topic and that everything is clarified. The data will be collected through interviews, observations and students' feedback on the reflections on the activities conducted in the Mobile Learning platform for the topics in the course.

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1. Do you understand the topics that are taught using Mobile Learning approach?
2. Do you think that using Mobile learning for selected topics in the course allow you to have more time for group activities (group project on Accounting Information Systems course)?
3. Do you experience better engagement qualities during your group activities after having a number of topics being taught using Mobile Learning?

Figure 1. Questions for reflections on the implementation phase

Findings of the Study

The results from the analysis of the data related to the Implementation phase - Practice perspective show three criteria emerged. They are "Enhance the understanding on the topics", "More collaboration, time and understanding to complete project activities" and "Enhancing engagement skills".

Enhancing the understanding on the topics

Under the "Enhancing the understanding on the topics" criterion, there are two themes emerged. The first theme is on the notes in which the participants agreed that better engagement and collaboration. The following are some quotes with regards to this theme.
- *"Easy to engage with friends"*
- *"Gaining more attention from the lecturer"*
- *"A lot of collaborations and discussion via m-learning"*
- *"Mobile Learning approach more closeness with friends and lecture"*.

The second theme is more attention and focus. The following are quotes from the participants on this theme.
- *"the Mobile Learning more attractive"*
- *"Gaining more focus and interesting"*
- *"A lot of attractions"*
- *"Using Mobile Learning approach I can focus better."*

More collaboration, time and understanding to complete project activities anytime and everywhere

From the analysis on the data, another criterion found is on the time to complete the class project. Two themes emerged under this criterion.

The first theme is more coaching. The participants agree that using mobile learning approach provide more collaboration and engagement to complete their project.

- *"Gives us more collaboration and engagement to complete our project"*
- *"We can complete the tasks given in our own room with lecturer coaching and it saves time because we do not need to take the time to go to lecturer room."*
- *"My schedule this semester is very packed so Mobile Learning approach gives me opportunity to complete my tasks anytime that I am convenient and close to lecturer."*

The second theme is on the time saving. The participants felt that using mobile learning approach saves their time especially on the time spent to go to class and having more time to spend to complete their group project.

- *"Extra time to complete our projects and assignments"*
- *"I can complete the tasks given faster because mobile learning is flexible."*
- *"Faster in understanding topic via Mobile learning approach, gives me opportunity to explore via my hand phone."*

Enhancing engagement skills

The third criterion found from the data analysis is "Enhancing engagement skills". The participants felt that by using Mobile Learning platform like chatroom and forum, they can enhance their engagement skills thus helping them to complete their group project. The theme under this criterion is the online engagement activities. The following are some quotes pertaining to this theme.

- *"We know our progress by looking at the progress button in the Mobile Learning platform so we know what task that has not been completed yet. This will keep us aware of our progress and do not forget our responsibilities for the team project."*
- *"We can learn about the hard sell, soft sell and teaser from the notes online and we can do it on the Facebook project online."*

Conclusion

As a conclusion, it is felt that Mobile Learning approach should be taken up in Accounting Information Systems courses as this might make the most effective use of technology. From the study, we can conclude that Mobile Learning approach is an effective way in enhancing engagement skills among accounting students. This is because Accounting Information Systems course students need more time to conduct outside class projects and the time in class for lecture should be minimised.

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The Effectiveness of Web 2.0 in Series of Curriculum Design, Management and Development (CDMD) Training

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Abstract

The purpose of this research is to investigate the effectiveness of Web 2.0 during series of training on Curriculum Design, Management and Development (CDMD). CDMD workshops that initiated by the Higher Education Leadership Academy (AKEPT) provides academics that are still young and talented to deepen their knowledge on the transformational process of teaching and learning in the era of millennial. That series of CDMD workshops develop many feedbacks from the participants about the importance and usefulness of Web 2.0 for teaching and learning purpose in education. Web 2.0 focused on the ability for people to collaborate and share information online via social media, blogging and Web-based communities. To determine the level of effectiveness of Web 2.0 for CDMD training, data was gathered through observation and reflection from participants of the program. The results indicate that Web 2.0 become very crucial since it provides variety of media which can create dynamic learning communities. The ease of Web 2.0 usage can actively be involved in knowledge building.

Keywords: Web 2.0, effectiveness, Curriculum Design, Management and Development (CDMD), teaching and learning

Introduction

The marks of Malaysian education systems are concisely specified in the National Philosophy of Education (MOE, 2015: 14): "Education in Malaysia is an ongoing effort towards further developing the potential of individuals in a holistic and integrated manner, so as to produce individuals who are intellectually, spiritually, emotionally and physically balanced and harmonious, based on a firm belief in and devotion to God. Such an effort is designed to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving a high level of personal wellbeing as well as being able to contribute to the betterment of the society and the nation at large." Without sufficient knowledge and knowledge, it is difficult for countries to thrive in an increasingly globalized world. By understanding current and future Malaysian's human capital candidates, planning for teaching and learning, research and development, can be streamlined to meet the government's goals and aspirations in a number of educational policies, especially through the National Higher Education Strategic Plan (PSPTN). Higher education institutions (HEIs) need to identify issues and challenges in the dissemination of knowledge as a whole, including elements that contribute to the personal and personal development of human capital. An inception of Higher Education Leadership Academy (AKEPT) took off on 19 October 2006

through a Memorandum Jemaah Menteri that put forward the establishment of the academy are to train and develop leaders with the required quality and be respected in order to bring impact to local higher learning institutions and elevate the standing globally (AKEPT, 2019). This establishment also involves curriculum design, management and development training for those high performing talents of future leaders.

Curriculum Design, Management and Development (CDMD) Training

The responsiveness in deliberating our nation aspirations, a lot of strategies have been done including the latest updates on transformation of technology basis through training and development among potential performing talents in academia. One of the great value programs that proposed by Ministry of Education through Higher Education Leadership Academy (AKEPT) is the Curriculum Design, Management and Development (CDMD) Training for higher education institutions (HEIs) educators. This program is having three levels Basic (Level 1), Intermediate (Level 2) and Advanced (Level 3). On successful completion of these modules' participants will be able to:

i. Apply the various meanings of curriculum in explaining various curriculum approaches.
ii. Analyze a curriculum from the perspective of its foundations.
iii. Compare and contrast various models of curriculum development.
iv. Apply the principles of curriculum development to designing a curriculum.
v. Explain the curriculum design approach adopted by the Malaysian Higher Education system.
vi. Plan, conduct and assess the training in the area of curriculum design work collaboratively in a team in designing a curriculum framework.
i. Analyze an existing practice in curriculum using the principles of curriculum implementation in relation to their fields.
ii. Develop curriculum management strategies in implementing the curriculum.
iii. Evaluate an existing curriculum using the principles of curriculum evaluation.
iv. Discuss in an informed way contemporary issue in CDMD
v. Train and mentor others in CDMD at university level.
i. Plan, conduct and manage a research project in curriculum studies.
ii. Present the research project individually.
iii. Publish articles based on curriculum projects and research conducted.
iv. Examine the knowledge and skills needed for leadership in curriculum and evaluation.
v. Provide leadership in the field of curriculum.
vi. Examine curriculum review models for program improvement.
vii. Analyze different initiatives and support for training and consulting in the field of curriculum globally.
viii. Reflect on your practice relevant to training and consultancy in the field of curriculum.
ix. Develop a training and consultancy portfolio based on your work done in the field of curriculum.
(Sources: Prof. Dr. Nurahimah, CDMD Trainer, UUM)

Having high academic standards is not enough if they are not implemented through powerful instructional methods in training and development program among educators. To develop high performing talents in the industry, curriculum and instruction are interdependent, and curriculum work needs to be approached with this important precept in mind (Hao & Lee, 2015). The aim of this research is to identify the effectiveness of Web 2.0 in the CDMD training, before having further discussion on the effectiveness, this study also focusses the investigation on how the participants understand the usage of Web 2.0 itself in teaching and learning.

Web 2.0 in Teaching and Learning at HEIs

The current students at higher education institutions (HEIs) are among those were born the day before yesterday. There are some significant changes in the way the current generation of students study and work. What current student demand from education totally different from previous especially when most of them have no memory of the world without the World Wide Web, mobile phones, or personal computers. Those current students are Internet surfing, iPoding, texting, Googling, Facebooking, and the IMing generation (Hassan & Muhammad, 2013). Observing on a report in The New York Times within ten years back, a professional expert says that for today's youth, using electronic media such as mobile phones, iPods, and computers and so on is part of their atmosphere as the air they breathe or the water they drink (Lewin, 2010). Those youths are currently millennial among generation Z which drastically starting to enter our higher education industry. They are all now grown up and become the age of dramatic technological change in our society. As educators in higher education institutions (HEIs), the use of Web 2.0 tools is transforming their work, and more specifically the way they support their students in the classroom. As higher education institutions (HEIs) bring more technology into their lecture halls, academics will in turn strive to put more technology in their students' hands. That is, if they are prepared to do so (Dabs, 2012). This technological innovation have made an enormous impact on the way people work, learn, and teach: "It has become central to people's reading, writing, calculating, and thinking, which are major concerns of schooling" (Collins & Halverson, 2010, p.19).

Figure 1. Web 2.0 Landscape
Sources: https://rossdawson.com/frameworks/web-2-0/

Web 2.0 refers to the use of the Internet as an intermediary for interaction among individuals through tools and technologies such as blogs, wikis, or podcasts, rather than using the internet merely as an information provider (Kostoula-Christina, 2016). Web 2.0 has emerged as a significant learning innovation because of its features and the great potential educators and scholars see in this innovation. Web 2.0 tools have been used to facilitate student collaboration, ideas and knowledge sharing, and interaction and communication with others (Cannel, 2013; Orehovacki, Bubas, & Konecki, 2009). Therefore, students have the opportunity to become actively engaged in the learning process by searching, gathering information, and creating content that can be shared with others (peers and teachers) through Web 2.0 applications (Hartshorne et al., 2010; Mason, 2016; Tunks, 2012). Examples of popular Web 2.0 tools are shown in Figure 1 (Web Landscape).

Methodology

This study was conducted in a few series of training for CDMD module. The data was gathered through observation and reflection from the participants of the program. The observation was done based on three phases of training program. On the first observation, the participants were introducing and being guided on how to use the Web 2.0. At the second phase, the respondents were displayed with a few types of Web 2.0 tools. At the final stage, the respondents were given tasks and asked to submit their tasks through various Web 2.0 applications. The participants of the program were also being asked to give some reflection for each phase of their experience in gaining knowledge of CDMD through the Web 2.0s. Furthermore, some information was also retrieved from survey questionnaires that distributed participants at the end of the CDMD training session. There were about a total of 30 participants involved in the survey research.
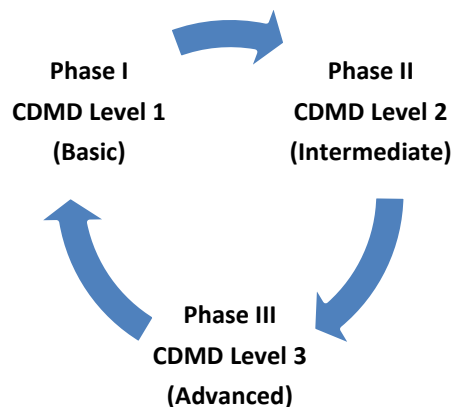
Figure 2. The Three Phases of Research Cycles for Three Levels of CDMD Training

Results and Discussion

There were three times of training for CDMD module by the researchers. The first and second training were involving local educators from several higher education institutions in Kedah, northern of Malaysia. The third session of training involved at researchers' institution,

a university with several local and foreign educators or lecturers. Out of 30 selected participants from overall training session, there were 5 foreigners and another 25 were our local educators. At 60% of participants during the training were PhD holders while the others were Masters' degree holder. Trainers for all slots were among three researchers of CDMD training program. All of the trainers have certificate in CDMD training from Higher Education Leadership Academy (AKEPT), Ministry of Education of Malaysia.

The research began by asking all the participants either they know about Web 2.0 tools before joining the training session. Most of the participants were aware about the tools. Only 20 % of them never heard or realize about the existence of Web 2.0. Anyhow, 90% percent of them know how to operate computers and using internet application, as well as having. 10% answered "not sure" when the researchers asked them for confirmation before the training started.

The Effectiveness of Web 2.0 during CDMD Training

Cycle 1 – Introduction to Web 2.0

At the first cycle of this research, observations on the feedback of the participants regarding the introduction of several tools of Web 2.0 were recorded. During the first cycle, all the participants of the CDMD program were introduced about Web 2.0 by the trainer. The first observation on first day training program showed that most of the participants have less knowledge about Web 2.0. Out of 10% seems familiar with some of the Web 2.0 tools such as YouTube, Wikipedia, Facebook, Google and WhatsApp. All of the participants also agreed that they are online learning users at their institutions. During the training, participants were shown by the trainer with some other tools of Web 2.0 such as Padlet, Blendspace, Kahoot, and Mentimeter instead of their familiarity on YouTube, Wikipedia, Facebook, Google and WhatsApp. Once the tools being introduced, the participants were asked to browse through and try to understand how to use it for their tasks and assignments during training session.

Example of one activity given to the participants was a question on how they understand scenarios about A Curriculum Fable. The participants were asked to share their answer using any Web 2.0 tools. Towards the end, all of them choose to submit their thoughts through shared email. This is because they need extra time to register, login and learn certain Web 2.0 tools such as Padlet and Blendspace.

Based on the first activity's reflection from the participants, they are all agreed that Web 2.0 tools need to be explored more. Every one of the session requested for some period of time to get use with all the suggested tools by the trainers.

Cycle 2 – Using of Various Web 2.0

At the second round of the training, all the participants were given some activities and assignments of the phase two CDMD module. All of them were compulsory to submit their work online. During the first round of phase two module, the participants were asked to submit through open courseware (http://ocw.uum.edu.my/). This is because at that first round of phase one module, they asked for some time to adapt with new tools of Web 2.0. For this session, the same applications like first round used in those activities (Padlet, Blendspace, Kahoot, and Mentimeter). The participants also allowed using tools beyond their knowledge (YouTube, Wikipedia, Facebook, Google and WhatsApp).

During this session, the participants were asked to discuss among groups about "How often have we heard people say, 'the plan was good but implementation was poor'? Let's examine aspects in curriculum implementation." Most of the participants aware about the submission must use Web 2.0 tools. Instead of submitting to their open courseware account and emails, they manage to submit by group through Padlet and Blend space too. This was one of the improvements about their usage.

Based on the observation, participants were very eager and passion about learning those Web 2.0. The trainers concerned about the CDMD content that they should mastered. In that case, the participants were given extra time to submit their assignments and activities after end of second session and before starting the third session of the training. The trainers also started asking those participants to utilised cloud application through Dropbox and Google Drive.

Cycle 3 – Choosing and Applying Suitable Web 2.0

The third phase of the CDMD training, the participants should be able to fulfil all the course learning outcome. The objectives of CDMD program are: (i) apply the knowledge and skills learnt in the area of curriculum design, management and development to design learning experiences in their respective discipline; and (ii) train others in the area of curriculum design, management and development at the department/school/faculty level. But in the meantime, the objective of this research is to identify the effectiveness of Web 2.0 in the CDMD training. The results indicate that this application really works in this training.

At the third stage of observation, the participants were becoming well verse in using Web 2.0 tools. They were given two important tasks on CDMD. They were asked to create a portfolio and plan for next CDMD training. In order to implement those two tasks, they need extra effort to understand how to use Web 2.0 tools effectively during their next training session.
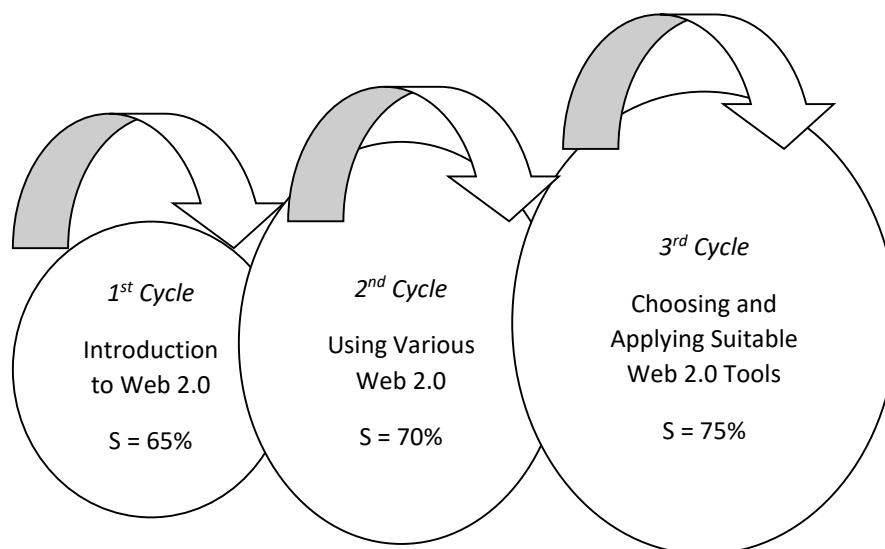
S = Submission through Web 2.0 Tools (Padlet/ Blendspace/ any Cloud)

Figure 3. The Submission of Report on Activities in During Training Session

Based on the reflection from the participants, most of them said that they struggle to learn and apply Web 2.0 tools but in a very passionate way. They did not even feel stress to use

the tools but they really enjoy browsing and adapting the tools for their portfolio and program planning. Most of them prefer to use Padlet, Blend space, Google Drive and Dropbox. They were also shared links of their work and some materials from YouTube, Slide Share, Research Gates and Google Scholars. They were only few of the participants did not show interests of Web 2.0 tools because they said that they preferred traditional way of teaching. They also mentioned about less attention given to the content of CDMD training itself.

The indicators of effectiveness of using Web 2.0 tools within the CDMD training also recorded. Based on the submission of the participants' work on the day they attended the training courses, the trainer gave marks in the checklist. The results show that the discrepancy between cycles are not much difference but at least, the trainers might be satisfied because of the improvement at every stage of research cycle from 65% to 70% and end up with 75%.

HEIs curriculum development team is recommended in order to bring both subject matter and educational methods expertise to the project. Once the curriculum is made generally available it should be evaluated from time to time to assure that it is of value to the users and remains current. For curriculum design, management and development (CDMD) program, learning and applying Web 2.0 tools require the confident and critical use of information, communication and technology. It is an informed and critical attitude towards interactive media and digital information – particularly concerning its safety, security and reliability. Since over time, there is an urgent need for qualified educators who possess skills in using modern technologies, including Web 2.0 tools (Miners & Pascopella, 2007). Consequently, there is an urgent need to train in-service educators to use Web 2.0 technologies to help their students optimize their use (Heun, 2006). Mutohar and Hughes (2012) describes that the simplicity of these Web 2.0 tools and merely focuses on the learning processes and information practices rather than acquire technical knowledge and skills. Therefore, it is confirmed that the learners have sufficient knowledge and skills to access these Web 2.0 tools yet rarely contributed their time to leveraging its benefits.

Conclusion

Web 2.0 is the application of educational technology and it has created a new teaching and learning concept which is known as cybergogy. One of the central elements of cybergogy is the intent to combine fundamentals of both pedagogy and andragogy to arrive at a new approach to teach and learn (Carrier & Moulds, 2003). Previously Knowles (1984) provides an example of applying andragogy principles to the design of personal computer training: (i) there is a need to explain the reasons specific things are being taught (e.g., certain commands, functions, operations, etc.); (ii) instruction should be task-oriented instead of promoting memorization, learning activities should be in the context of common tasks to be performed by the others; (iii) Instruction should take into account the wide range of different backgrounds of learners; learning materials and activities should allow for different levels/types of previous experience with computers; and (iv) since adults are self-directed, instruction should allow learners to discover things and knowledge for themselves without depending on people. However, learners should be offered guidance and help when mistakes are made. According to the results of this research, with the effectiveness of Web 2.0 tools in CDMD training, that andragogy are fully utilised and perhaps bring the cybergogy principles into highlight.

Acknowledgements

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Enhancing Teamwork Skills among Entrepreneurship Students Using MOOC Approach

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Abstract

This study attempts to implement Massive Online Open Course (MOOC) approach in the effort to enhance students' teamwork skills in projects activities in group projects in Entrepreneurship course at Universiti Utara Malaysia (UUM). Aligned with the rapid expansion of MOOC for stakeholders in education, the approach should be taken up in entrepreneurship courses as this might make the most effective use of technology. The project assignment for the entrepreneurship course (business plan and website) is in a group, thus teamwork is the most important thing to ensure a well prepared and good quality product is achieved. Therefore, the objective of this study is to examine how the use of MOOC can help to improve students' teamwork skills in group projects activities in Entrepreneurship course. This study is conducted using action research. Results show that using MOOC approach is an effective way to enhance teamwork skills among entrepreneurship students. The participants felt that by using MOOC platform like chatroom and forum, they can enhance their teamwork skills thus helping them to complete their group project.

Keywords: Massive Online Open Course, MOOC, Entrepreneurship, teamwork skills, soft skills.

Introduction

'Massive open online course' (MOOC) can be considered as the latest in a long list of technologies to support online and distance education. The implementation of MOOC can leverage certain aspects of teaching, such as transmitting information, assessing rules-based knowledge, automating feedback to common errors and directing students individually to appropriate adaptive learning objects and paths (Freeman & Hancock, 2013)

MOOC is an emerging educational development that allowed anyone with internet connection to access learning materials from higher learning institution without any cost. MOOC is viewed as an extension of existing online learning approaches in term of open access to courses. The implementation of MOOC is aimed to allow open access to anyone interested in taking up the course with unlimited number of students (Kop, 2011).

MOOC is a disruptive innovation that will transform higher education which serves as a powerful tool to make fundamental changes in the organisation and delivery of higher education over the next decade (Shirky, 2012). Besides that, MOOC helped address the problem of higher education budget constraints and helped to lower the cost of degree courses by enabling inexpensive, low-risk experiments in different forms of higher education provision (Carey, 2013).

Aligned with the rapid expansion of MOOC for stakeholders in education, the approach should be taken up in entrepreneurship courses as this might make the most effective use of technology.

Using MOOC approach, students could use several tools in the MOOC platform for group discussion for example forum platform, as well as more time can be used for group discussions since lectures are minimised by using an effective technological approach which can accommodate the teaching and learning process.

This study implemented MOOC approach in the effort to enhance students' teamwork skills in projects activities in group projects in Entrepreneurship course at Universiti Utara Malaysia (UUM).

Entrepreneurship course structure at UUM

In this course, students will be exposed to the basics of entrepreneurship in term of history, concepts, and theories, self-development, skills, and behaviour. The students are also exposed to the development of creative and innovative skills, as well as business start-up process.

By the end of the course, students are expected to understand the entrepreneurship concept and importance; appreciate the entrepreneurial website and business plan; know the concept of creativity and innovation, risk taking and fundamental in business management and assess the business opportunity and approaches to business start-up and development.

Besides understanding the concepts and theories of entrepreneurship, students are required to come up with one or two online businesses. In promoting their product, they should be able to demonstrate a business platform through a website and social media. In a small group, each student is encouraged to apply their creativity in developing an attractive website for their business. Apart from that, they have to develop a comprehensive business plan to show whether or not their business has the potential to make a profit. A well- designed business plan lays out a vision of growth and steps needed to get there. It also serves as communication tool for attracting financing for the business.

Problem Statement

The Entrepreneurship course structure requires the students to complete a group project which involves a lot of discussions and collaboration among team members. The preparation of business plan, as well as the website for business, involve a lot of discussion in order to come out with a good output hence require the contribution of ideas from each team member. Since the project (business plan and website) is in a group, teamwork is the most important thing to ensure a well prepared and good quality product is achieved. It is noticeable that some group having a significant problem in producing a good report due to teamwork factor and there was even the worst scenario where several group of student failed to submit a report on time due to teamwork.

From the observations of the lecturers, entrepreneurship students mostly face this problem due to the lack of time to conduct discussion face to face among group members. Teamwork skills are noticeably low which led to the failure to produce a good project report.

Research Question

How the uses of Massive Open Online Courses (MOOC) helps to improve students' teamwork skills in group projects activities in Entrepreneurship course.

Research Objective

To examine how the uses of Massive Open Online Courses (MOOC) can help to improve students' teamwork skills in group projects activities in Entrepreneurship course.

Literature Review

Massive Online Open Courses (MOOCs)

A few decades back, both educators and students suffered from the availability of course and learning materials, especially in developing and under-developed countries. Today the trend is changing. One of the factors responsible for this change is the development of IT tools, which change the methods of teaching and learning. The IT developments make us easy to obtain great amount of materials through various media such as Internet, TV, and smart phone, etc.

Massive Open Online Courses (MOOCs) is one of the latest trends in online education (Pappano, 2012). MOOCs offer the possibility to learn online to a massive number of students and it is free of charge (Kop, Fournier & Mak, 2011). Although the first MOOC was offered by the University of Manitoba in 2008 (Fini, 2009), MOOCs seem to be picking up now due to the inability of physical campuses to cater for the higher education needs of the growing world population and the maturity of the technology that makes broadband internet more accessible and reliable.

In 2011, a Massive Open Online Course (MOOC) about Artificial Intelligence offered by Stanford University attracted 160,000 students from around the world. Fourteen percent (14%) of them have successfully completed the course. Since then, MOOCs have attracted a wide variety of responses and are seen to have high potential that will change the world educational landscape. Early MOOCs have focused on engineering and computer science knowledge and skills, but MOOCs are believed to have a place in teaching skills such as critical thinking, problem solving, communication, and entrepreneurship (National Research Council, 2012).

The MOOCs integrates the connectivity of social networking, the facilitation of an acknowledged expert in a field of study and a collection of freely accessible online resources (McAuley, Stewart, Siemens & Cormier, 2010). Because of that, MOOCs allow the massive development of knowledge and certain competences among adult learners' showing enough motivation, self-regulation and cognitive quality time to engage, and succeed in this online course. For this reason, MOOCs could be considered as an excellent opportunity to achieve education objectives among massive number of participants in formal or informal contexts, such the development of an entrepreneurship education.

Previous Literature on MOOCs in Education

MOOCs have gained much attention since it was first launched in 2011. The impact of MOOCs on the future of higher learning especially on teaching and learning has captured the interest of researchers as well as academicians.

Staubitz and Meinel (2017) found that perception of participants of team assignment on MOOC platform rather positive where majority of the participants have successfully completed the task assignment. 240 participants were admitted for team work and 32 out of 39 teams submitted their completed work. This showed that the toolset embedded in MOOC provide a good foundation for a large scale teamwork assignment.

A study by Duhring (2013) revealed that students participated in MOOC were actively in discussion forums. The study found that students are responding to each other much faster than without instructor intervention. They even managed to get the right answer faster than instructor. The promptness of feedback in discussion forums assisted the instructor in responding the students' feedback on the course design and make necessary changes. On top of that, the instructor is able observe each participant learning reflection. The result showed that MOOC have high potential in encouraging active learning among students or participants.

Stewart (2013) suggested that MOOC encouraged cooperation among students better than the traditional large classroom. The discussion forums were actively used by the participants for sharing course notes, asking questions about the lecture and discussion topic that are covered in the course. Cooperation among students is believed to be one of the principles of good practice in undergraduate education.

The importance of teamwork skill

Teamwork is defined in Webster's New World Dictionary (2019) as a joint action by a group of people, in which each person subordinates his or her individual interests and opinions to the unity and efficiency of the group. This does not mean that the individual is no longer important. However, it means that effective and efficient teamwork goes beyond individual accomplishments. The most effective teamwork is produced when all the individuals involved harmonize their contributions and work towards a common goal.

Teamwork is not simply the act of a group working together but also includes commitment, goals and shared leadership. Every team member needs to adapt themselves in the group to be able to work as a team. Lehman and DuFrene (2008) defined team as a small number of people with complementary skills who work together for a common purpose. Generally, teams are formed to accomplish tasks or to solve specific problems. Each members of the team have different ideas and different personalities.

In today's business world, the integration of teams, committees and groups is vitally important (Lehman & DunFrene, 2008; winter, Neal & Waner, 2005). By combining efforts and expertise, teams are able to achieve more collectively than they could individually. Hence, one of most desired skills in potential employees is the ability to work in a team. In order to work well with others and to be able to function competently as a member of a group or team, it is essential for individuals to possess the interpersonal skills.

MOOC Approach in Entrepreneurship Course

Upon enrolling the course, students are automatically registered as online students of entrepreneurship module. The platform used to deliver the module is OpenLearning.com.

OpenLearning is a for-profit educational technology institution based in Australia that offers a social online learning platform that can deliver massive open online courses. Just like many social media it provides features such as forums to enable students to comment and receive comments which encourage interaction while learning. In addition, it has other interesting features such as karma points, which are gained via obtaining positive comments from peers, and badges that can be issued either automatically or when a certain learning goal is achieved. These features, together with a life progress bar, are designed to encourage learning and collaboration throughout the course.

Notes for each chapter are available in the form of power point and pdf. Videos related to each chapter were also embedded to make learning more interesting and fun. All the online students are required to watch all the videos and complete all the assignments and other activities of the course. The MOOC platform not only provides online notes, assignment and activities but also include assessment rubrics for the course which include assessment rubric for business plan, business website and social media. Students are supposed to refer to these rubrics before they submit their group assignment. They are also able to share their thoughts on the online learning using MOOC approach in the feedback and support page. This learning reflection serves as feedback to improve teaching and learning using MOOC platform.

Methodology

Action research (AR) approach is used in this research. There are several definitions of action research. Action research by definition is a "systemic inquiry that is collective, collaborative, self-reflective, critical and undertaken by participants in the inquiry" (McCutcheon & Jung, 1990) It is also being defined as "a form of collective self-reflective inquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out" (Kemmis & McTaggart, 1988). However, in this research, the definition by Rapoport 1970 is used as it defined AR in terms of its contribution to the practical process. They explained that "action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework" (Rapoport, 1970).

To operationalise the action research approach, we adopt a model byTrigwell and Shale (2004) which is a practice-oriented model that favours a notion of scholarship as activity and is concerned with the articulation of pedagogic resonance, assumes a learning partnership, rather than an instructional relationship, with learners and privileges the work of knowledge creation with students. The model includes three interrelated components, Knowledge, Practice and Outcome of teaching. Each of the teaching components is described by a set of elements (in each of the three overlapping ovals). Together these elements and components describe a teaching system (See Figure 1).

The primary data for this study was collected through interviews and students' feedback on the reflections of implementation of MOOC (pre-implementation phase (knowledge), implementation phase (practice) and post-implementation phase (outcome)) in the teaching and

learning processes. This paper presents the results for the analysis conducted on the implementation phase (practice).

In the practice of MOOC in Entrepreneurship course subject, all the materials are given online. The lecturer examines the groups' methods of learning the subject and how they could benefit the time given for the group discussion. In this phase, the investigation is conducted through reflection, communication and learning process using the MOOC approach. The data was collected through interviews, observations and students' feedback on the reflections on the activities conducted in the MOOC platform for the topics in the course.

Figure 1. Components of a model of scholarship of teaching by Trigwell and Shale (2004)

1.	Do you understand the topics that are taught using MOOC approach?
2.	Do you think that using MOOC for selected topics in the course allow you to have more time for group activities (group project on entrepreneurship course)?
3.	Do you experience better teamwork qualities during your group activities after having a number of topics being taught using MOOC?
4.	What are the most things you like about having topics conducted using MOOC?
5.	What are the most things that you don't like about having topics conducted using MOOC?

Figure 2. Questions for reflections on the implementation phase

The qualitative data collected from these two activities were coded and analysed using thematic analysis (Patton, 2002), which involves assigning each unit of data its own unique code and identifying repetitive patterns of actions and consistencies. Data coding was performed to identify the themes and categories of qualitative data. Data coding is a cyclical process, where usually several cycles of coding processes are needed for a good coding result, and the cycles of coding processes are performed to manage, filter, highlight, and focus the salient features of the qualitative data with the aim to generate categories, themes, concepts

and build theories (Creswell, 2013; Saldaña, 2009).

Findings of the Study

The results from the analysis of the data related to the Implementation phase - Practice perspective show three criteria emerged. They are "Enhance the understanding on the topics", "More time to complete project activities in class" and "Enhancing teamwork skills".

Enhancing the understanding on the topics

Under the "Enhancing the understanding on the topics" criterion, there are two themes emerged. The first theme is on the notes in which the participants agreed that the notes are interesting and easy to understand. The following are some quotes with regards to this theme.

"The notes are easy to understand and not too lengthy."

"I can't really understand when I read the text book but the notes in the MOOC platform are more interesting and brief."

"I always refer back to the pdf notes in MOOC when I can't understand the topic."

The second theme is on the variety of learning styles. The following are quotes from the participants on this theme.

"I can understand the topics with the extra videos provided. They help me to understand more."

"I always try to read the materials and then watch the videos to understand more."

More time to complete project activities in class

From the analysis on the data, another criterion found is on the time to complete the class project. Two themes emerged under this criterion.

The first theme is time saving. The participants agree that using MOOC approach saves their time especially on the time spent to go to class and having more time to spend to complete their group project.

"Gives us more time to complete our project"

"We can complete the tasks given in our own room and it saves time because we do not need to take the time to go to class."

"My schedule this semester is very packed so MOOC approach gives me opportunity to complete my tasks anytime that I am convenient."

The second theme is on the flexible learning time. The participants felt that using MOOC approach, they can benefit the flexible learning time where they can learn the course anytime outside the class hours.

"The good thing about MOOC is I can learn the topic outside class hours."

"MOOC approach gives me time to do more exercises outside the class time."

"The exercises given in MOOC do not burden me too much and I can use the time to find more exercises and there is enough time for me to complete the project tasks."

Enhancing teamwork skills

The third criterion found from the data analysis is "Enhancing teamwork skills". The participants felt that by using MOOC platform like chatroom and forum, they can enhance their teamwork skills thus helping them to complete their group project. Under this criterion, two themes emerged.

The first theme under this criterion is the ability to be more prepared for the project activities. The following are some quotes pertaining to this theme.

"I always refer the notes in MOOC before the group discussion so I can understand before the activity."

"I refer the notes in the MOOC platform and it makes us understand what to do for our project."

"It helps us to complete our project because the materials can be accessed and referred to when we are doing our project."

"I always get involved in the group discussion and presentations and when we need to refer anything the notes are always available in the MOOC platform."

The second theme is regarding the online teamwork activities. The participant stated that they can benefit the features in the MOOC platform in order to keep them on track on the project activities and using social media platforms to do online teamwork activities.

"We know our progress by looking at the progress button in the MOOC platform so we know what task that has not been completed yet. This will keep us aware of our progress and do not forget our responsibilities for the team project."

"We can learn about the hard sell, soft sell and teaser from the notes online and we can do it on the Facebook project online."

Conclusion

As a conclusion, it is felt that MOOC approach should be taken up in entrepreneurship courses as this might make the most effective use of technology. From the study, we can

conclude that MOOC approach is an effective way in enhancing teamwork skills among students. This is because entrepreneurship course students need more time to conduct outside class projects and the time in class for lecture should be minimised.

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Education 4.0: Prediction Model towards Usage on Internet and Services for Young Learners

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Abstract

Learners have different ways that they prefer to learn. Many educational theorists and researchers consider learning styles as an important factor in studying strategies and agree that incorporating them into education has the potential to facilitate learning for students. This study aims to get some insight into the learning style and the number of resources marketed to study strategies in UUM students. This study also aimed to analyze the relationship between students learning habits and behaviors towards internet use and services. Using the types of learning habits identified, prediction techniques known as Zero Rules (ZeroR) and Decision Tree (J48) were used to identify patterns of behavior. This study begins with the following objectives: First, to identify UUM student learning styles in the 2nd and 3rd years, second, to analyze the relationship between students learning habits and behaviors towards internet applications and services, and third, to propose appropriate learning strategies for UUM students. A total of 120 questionaires were distributed manually into three classes and a total of 99 questionnaires were collected through this study. The analysis was performed using Ms Excel and SPSS Version 22 to find the frequencies, correlation and cross-tabulation between the data. From the SPSS analysis, two Machine Learning algorithms; Decision Tree (J48) and Zero Rule (ZeroR) were evaluated to find the highest score based on their accuracy. The highest accuracy achieved was 80.80% with the J48 algorithm. Studies show that respondents are mostly visual learners and show high priority using social networking sites. Education 4.0 changed the teaching and learning approach. Students no longer depend on classroom learning, they can be anywhere and anytime because they have access to the internet.

Keywords: learning style, learning behavior, prediction model, J48, ZeroR

Introduction

The field of learning styles is complex and affected by several aspects, leading to different concepts and perspectives. Many models of learning styles are found in literature, such as learning style model by Kolb (1984), Honey and Mumford (1982), Felder and Silverman (2002), Felder and Spurlin (2005), Yu and Sunghoon (2018). Although there are many open issues related to learning styles, all learning style models agree that students have different ways in which they prefer to learn. In addition, many educational theorists and

researchers consider learning styles an important factor in studying strategies and agree that incorporating them into education has the potential to facilitate learning for students. Having a framework for identifying the different types of learners can help an instructor formulate a teaching approach that addresses the needs of all students (Yu and Sunghoon, 2018).

Learning styles can be considered in different ways. The first step is to make students aware of their learning strategies and to show them their strengths and weaknesses. In this study, we learn strategies for using the internet and using services. Knowledge of their learning strategies helps students understand why learning is sometimes difficult for them and is the basis for developing their weaknesses. In addition, students can be supported by matching their teaching style with their learning strategies. Providing students with learning material and activities that fit their learning style makes learning easier for them. This hypothesis is supported by educational theories. Studies such as those performed by Bajraktarevic et al. (2003), Graf and Kinshuk (2007) and Alzain et al. (2018) shows supportive results.

Recent study (Osmanbegović, Suljić and Agić, 2014) in educational data mining pertaining to dominant factor for student performance showed that the studying time, years of education, the student's age and father's education among the most significant predictors of grade for successfulness of a student (Piad, 2018). In other studies, Yu and Sunghoon (2018) designed a lab manual based on Felder-Silverman learning style model (FSLSM) and the flipped classroom model for engineering education. The lab manual is developed for the early junior year course of "Microcomputer Systems Technology" and emphasizes student-centered active learning experiences with practical exercises and open-ended questions.

In this study, the aim is to get some insight into the learning style and the amount of resources marketed as a learning strategy among UUM students. This study also aimed to analyze the relationship between the students' learning habits and behaviors towards internet use and services. Using the types of learning habits identified, prediction techniques known as Zero Rules (ZeroR) and Decision Tree (J48) were used to identify patterns of behavior. Other studies such as El Aissaoui et al. (2018) used clustering techniques (K-means algorithm) to classify student log files according to specific learning style models (Felder and Silverman models). To this end, the study also aims to identify important features that will improve UUM student grades.

This study embarks on the following objectives:
1. to identify the learning styles of UUM students epecially in the 2nd and 3rd years,
2. to analyze the relationship between students learning habits and behaviors towards internet applications and services,
3. to suggest appropriate learning strategies for UUM students.

Methodology

Knowledge Discovery and Data Mining (KDD) is an interdisciplinary area that focuses on methodologies to extract useful knowledge from data. KDD is known to determine possible, potential useful and understandable data patterns that can be used for prediction. Figure 1 shows the steps of the KDD process.
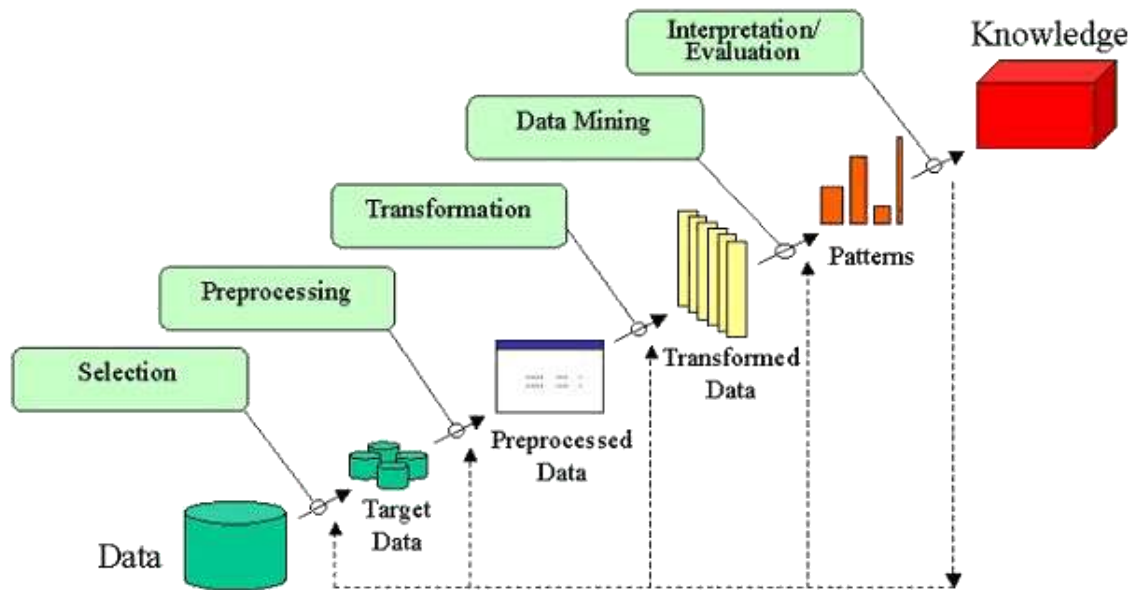
Figure 1. Steps in KDD process

Knowledge discovery has nine (9) steps. One key step in knowledge discovery is the data mining step that focuses on finding interesting patterns in the data set. The process of KDD is traditionally presented as a sequence of operations that, when applied repeatedly, lead from raw input data to high-level, translatable and useful knowledge. The main steps in the KDD process are: Selection, Pre-processing, Transformation, Data Mining, and Interpretation/Evaluation (Szczuka, Janusz and Herba, 2012). During the selection and pre-processing phases of the KDD cycle, the original raw data pool is easily set up, cleaned, normalized, formatted and stored. The original, raw data was first converted to target data) and then transformed into pre-processed, analytical (pre-processing) and data mining. This study uses three phases of data-mining techniques including data pre-processing, classification tasks, and interpretation and evaluation.

A total of 120 questionaires were distributed manually into three (3) classes at the School of Computing (SOC), the School of Multimedia, Technology and Communication (SMMTC) and the School of Finance and Banking (SEFB) for the Second Semester 2017/2018 session. A total of 99 questionnaires were collected through this study. The analysis was performed using Ms Excel and SPSS Version 22 to find frequency, correlation and cross-tabulation between the data. The UUM students in each class were divided into two main groups, the fulltime students, and the distance learning (PJJ) students. Figure 2 shows the division between classes. Based on their age, we found two generations involved in this study: Gen Y (between 1977-1994) and Gen Z (1995-2012). A total of 75 students over 99 are of Z generation.
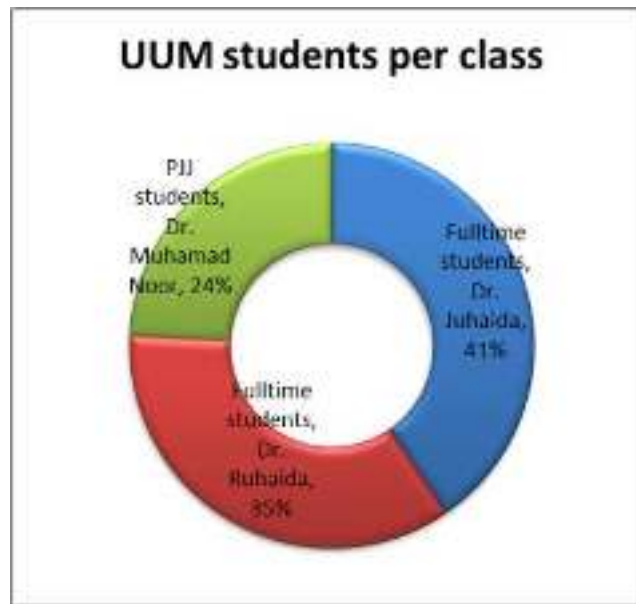
Figure 2. Percentage between classes

In this study, the questionnaires were used as an instrument to collect preliminary data at a predetermined location. Data were collected from Northern University of Malaysia students. Data related to student background, resource availability, type of learning strategies, and personality traits were collected through questionnaires.

Analysis

This section presents the analysis of data collected from 99 student samples. Information gathered from 99 respondents providing some demographic or background information such as gender, age, citizenship, race, college in UUM, semester currently enrolled in UUM, socio-economic status, number of children in family and hobbies are summarized in Table 1.

Table 1
Respondents Profiles

No	Variables	Frequency	Percentage
1	**Gender**		
	Male	30	30.3
	Female	69	69.7
2	**Age**		
	<21 years old	27	27.3
	21-24 years old	53	53.5
	25-29 years old	7	7.1
	30 and above	12	12.1
3	**Citizenship**		
	Malaysia citizen	96	97.0

	Non-Malaysia citizen	3	3.0
4	**Race**		
	Malay	68	68.7
	Chinese	21	21.2
	Indian	8	8.1
	Others	2	2.0
5	**College in UUM**		
	COB	60	60.6
	COLGIS	39	39.4
6	**Semester currently enrolled in UUM**		
	1	2	2.0
	2	64	64.6
	3	3	3.0
	4	30	30.3
7	**Socio-economic status**		
	Major	31	31.3
	Non-major	38	38.4
	Others	30	30.3
8	**Child number in a family**		
	Eldest	30	30.3
	Youngest	38	38.4
	Middle child	31	31.3
9	**Hobby**		
	Sport	46	46.5
	Cooking	20	20.2
	Sleeping	19	19.2
	Study	4	4.0
	Others	10	10.1

Information were gathered in terms of the basic learning styles of the students such as type of learner, how they like to learn, when they were best to learn, what led or motivate them to study, what they did in their free time, what they liked to do and study at university, and what they like to learn in class are summarized in Table 2.

Table 2
Basic information about the respondents

No	Variables	Frequency	Percentage
1	**Type of learner**	13	13.1
	Audio	66	66.7
	Video	20	20.2
	Kinesthetic		
2	**How student like to learn**		
	Self-learn	35	35.4
	Study group	15	15.2
	Problem-based learning	32	32.3
	Focus on classroom	17	17.2

3	**When student was best to learn**		
	Morning	18	18.2
	Afternoon	7	7.1
	Night	55	55.6
	Near exam date	19	19.2
4	**What motivate student to learn**		
	Self	34	34.3
	Parents	27	27.3
	Teachers	28	28.3
	Friend	8	8.1
	Others	2	2.0
5	**What student like to do during free time**		
	Relaxing		
	Sports	28	28.3
	Movie	18	18.2
	Social media	22	22.2
	Others	29	29.3
		2	2.0
6	**What student like about living in the university**		
	Green university	33	33.3
	Cheaper living cost	23	23.2
	Variety of food	13	13.1
	Student activities	28	28.3
	Others	2	2.0
7	**What student like about learning in the university**		
	New knowledge	49	49.5
	Multi-cultural environment	19	19.2
	Opportunity to get a job	15	15.2
	Many friends	16	16.2
8	**What students like to learn in class**		
	Lecturer appearances	9	9.1
	Lecturer teaching delivery	38	38.4
	Lecturer evaluation	5	5.1
	Lecturer guidance/consultancy	47	47.5

Finding

This chapter presents data findings that investigate the first objective of the impact of internet applications and services on students' academic performance. This technique was used in this study as a descriptive analysis using Weka 3.6. Weka is a collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to the dataset or called from your own Java code. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization. It is also well-suited for developing new machine learning schemes (Frank et al., 2016).

For the second objective, this study focuses on the Generation gap. We look at whether

there are significant differences between Gen Y and Gen Z in terms of how much they like to learn, what they like about classroom learning, how much time they spend online each day, and what is their purpose for joining the Social Networking Group (SNS). Analysis shows that there are significant differences between these groups.

Using the same respondents, we expanded our knowledge to look at student behavior on internet applications and services based on previous analyzes on SNS. In our previous analysis, we found significant differences between these two generations with their intention of joining the SNS. We run two algorithms, namely ZeroR and J48. We used the same parameters for these two algorithms in term of data type (real, numeric, nominal) and sample selection (cross validation). All data has been filtered from numerical to nominal to allow the use of selected algorithms.

Cross-validation is a technique for evaluating a prediction model by splitting the original sample into a training set to train the model, and a test set to evaluate it. We used a non-exhaustive cross-validation called k-fold cross validation with k=10. In *k*-fold cross-validation, the original sample is randomly divided into *k* equal sized subsamples. Of the *k* subsamples, a single subsample is retained as the validation data to test the model, and the remaining *k−1* subsamples are used as training data. The cross-validation process is then repeated *k* times (the folds), with each of the *k* subsamples used precisely once as the validation data. The *k* results from the folds can then be averaged to produce a single estimation (Vanschoren et al., 2013). Table 3 shows the comparative results based on these two algorithms: ZeroR and J48. Figure 4 (Appendix A) shows the knowledge extracted to understand Generation Y and Z's behavior towards internet applications and services.

Table 3
Comparison between algorithms accuracy

Algorithms	Accuracy
ZeroR	75.76%
Numeric class: Mean	
Nominal class: Mode	
Decision Tree (J48)	80.80%
Confidence Factor: 0.25	
Min Num Obj: 2	
Num Folds: 3	
Seed: 1	

Discussion

This section presents the discussion of two parts; to examine the findings and how the findings show the impact on learning and reflect on the Gibb's Reflective Cycle.

A. To examine the findings and how the findings have shown impact of engaged learning

This study found two interesting findings related to student learning. This study shows that most respondents are visual learners. It indicates that respondents prefer to be learn by aiding visual such as images, pictures, photos and animation as learning tools. Respondents

need to watch the visuals in order to foster a better understanding of learning. Visual is an essential element of their learning process. This finding indicates that if educators are faced with such situations, they may implement visual teaching and learning aids to meet students' need. In this case, students may gain more attention and be involved in teaching and learning. It is also useful as a guide for educators on how to handle the kinds of students who prefer visuals as a platform for learning.

The second finding is that this study shows that respondents have a high priority using social networking sites (SNS). This is because most of the respondents are undergraduate students. Prensky (2001, 2004) defines this generation as Digital Native, where they all grew up on the Internet and the digital age. This generation has more digital knowledge and capabilities (e.g. Internet, SNS) than previous generations. This study suggests that SNS is a key platform for them to communicate and interact with one another. It suggests that if educators want to engage with Digital Native students, they will use digital technologies such as SNS, and will receive good response.

B. To reflect on the Gibb's Reflective Cycle

This section discusses how to reflect this study based on Gibbs' reflective cycle. There are six reflective cycles according to Gibbs (1988).

Table 4
Reflection on Gibbs' reflective cycles

Component	Reflection
Description	This study aims to examine the behavior of students towards the use of internet applications and services. It seeks to analyze how the internet influences students' perceptions of learning. The results of this study are useful for educators to learn and understand their students especially for the younger generation
Thinking	This study assumes that current university students will be at a different level of internet usage than previous generations. That is the motivation for this study.
Evaluation	This study demonstrates the importance of educators in identifying students' behaviours and how they view the use of the internet. The results of this study will help educators learn more about their behaviors and implement ideal ways to teach and engage students.
Analysis	The analysis of this study shows that respondents have a high level of internet usage. This study shows that respondents prefer SNS as a medium than other types of applications (such as email).
Conclusion	This study shows that students' behavior in using SNS is more relevant and appropriate for their use and impact on students. Educators can think of using SNS as a platform for teaching and learning.
Action plan	Based on these findings, we will encourage educators to recognize and understand their students to achieve their teaching and learning goals. People cosider the internet as a discussion for the younger generation, however, this study shows that students are more focus on SNS than other internet applications. For example, online portals are now a medium for

interacting with students. The result of this study suggest that educators should use the SNS as a platform and it may be appropriate to aid teaching and learning.

Conclusion

As we mentioned earlier, current university students are Digital Native Generation. This study helps us identify and isolate students based on their behavior. The teaching and learning landscape are different from previous generation (i.e. Digital Immigrant). For example, educators have previously focused on teaching and learning in the classroom (e.g. face-to-face) and marker and whiteboard are the primary tools between educators and students. However, the Education 4.0 (EDU4.0) changed the teaching and learning approach. EDU 4.0 emphasizes on digital technology in delivering teaching and learning. Students no longer rely on classroom learning, and they can be anywhere and anytime as long as they have access to the internet. Learning is more personalized, and students are free to choose. Therefore, this study is important to help educators understand their students' behaviors and engage with appropriate mediums especially SNS.

Based on this study, we plan to engage and communicate using technology, especially Web 2.0 applications such as SNS, Padlet, and ScreenCast-O-Matic. Current teaching and learning is not the same as before. We need to embrace EDU 4.0 and implement activities related to students' needs. It can be said that current students no longer depend on traditional lectures.

Acknowledgment

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Appendix A
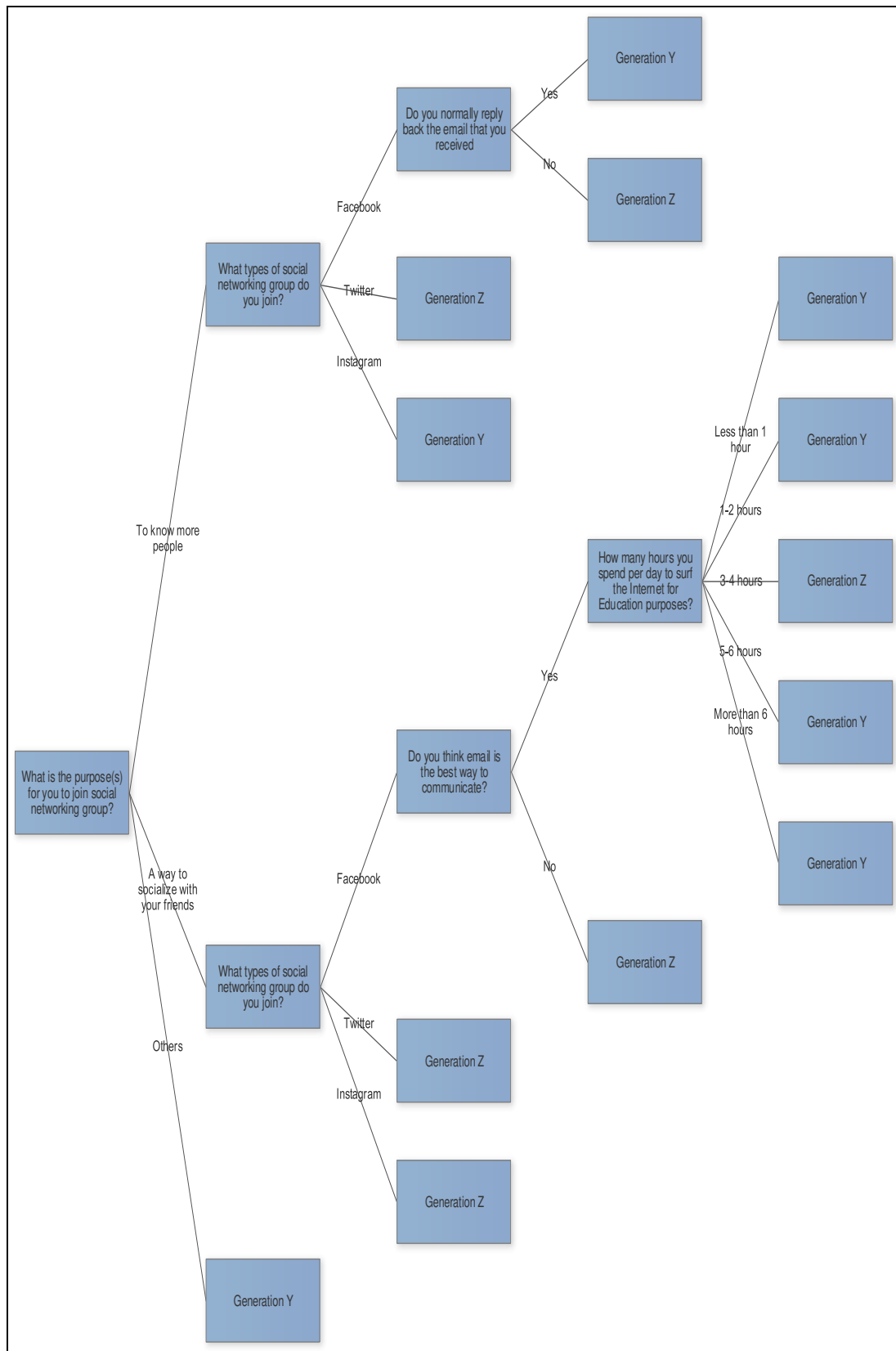
Figure 3. Model classifier using decision tree (J48)

Gamification in Education: The Case for Wordnary in UUM

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Abstract

Gamification of learning is an educational approach and an alternative that can motivate, maximise excitement, and inspire students to continue to learn. Gamification can be an effective tool to provide immediate feedback to assist educators in producing more effective ways and techniques of learning, as well as help students to identify their innate strengths and weaknesses. The underlying problem is that it is difficult to keep the learner's attention and difficult for students to absorb knowledge using traditional methods. The objective of this study was to identify student perception toward board games in education that can enhance knowledge among students in Universiti Utara Malaysia, and to explore the suitability of board games in education that can increase learning intention and absorption of information by students. The data were collected via a questionnaire survey and observation, which were then analysed using statistical analysis tool. The results of this study showed that respondents were in the somewhat in agreement level of confidence in answering all the questions relating to their perception to board games and the suitability of board games in education. Even though today's digital age commands a strong presence in our daily lives, the respondents felt that board games can still play an important role in imparting knowledge and lessons. Almost all respondents said that after playing this board game, they acquired new knowledge and experience in playing. In addition, they also discovered their strengths and weaknesses.

Keyword: Gamification, Wordnary, education, board game, learning

Introduction

The ability to solve problems becomes a measure for someone's intelligence quotient (IQ). It basically reflects how well one is doing in a particular test, as compared to others in the same age group. Everyone has the experience of having difficulties in learning and the learning process takes place when one overcomes this challenge (Oxford Royale Academy, 2014). This paper was written to find alternatives to solving learning problems faced by students, which include difficulty concentrating, experiencing low motivation, subject not enjoyable, lazy to think, and expecting others to give answers. A learner can get stuck when learning something new, perhaps because of not understanding the concepts, procedures, and also the lack of knowledge needed to learn new concepts (Mostrom, 2011).

According to Soclova (2012), gamification is a concept which, as it was already mentioned, has been adopted in various areas of human activity. However, when we look at the existing definitions of gamification, we find a surprising lack of variety. There is one definition which has been almost universally adopted in the literature on gamification. This definition has been introduced by Deterding, Khaled, Nacke, and Dixon (2011), where

"gamification is the use of game design elements in non-game contexts" (Deterding et al., 2011, p.11).

Gamification of learning is an educational approach and an alternative that can motivate students to learn by using game design in a learning environment. The objective is to maximise the excitement and the desire to learn by students and inspire them to continue to learn.

According to Holloway (2017), this theory has been tested by educators and has proven to have a positive impact on learning. Various ways can be introduced to students for education understanding, such as gamification in grading, award students with badges, and stir up a little competition. Gamification in education helps educators to stimulate students to engage and react to each activity.

Gamification in this study is about board games in education. Due to the large population of UUM students, as well as the fact that this was an exploratory study to investigate the suitability of board games, the target audiences for this study were restricted to School of Technology Management and Logistics (STML) students in Universiti Utara Malaysia. STML students were selected for this study through a purposive sampling procedure.

Students were selected rather than staff because they are potentially the contributors of the next generation of graduates and it would be interesting to observe their thoughts on using a manual game rather than a mobile application, which is the trend these days, especially involving the millennial generation. They are comfortable in their ways and perhaps are not willing to get out of that zone to advance themselves and raise their level of general knowledge.

Gamification can be an effective tool that is able to provide immediate feedback that can help educators produce more effective ways and techniques of learning as well as helping students to identify their strengths and weaknesses, which would ultimately guide educators to focus more on areas that need more focus (Hallberg, 2017). Playing games is an easy and wonderful way to spend time with family and friends, because of the hassle-free and fun time. Broad games can be a tool for users to learn and expand their skills and knowledge (Zander, 2019).

Board games require players to think critically, individually, or as a team that helps to create communication skills to answer questions or solve every single question (Viray, 2016). Learning skills as well as memory skills are essential for mastering game mechanics and for accomplishing tasks or missions in any kind of games, such as board games and video games. This situation will not burden students when educators apply board games in the learning system.

This study aimed:
1) to identify student perception toward, and
2) to identify suitability of, board games in education that can enhance knowledge among STML students in Universiti Utara Malaysia, and
3) to test a prototype board game developed during this research that can increase learning intention and absorption of information by students.

Learning while playing games can inspire enthusiasm among students, as well as improve the process of information absorption that becomes easier for the students. Students will be more productive if what they do is something that can attract their attention.

Previous and existing literature, journal articles, and case studies (see Table 1) focused on all types of gamification, like board games or digital games, which can influence in terms of other aspects, such as the learning process, teaching process, student result, student achievement, curriculum, and others. The problem is it is difficult to keep the learner's attention and difficult for students to absorb knowledge using traditional methods, combined with the educators' problems to teach and deliver learning. As a result, all kinds of games used in

education can positively impact both students and educators. These types of gamification can be utilised by students during the learning process to improve their knowledge and motivation of their academic subjects effectively and efficiency.

According to Barata, Gama, Jorge, and Goncalves (2013), various types of fields using gamification include education, business, healthcare, and productivity. Gamification is used to prevent students from being bored or disappointed and allowing them to experience. Gamification gives advantage to motivate people in embracing certain behaviours and also motivates users to learn, train, and hone new skills.

Literature Review

This paper was written to find alternatives or tools to attract students to pursue knowledge in fun and more effective ways. Board games are a proven way of solving the problems faced by educators to address this problem in the classroom, at home, or anywhere else. Gamification requires a very high and critical thinking, especially in team-based board games that help in building communication and relationship skills as players play face-to-face to solve problems or answer questions (Alomari, Al-Samarraie, & Yousef, 2019).

A game is a system where players are involved in artificial conflicts, defined by rules, which produce measurable results (Salen & Zimmerman, 2004) The definition has been modified and added by the concept of emotional reaction by (Koster, 2013). Games are a system where players are involved in abstract challenges, defined by rules, interactivity, and feedback, resulting in measurable results often eliciting emotional responses. Team-based board games are designed based on specific topics to provide information, create experiences, entertaining and engaging challenges, cooperation, and discussion. According to Kapp (2012), gamification is simply the use of game mechanics to make learning and instruction more fun. Learning professionals can add game elements like curiosity, challenge, avatars, distributed practice, or storytelling to the learning development. In the classroom, there is a need for gamification to avoid the endless stream of information the educator voices at learners in an uninspiring lecture format. The research body proves that a good team-based board game not only inspires learning but also encourages communication, collaboration, and risk taking. A summary of the previous literary works that were done in relation to gamification in the education and training sector involving university students is provided in Table 1.

Shifting the focus to board games, Viray (2016) investigated student engagement through the use of board games. In that study, the author wanted to explore and examine the capability and effectiveness of board games on academic performance. The study employed a quasi-experimental approach involving 44 control group students and 43 experimental group students, all of whom were 14 years old, using board games as the medium for gamification. The findings revealed that after the engagement in board games, the academic performance of the experimental group was higher compared to the control group, as evidenced using t-test of their means.

Based on the findings, the paper recommended that board games be employed as tool to improve the academic performance of students, teachers should find more ways to improve students' academic performance through various innovative strategies, and school administrators should invest in assisting teachers to produce aids or innovation that will improve students' academic performance.

Table 1.
Summary of Gamification Literature in Education and Training

Source	Topic	Respondent	Gamification Elements	Outcome
Chan et al. (2017)	Benefits of gamification in lessons in the form of constructivism by using GIGAME in legal theory lessons	University students	Challenge, Immediate feedback, Points & rewards, Leaderboard	Result & achievement, Satisfaction, Enjoyment
Cózar & Sáez-López (2016)	Impact of gamification and GBL using MinecraftEdu towards engagement, interest and motivation	University students	Challenge, Collaboration	Enjoyment, Involvement, Motivation
Ding et al. (2017)	Impact of gamification towards student engagement on online student discussions	University students	Digital badges, Points & rewards, Leaderboard Exp. system	Motivation, Engagement
Hew et al. (2016)	Effect of gamification to students at the Universities in Asia	University students	Digital badges, Points & rewards, Leaderboard	Result & achievement, Engagement
Huang et al. (2018)	Effect of gamification on student engagement in lessons via flipped-classroom	University students	Challenges, Digital badges, Immediate feedback, Leaderboard	Result & achievement, Engagement
Kyewski & Krämer (2018)	Effect of digital badges in different learning situations	University students	Digital badges	Result & achievement, Engagement
Pechenkina et al. (2017)	Effect of gamified mobile learning in achievement and student engagement	University students	Digital badges, Feedback, Leaderboard	Result & achievement
Tsay et al. (2018)	Use of gamification element in a student-centred learning environment for Self Development and Professionalism lessons	University students	Challenge, Digital badges, Immediate feedback, Leaderboard	Result & achievement, Engagement
White & Shellenbarger (2018)	Use of gamification elements (digital badges) in nursing education	University students	Digital badges	Result & achievement

Yildirim (2017)	Effect of the gamification of teaching methods on lessons to students	University students	Digital badges, Points & rewards Leaderboard	Result & achievement, Attitude

Meanwhile in a study by Taspinar, Schmidt, and Schuhbauer (2016) that investigated gamification in education through a board game approach to knowledge acquisition, it was revealed that the board game is an appropriate medium to tackle the requirements identified for the intended use by university students. Their method was to employ and test a prototype that was developed by taking into account various aspects such as player types, game mechanics, game content, game design (board design, type of questions, and number of questions).

Board games are games played on custom boards, usually by two or more players. The board may have marked and fixed space, and it may involve tokens, dice, counters, pawns, or other parts used in certain ways throughout the game. They may represent real-life situations using specific themes and narratives. Rules can range from the very simple to those who describe the entire world in detail. There are several categories in which a board game can be classified, such as party, sports, racing, fantasy, and education board games (Virvou & Papadimitriou, 2015).

In addition, board games are tools or boards that involve some of the required support tools or pieces that are moved or placed on a surface that is marked or "board", according to a set of rules. Some games are just based on luck or chance, solely on the players, but there are also games that require players to think about how to complete the mission by creating an effective strategy and to hone skills. Board games are an important tool for providing skills and knowledge development in hand and ability, for all ages across all subjects. Mistakes are useful for the educator to fix what is not right and learners need to learn from mistakes. Playing board games is usually reserved for family fun, but when properly configured and used in corporate environments, a vision can be obtained that cannot be done otherwise (Kapp, 2012).

Board games can motivate action, promote learning, and instil problem solving. For motivated individuals, the challenge cannot be too difficult or too easy. Good questions, problem solving, and situations need to be considered in order to enable players to think and apply what they have learnt (Taspinar et al., 2016).

Participating in actions or activities are core elements of gamification. Gamification can be used to encourage learning as many gamification elements are based on educational psychology and are techniques that instructors, teachers, and professors have been using for years. Gamification has the potential to help solve problems. The cooperative nature of the game can challenge more than one individual in solving problems and the competitive nature of the game motivates people to do their best to attain the goal of winning.

Examples of Board Games

There are many education sectors and a variety of industries that use board games to encourage consumers and students to be interested in and engaged with the industry, as well as use of board games to facilitate the process of delivering and understanding. The following are some of the board games created to increase the desire and understanding of learners in the field of engagement.

Gamification in Industry

According to Treher (2011), an individual without prior knowledge of the industries covered by a game to learn and maintain, can learn enough for a successful transition to employment in the industry through gamification, because they are "able to demonstrate a greater understanding of that business and its challenges compared to others who applied".

The PHARM game is played once a month in a facility and engineering section of about 1700 employees to show their employees the challenge of their business. The process of playing a lot of games makes them learn more about every process that happens. The game was created by Elizabeth Treher, CEO and President of The Learning Key.

Meanwhile, a global Fortune 200 company spends 80 hours reserved for training, but found out that they can half that amount when they include a board game. Preliminary training does not result in a measurable increase in the potential to use complex new process. However, 80 hours after the information that has been distilled into the game and the process described in the board, successful training was achieved. Games elements reinforced how the use of crucial processes and information is included, which leads to the ability to apply them to work tasks.

Gamification in Finance

Wi$eMoney is a game that teaches and enhances knowledge about basic financial education in a group and classroom setting that leads to a significant increase in student consciousness and understanding. The Wi$eMoney game can be entertaining to be played with family or friends, and players learn to face financial challenges while learning about real-life situations and personal money management. Wi$eMoney was designed for users aged 13 to 99+ and the average play time is between 30 to 60 minutes. Every team learns about key financial topics:
1. Banking and Investing
2. Budgeting and Payday
3. Financial Responsibility
4. Financing and Credit
5. Identity Protection

Research on Wi$eMoney with students aged 12 to 24 years and educators showed answers before the pre-game increased from 55% to 93% even without additional lessons. The game is a formative assessment useful for showing students and educators the need for reinforcement and additional learning on the fields. The discussion highlighted that when playing Wi$eMoney, it helped the player to think how to face the situation, take risks, and test the idea. Players do not only learn through games, but also learn through each other's interactions.

Gamification in Healthcare

Appropriate assessment and effective management of early and appropriate transfer of patients suffering from severe burns on their bodies has been shown to increase results. The Emergency Management of Severe Burns (EMSB) course was established to equip all emergency health care workers with a systematic and multidisciplinary approach to patients

with severe burns. The board game that they developed was with the aim of acting as a tool for learning and training to manage burn patients.

According to Whittam and Chow (2017), EMSB course is a course with a combination of theory and practical workshops to instruct healthcare professionals about the care of burn injury. Recently, educational board games have been developed with a content structure similar to the EMSB course, where the purpose is to increase knowledge in burn care. It is an educational game using instructional methods to help learners acquire knowledge and involve themselves in activities competitive with pre-set rules. The use of educational games is supported by the four principles of Knowles' theory of adult learning, namely:

1. Adults are autonomous and self-directed; game learning provides students with active learning can promote student independence.
2. Adults' past experiences become a resource for learning; games facilitate this process as feedback is given to learners by peers based on their past experiences.
3. Adults are goal-oriented; organised games with clearly defined elements assist adults to achieve their learning goals.
4. Adult learning is problem-centred rather than content-oriented; games allow learners to apply their knowledge in a situation that resembles real-life problems.

Board games in education has been used in several fields of medicine and allied health professionals' training and show an increase in knowledge, enjoyment, and interest of students in the field. Overall, The Burns Game and its experience use it as a learning tool among different staff groups at the Mersey Regional Burns Service. The purpose of the study was to assess whether The Burns Game could be utilized as an educational tool to increase knowledge and understanding in the burn in frontline multidisciplinary staff. The assessed assessors were eight young doctors, five nursing staff and one therapy staff. Five persons from all the participants have completed the course EMSB. Burn experience ranged from one month to 22 years. In addition, the improvements of knowledge in burn care.

Board Game Developed for this Study (Wordnary)

The board game developed for this study was Wordnary. This board game aims to enhance the players' general knowledge about worldwide knowledge based on the question given. The number of participants is between two to six players, with one referee and the board game type is intelligent.

After careful consideration and decisions made about the mechanics of this new board game, Wordnary was derived from a combination of "Scrabble" (a vocabulary based board game where players take turns in placing letters on a board to form words that are physically connected with each other) and a "snakes and ladders" board game (a chance based game where players take turns to move a board piece according to the roll of a dice, and depending where it lands, the piece either stays put, advances up a ladder, or regresses down a snake that has been drawn on the board). The mechanics of this game prototype is such that it combines the advantages of both types of gameplay and strategies associated with them. This is perhaps what makes this board game unique, as it was given recognition in several gamification competitions and events in 2018.

Tools for Wordnary are provided with a dice, some chess, game board, instruction book and question list, strategy card, marker and eraser (Figure 1). Wordnary is produced with 88

questions (Figure 2) from six general categories for every number in the grid on the board, and also five types of strategy cards (Figure 3).

The actual board game (Figure 4) has 100 grids which included one start point, one end point, 88 grids containing questions, and 10 blank squares. The strategy card allows players use the strategy indicated on the card and it can raise the chances of winning the game. In order to influence the game, the strategies that a player can use include roll the dice once, roll the dice twice, not need to answer, forward six steps, and forward 12 steps.

Meanwhile, a white board, marker pen, and eraser are used to write the answer and clear the white board. This board game not only increases and enhances knowledge, it can also sharpen the talent and skill to think about how much easier it is to win with a strategy card that is given. The board game allows for three types of users: administrators, teachers, and students.

Figure 1. The Wordnary game set

Figure 2. The question set.

Figure 3. Strategy cards.

Figure 4. The game board and grid.

Methodology

The increasing complexity of new technologies has affected the wider population, usability testing is increasingly relevant in the field of human-computer interaction (HCI) and user interface (UI) design. Product designers concentrate on improving usability test during the prototype phase to determine the design or implementation issues may prevent users from successfully interacting with the final product. According to Moreno-Ger, Torrente, Hsieh, and Lester (2012), prototype testing usability is very important when used by a heterogeneous population or populations that are not familiar to interact with new technology. In this sense, the fields of serious games provide a good example which should pay particular attention to usability issues. Serious educational games involve players in meaningful learning activities,

thus it is essential to assess the dimensions of learning effectualness, involvement, and design suitability for specific context and target audience.

There are various types of methods that can be used to evaluate for usability. As described by Macleod and Rengger (1993), these methods can be in general catalogued as (i) expert method, in which experienced evaluators determine potential pitfalls and usability issues, (ii) theoretical methods, in which theoretical models of tools and user conduct are contrast to forecast usability issues, and (iii) user methods, in which software prototypes are given to end users to interact.

The method that was selected for this study was user method and QUIS to collect data. There are two main approaches existing among user methods, which are observation in which a user interacts with the system while the developer observes, and survey-based methods, where the user will fill out an evaluation questionnaire after using the prototype. Questionnaires are also used when using expert methods and they are normally based on heuristic rules that assist determining potential issues. According to Harper and Norman (1993), the Questionnaire for User Interaction Satisfaction (QUIS) deals in terms more closely related with the technology (such as system capabilities, screen factors, and learning factors) with attention to demographics for selecting suitable audiences.

The most accurate approach is observational user methods when the goal is to determine specific issues that can prevent end users from interacting successfully with the prototype as it provides direct examples of how end users will use or endeavour to use the prototype. However, analysis of observations need a fully functional prototype and requires a large amount of observational data that need processing and analysis. There are several possible requirements to identifying some of the initial requirements for implementing a serious game usability test.

Test Users

It is necessary to have a set of users to test and evaluate prototype. The target audience users reflect the serious games in terms of age, gender, education, and other demographic features that may be unique or associated with the educational goals of the serious game. In terms of the number of test users, five users should be enough to detect 80% of the usability problems, with additional testers discovering a few additional problems (Virzi, 1992).

"Ready-to-Play" Prototype

"Ready-to-Play" prototype needs to be close to the end product as possible for test users to evaluate. The prototype must allow test users to experience the interface and also all the functions intended for interaction to simulate real game sessions, therefore, maximising the benefits of using usability tests. When the prototype cannot be fully implemented, the use of incomplete prototypes will not reflect the actual usage of the end product.

In a nutshell, usability testing approaches and instruments used in a variety of contexts is a mature field and all methods are valid and functional even if there are different types of outcomes. Observational user methods seem to be most relevant when objectively identifying design issues that have interrupted the user experience.

This study was conducted to determine the respondents' demographic profile in terms of age, gender, and semester. This study also determined the student perception toward board game Wordnary in education that can enhance knowledge toward STML students in Universiti

Utara Malaysia. It was also conducted to determine whether board game in education can increase learning intention and absorption of information by students.

A questionnaire was designed to collect information regarding to the demographic, student enhancement of knowledge, and impact using board games that can increase the learning intention and the absorption of information to students. The respondents are from School of Technology Management and Logistics (STML) students in Universiti Utara Malaysia. The questionnaire was generated using Google Forms and disseminated through the provided link.

The total number of students for STML was 1385. The minimum sample size calculator was used (https://www.surveysystem.com/sscalc.htm) to determine the sample size needed. Based on the website, 90 respondents were required as the minimum sample size.

Each respondent was required to answer all questions. There are 3 sections in the questionnaire, where section A collects demographic data, section B is about student perception toward board games, and section C is for collecting data related to suitability of board games suitable for education. There are 22 questions, eight in section A, six in section B, and eight in section C that need to be answered. Section A asks about age, semester, school, and gender, while in sections B and C, respondents need to answer using a five-point linear scale rank from "Strongly disagree = 1" to "Strongly agree = 5". The respondents consisted of students from the School of Technology Management and Logistics (STML).

Results

In this study, the quantitative method was used where data were obtained through an established questionnaire and disseminated to the target audience. In addition, the observation method was used during the process of playing, while asking for their views or opinions on the game. Data were obtained from 90 respondents in STML and eight random respondents in Universiti Utara Malaysia for the observation process. SPSS was used to analyse the data to determine the frequency analysis and reliability test.

Cronbach's alpha is the most commonly used for consistency internal (reliability) and is most commonly used when the question is in the questionnaire contains multiple Likert questions that make up the scale and the researcher wants to determine whether the scale is reliable. Firstly, reliability analysis was carried out after 90 responses were received from the respondents. It acted as a pre-test to see whether the overall items are reliable, free from error, and yield consistent results (Hussain, 2003).

The results showed that the Cronbach's Alpha for the total overall 14 Likert question measure is high at 0.943. The closer the coefficient of reliability is to 1.0, the better. According to Sekaran and Bougie (2019), reliability less than 0.6 is considered to be poor, those in the 0.7 is range, acceptable and those over 0.8 are good. The total overall result exceeds the reliable level, so the instrument or questionnaire established is considered reliable for this study.

Demographic Results (Section A)

The percentage of female answering the questionnaire was greater than the percentage of males, where 71.7% were female. Meanwhile, regarding the respondent age, 4.3% were 19 years old, 5.4% were 20 years old, 13% were 21 years old, 40.2% were 22 years old, 25% were 23 years old, and 12% were 24 years old and above. Respondents aged 22 years old were the most among 90 respondents. Among the 90 students, it was also revealed that there was one

respondent from first semester, 6.5% from second semester, 8.6% third and fourth semester respectively, 10.9% from fifth semester, 7.6% from sixth semester, and 63% from seventh semester and above. It was revealed that the majority of respondents had the following characteristics in relation to board games: 45.7% of respondents play one to six times a year, 47.8% prefer math management and skill games, 57.6% feel happy when playing board games, and 45.7% like both dice and move forward board games.

Student Perception of Board Games

This section presents the results for the student perception toward board games. Table 2 shows the highlights of the results for section B questions.

Table 2
Highest Response from Section B (Student Perception of Board Games)

Item	Highest Response	%
Gaming is a social occasion. I like spending quality time with my friends and/or family	Somewhat Agree	53.30
I like building my empire/city/business and watching it grow	Somewhat Agree	55.40
I like admiring the aesthetics (artwork) of the game	Somewhat Agree	55.40
I like collaborating and working with other players	Somewhat Agree	59.80
I like the satisfaction of knowing that my moves/ strategy are better than the other players	Somewhat Agree	54.30
I like screwing over/backstabbing co-players when they least expect it	Somewhat Agree	47.80

Type of Suitability of Board Games for Education

This section describes the results for section C which reveals the respondents' answer to question items relating suitable board games for education. Table 3 provides the summary.

Table 3
Highest Response from Section C (Suitability of Board Games for Education)

Item	Highest Response	%
Learning by playing a board game can increase students' interest in learning	Somewhat Agree	53.30
The board game in education can increase the learning intention and the absorption of information to students	Somewhat Agree	55.40
Good questions, problems to solve, and situations to consider allow players to think through and apply what they learn	Somewhat Agree	60.90

Many subject or industry need to create and use a board game about their field to make student more understand and interesting	Somewhat Agree	60.90
The knowledge is easily accepted by students as they are fun and motivated to learn	Somewhat Agree	56.50
The attention and focus of the student can be fully obtained if educators use the game board wisely	Somewhat Agree	55.40
Board game created can be a tool for users to learn and expand their skills and knowledge on general knowledge and concepts	Somewhat Agree	55.40
Student more like to learn using method or technique that is more advanced than using traditional methods	Somewhat Agree	52.20

Discussion

The results showed that the respondents in this study were in the somewhat in agreement level of confidence in answering all the questions relating to their perception to board games and the suitability of board games in education. Even though today's digital age commands an strong presence in our daily lives, it is refreshing to see that the future generations feel that board games perhaps can still play an important role in imparting knowledge and lessons.

Almost all respondents said that after playing this board game, they acquired new knowledge and experience in playing. They also know much basic and worldwide information based on the questions given to them during playing this game. In addition, they also learned to spell difficult words and through this they discovered their strengths and weaknesses. By playing the board game, they can learn and process the absorption of information easier because they are happy and enjoy playing while learning, without much stress. Relationships become more familiar and closer as they help each other during the process of playing, because this game aims for learning and knowledge, instead of solely for victory.

This feeling of enjoying the game and time together, is part of the explanation provided by McGonigal (2011), who described the science behind why games make us better. McGonical showcased that games make us and the whole world happier, more creative, and resilient, and able to handle change better. She also pointed out, that different people like different games, but she is adamant that the future will belong to those who can play, understand, and design games.

Similarly, according to (Boycott-Owen, 2018), more and more people turn marathon gaming session alone in a dark room for a social board game fun. This is supported by their statement, "while the Internet is a great thing, sitting down and playing with friends and family is becoming increasingly important. Having time away from our phones and computers where we can talk, play and enjoy time together is something board games let us do". It is becoming part of the new trend—from books to vinyl—where there is evidence of growing interest in the "real thing" rather than the digital versions. It is also an interest that can be shared across generations.

Also, for the question "What percentage would you give in returning to play this board game after improvements/enhancements have been made?", all the respondents remarked an average of 93% that they would return to play an improved version of the board game prototype. This was indicative that perhaps board games, although going against the grain in

this day and age of digital devices, are still relevant and applicable to be used as a tool to assist in the development of both children and adults alike in terms of learning new knowledge and skills, and providing a fun and rich experience during the process.

Conclusion

The learning process is usually carried out in classrooms where instructors will teach in front of students who will learn through what they hear. Normally, anything one hears and sees, but not practice, it would be easy to forget. According to (Moore, 2018), Chinese Proverb has an inspirational saying in relation to this, which is "when I hear I forget, when I see I remember, and when I do, I learn", and "tell me and I'll forget; show me and I may remember; involve me and I'll understand". According to Anderson and Rainie (2012), there results split among experts about the scope and power of gamification trend, especially those in other than the digital form, which is more popular these days, especially in the younger generation. From their study, about 53% of respondents in their survey said the use of game mechanics, feedback loops, and rewards to promote interaction and increase engagement, loyalty, excitement and/or learning will continue to be between now and 2020, and beyond.

From this study, it was revealed that gamification is a potentially useful tool when integrated with the learning activities of students, whether it is inside or outside the classroom. Moreover, even though most gamification implementation is more in the more widely used digitised form, there is still perhaps room for other forms of gamification tools, such as the board game covered in this study. The board game needs to incorporate several key elements, such as challenge, strategy, player interaction, collaboration, and others, in order to attract and maintain the player's attention to provide a rich experience for learning.

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Assessing Program Learning Outcomes of Creative Industry Management Undergraduate Program

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Abstract

Outcome Based Education (OBE) is an educational theory which focuses on the process of an individual upon enrolling to an educational program; and throughout one educational experience, certain specified outcomes must be achieved at stages. The Program Learning Outcome (PLO) is being assessed soon after an individual student finishes a program and to indicate one personal achievement of learning at the time of leaving the higher learning institution. This study describes the evaluation of PLO for Bachelor of Creative Industry Management with Honours (BCIM) undergraduate program. Collecting data from three consecutive years, this study gathered 120 responses from 2017 till 2019 using questionnaire which its items derived from the statements of the PLO. It is found that students agreed that they have achieved all PLOs. However, the analysis of each PLO shows that majority PLO have a slight drop of mean values in 2019. The findings, together with those findings of few other surveys, would be used for the curriculum review towards improving the undergraduate program.

Keywords: Outcome based education, Program learning outcomes, Exit survey, Creative industry management, Undergraduate program.

Introduction

Outcome Based Education (OBE) is an educational theory which focuses on the process of an individual upon enrolling to an educational program; and throughout one educational experience, certain specified outcomes must be achieved at stages. Thus, learning outcomes must be specific, observable and measurable, so that at the end of the stipulated course or program, achievement can be quantifiable and reported. Any outcomes which cannot be attained may have curriculum or delivery of teaching or method of assessments be resorted to be improved.

Stemmed from the national policy on creative industries or better known as *Dasar Industri Kreatif Negara* (DIKN) (Kementerian Penerangan, Komunikasi & Kebudayaan, 2010), Bachelor of Creative Industry Management (BCIM) is established in the pursuit of producing think tank as well as top and middle managers of the creative industries. DIKN covers a wide spectrum of creative industries such as creative multimedia, cultural heritage and arts based on local values and inspiration.

The establishment of the program has followed meticulous procedure of quality assurance by Malaysia Qualification Agency (MQA) and it managed to gain full accreditation

by MQA in 2016. The strength of the programme is the twinning of management skills and technical skills in the curriculum. At the midst of the program, one must choose an elective out of four creative industries: animation production management, film production management, interactive media production management, and music production management. Therefore, this study is impetus to determine the assessment of the PLO as perceived by graduating students.

Theory

Spady and Marshall (1991) defined OBE as a transitional approach in the education system primarily concerned with the students' capabilities upon graduation and focuses curriculum and assessments design around higher-order exit outcomes. It is a shift from the traditional approach where the emphasis is on inputs and resources to an outcome-based system maximizing the students' performance capabilities (Spady, 1994).

The OBE has gained international adoption with the establishment of The Washington Accord in 1989 whereby the signatory countries including Malaysia must be responsible for accrediting professional engineering degree programs. Each of the signatory countries mutually recognizes the substantial equivalency of programs accredited by these bodies based on accreditation criteria, policies and procedures that are substantially equivalent (Basri, Che Man, Wan Badaruzzaman, & Nor, 2004). As recent signatory of Sydney Accord and Dublin Accord in 2018, Malaysia through her Board of Engineers Malaysia (BEM) has gained another international recognition in providing quality engineering technology education (Board of Engineers Malaysia, 2018, June 27). This implies that graduates of those BEM-accredited programs may enter international profession as they are considered as industry-ready hence it will increase the employment rate of the graduates. Those programs are heavily driven by OBE which the Continual Quality Improvement (CQI) culture is the central focus (Board of Engineers Malaysia, 2018).

In Malaysia, OBE is the prime criteria for engineering accreditation, whereby Engineering Accreditation Council (EAC) require the implementation of OBE in engineering education sector. Starting from year 2004, all the engineering programmes in Malaysia have been instructed to adopt OBE by the EAC as a part of the requirement for Board of Engineers Malaysia (BEM) to be a full member of the Washington Accord. This act is to ensure that the engineering degree produced by the Malaysian universities would be recognized by the Washington Accord member, such as United States, United Kingdom, Australia, South Africa and other countries (Shahrir, et al., 2008).

Later, in year 2010, OBE was also introduced and piloted in disciplines of sciences and technology, social sciences and humanities in many universities in Malaysia as parallel with the Ministry of Higher Education reform policy and Malaysian Quality Assurance of higher education. Tang Howe Eng et al. (2012) shows the assessment on implementation of OBE on technology innovation at the course level in Universiti Teknologi MARA, considering the generated report on OBE grade score, class size and semester of all OBE course codes offered.

Measuring Program Learning Outcomes

The OBE assessment typically includes the Course Learning Outcomes (CLO) which normally being assessed during the semester, the Program Learning Outcomes (PLO) which being assessed at the end of the program duration of study, and the Program Educational

Objectives (PEO) which being assessed after three to five years of graduation. PLO describes what individuals are expected to know and be able to demonstrate by the time of graduation. These typically relate to the skills, knowledge and behaviours that students acquire as they progress through the program.

Among others, employers' demand for communication or interpersonal skills was centered on the issues of graduate abilities to perform good communication skills either horizontally or vertically, within and outside organization (Omar, Manaf, Mohd, Arena, Kassim, Khairani, & Aziz, 2012). Having decided what are the key things students should understand and be able to do or the qualities they should develop, both structures and curricula are designed to achieve those capabilities or qualities. The designing process involves restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of high order learning and mastery rather than accumulation of course credits.

The PLO of BCIM as listed in Table 1 are derived from its program aim which is to produce graduates with competitive knowledge, principles and skills in term of theoretical and practical foundation for managing and enhancing creative industries.

Table 1.
Program Learning Outcomes for Cohort 2017 – 2019

No	Program Learning Outcomes
1	Apply the knowledge and understanding of creative industries management concepts, theories, and practices in accordance to the needs of the global industries.
2	Practice the skills of planning, designing, implementing, and evaluating of creative production management.
3	Exhibit good values and be responsible to the society through practices of creative production.
4	Demonstrate professionalism through positive attitudes and ethics towards society and organisation.
5	Demonstrate the ability to work competitively across culture, communicate effectively and corporate as a team in sustaining global challenges.
6	Use critical and scientific thinking to manage creative content.
7	Utilize appropriate entrepreneurial skill to secure business and management opportunities in creative industries, through integration of the relevance technology.
8	Participate in lifelong learning, career advancement activities, and keep up to date with knowledge of emerging creative technology.
9	Portray leadership, accountability and integrity in exercising management, problem solving and decision-making skills.

The achievement of the PLO is measured by using any of these methods: (i) the linking of PLO with CLO which could be measured directly using course assessments as reported in the evaluation of eight courses for electronic engineering program at Universiti Kebangsaan Malaysia (Hamimi Fadziati et al., 2011), and (ii) through the survey of graduating students or known as exit survey or indirect measurements. This article describes the latter.

Methodology

The exit survey is conducted upon BCIM graduating students of three consecutive years: 2017, 2018, and 2019. The questionnaire consists of four sections namely demographics, achievement of PLO, graduate employability, and student experience. The questionnaire is available online (https://tinyurl.com/SCIMPAexitsurvey) which acquires less than 20 minutes to fill up. Table 1 lists items related to the PLO section that begins with the phrase "Please indicate the degree to which you agree with the following: My MAJOR/PROGRAM provided an education that:"

Table 2.
Items for Program Learning Outcomes

PLO	Item
1	Demanded a satisfactory level of rigor (academic challenges)
2	Applied theoretical knowledge to practical situations
3	Helped me understand current issues and trends in the field
4	Helped me develop professional ethics
5a	Developed my oral communication skills
5b	Developed my written communication skills
6	Developed my critical thinking skills
7a	Prepared me for further education and/or a career
7b	Helped me develop strong leadership skills
8	Helped me function as an independent learner
9	Helped me learn to function effectively as a member of a team

The response scale used in this study is four Likert scale that is 1: strongly disagree to 4: strongly agree. Responses are tabulated and coded using statistical tools prior to the use of descriptive statistics for data analysis. The set of questions was validated during a focus group discussion consists of at least three (3) senior members of the school.

Initially, the survey was conducted inside the waiting room prior to their convocation ceremony. As the responses were not encouraging, in 2019, it is decided that the survey is conducted soon after their internship as they need to be on campus presenting their internship projects to their academic supervisors.

Results and Discussion

Respondents are 120 graduating students from Bachelor of Creative Industry

Management (BCIM) programme. Taken from 2017 till 2019, Table 2 depicts the percentage of responses according to graduating year.

Table 2.
Responses by Graduating Year

Graduating Year	Total Students	Frequency of Responses	Percentage
2017	53	27	50.94
2018	73	37	50.68
2019	63	56	88.89
Total	189	120	63.49

The percentages of responses are ranging from 50.68% in 2017 to 88.89% in 2019 which indicate a good representation of the population. On another note, graduating students in 2019 is the first intake by interview which one, among other requirements, must possess creative talent or prior experience in creative tasks or projects.

As we did not collect prior academic background in the study, our admission record shows that generally our students have Sijil Tinggi Persekolahan Malaysia (STPM) which is the highest examination certification in Malaysian education system. Only a minority has Diploma degree or from the Matriculation system. The admission to this programme is only once a year, with a maximum of 80 students per intake. The students are required to complete 123 credit hours in order to graduate and normally it takes 3.5 years for them to complete this program.

Achievements of Program Learning Outcomes

The achievement of the PLO for three graduating years is depicted in Figure 1. The mean values are plotted against each PLO to indicate the achievement level.
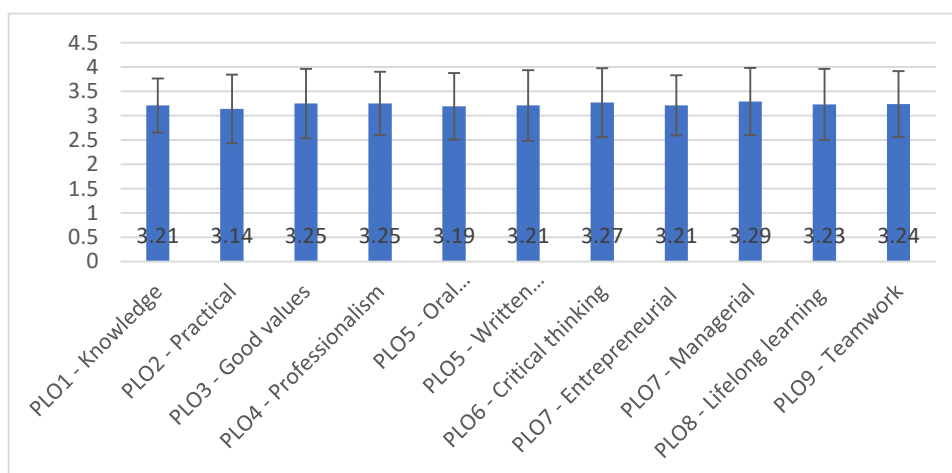
Figure 1. Mean Values against Program Learning Outcomes

From Figure 1, it is found that PLO7 on managerial skills has achieved the highest score (mean=3.29, s.d.=.691) which is anticipated as this upholds the niche of university. However, PLO2 on practical skills has the lowest score. It is likely due to the minimum number of equipment available for students to use during their practical sessions.

Further analysis was conducted to determine the achievement for each PLO. Figure 2 depicts the results for PLO1 to PLO3. For PLO1, it is found that graduating students agreed that they have acquired adequate knowledge related to creative industry management. In 2018, the mean value has increased (mean=3.24, s.d.=0.475) but slightly drop (mean=3.2, s.d.=.624) the following year as shown in Figure 2(a). This pattern of fluctuation is also similar to PLO2 as in Figure 2(b) which students agreed they have acquired certain practical skills, but the value is quite worrying as it is at the border (mean=3.04, s.d.=.824). Students agreed that they also have acquired social skills (PLO3) and correct attitude (PLO4) to pursue their career in the industry although significant drop has occurred in 2019 for the achievement of both PLOs as illustrated in Figure 2(c) and 2(d) respectively.

(a) Achievement of PLO1 Knowledge

(b) Achievement of PLO2 Practical Skills

(c) Achievement of PLO3 Social Skills

(d) Achievement of PLO4 Attitude
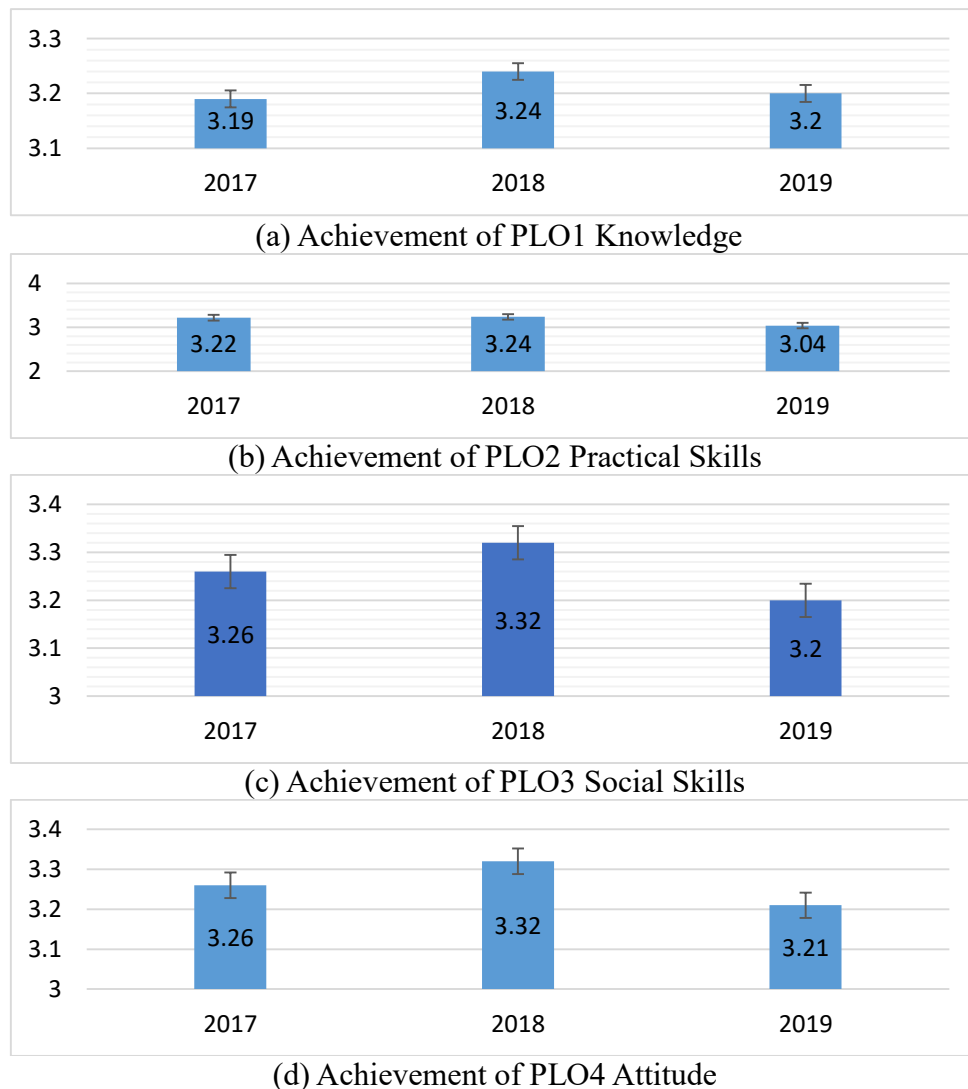
Figure 2. Achievement on Knowledge, Practical, Social Skills and Attitude

For PLO5 on communication, we did split the items into oral and written communication. Both oral and written communication depict the similar pattern. This implies that students agreed they have acquired oral and written communication skills, but there is a small drop in 2019 (mean=3.11, s.d.=.789; mean=3.18, s.d.=.879).

(a) Achievement of PLO5 Oral Communication

(b) Achievement of PLO5 Written Communication

(c) Achievement of PLO6 Critical Thinking
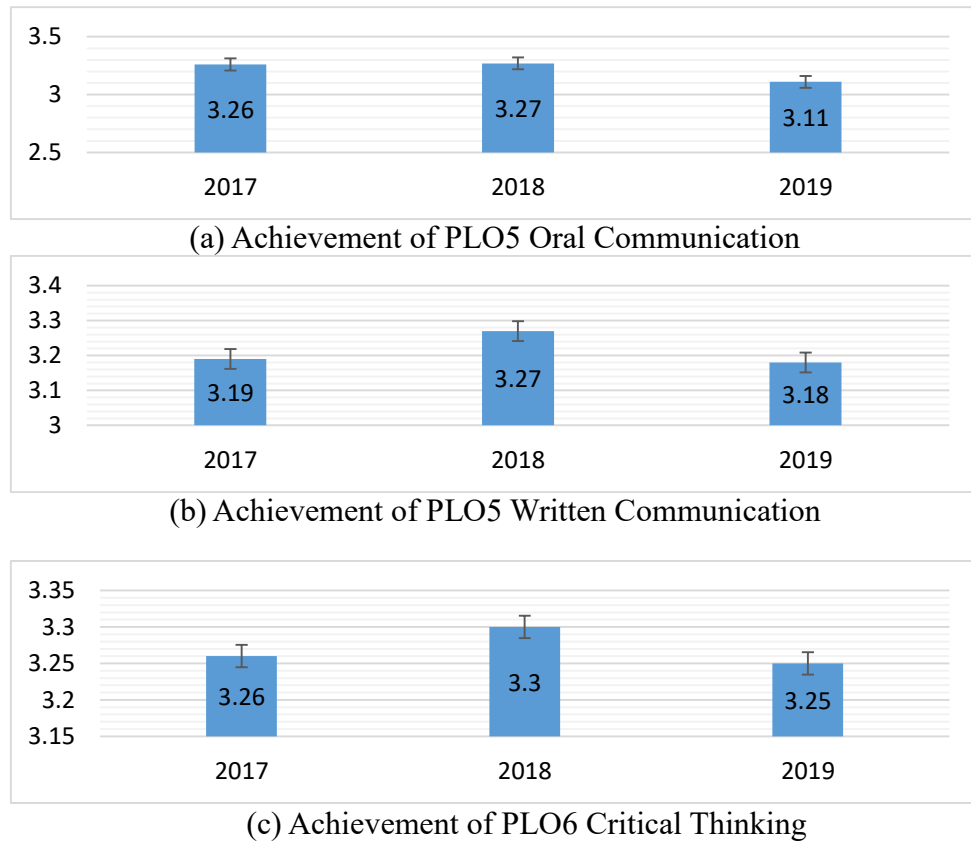
Figure 3. Achievement on Communication and Critical Thinking/Problem Solving

Figure 3(c) shows that students agreed on their ability to demonstrate critical thinking (PLO6) though it is experiencing a slight drop in 2019 (mean=3.29, s.d.=.810).

In Figure 4(a) and (b), for entrepreneurial skills and managerial skills (PLO7), students agreed that they have possessed adequate skills. However, entrepreneurial skills have slightly drop in 2019 (mean=3.16, s.d.=.724) while managerial skills show contrast pattern of slowly decreasing.

On lifelong learning (PLO8), students also agreed that they can pursue their studies as shown in Figure 4(c). Mean values (mean=3.18, s.d.=.765) for teamwork (PLO9) also indicate students agreed that they have developed teamwork skills during their studies.

Limitations

This survey covered only 63.49% of graduating students. The role of academic supervisors is pertinent in making sure graduating students fill up the survey upon practicum project presentation.

This survey is also based on the perception of graduating students. Hence, it warrants further studies to investigate on the achievement of program educational objectives (PEO) after

three to five years of graduation.

(a) Achievement of PLO7 Entrepreneurial Skills

(b) Achievement of PLO7 Managerial Skills

(c) Achievement of PLO8 Lifelong Learning

(d) Achievement of PLO9 Teamwork
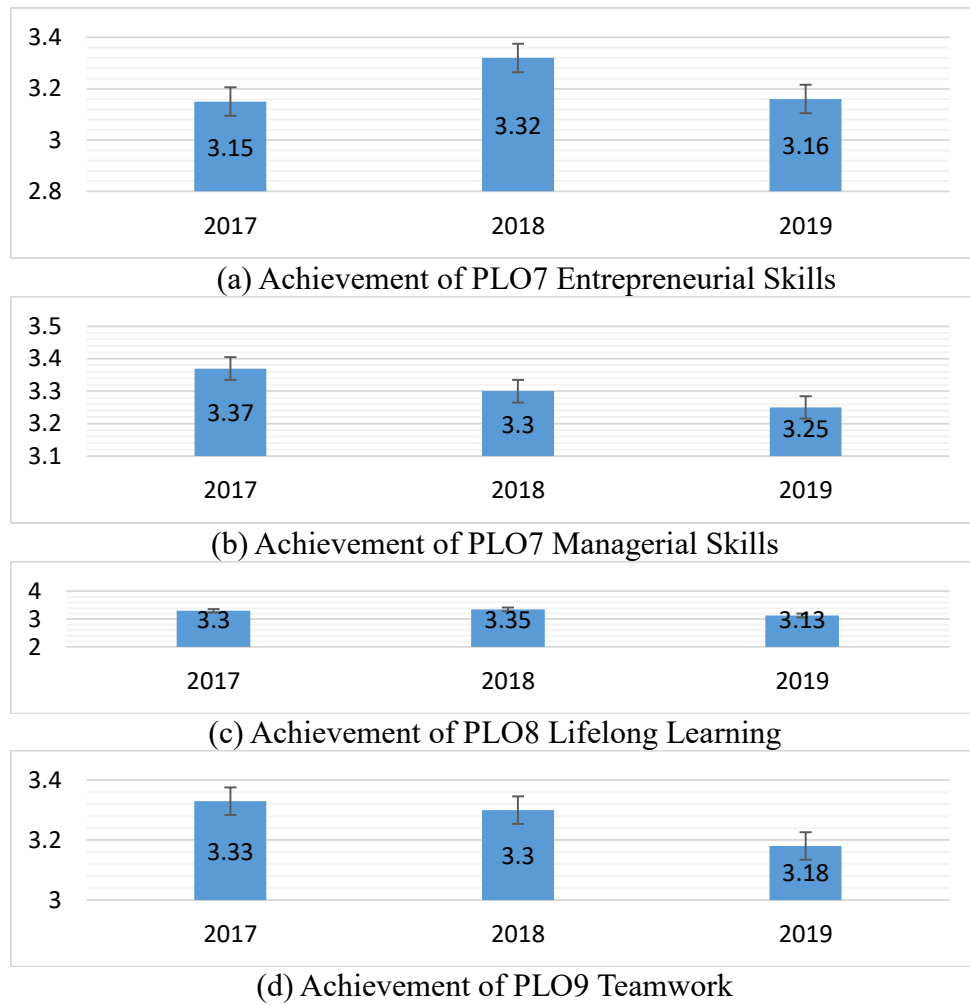
Figure 4. Achievement on Entrepreneurial and Managerial Skills, Lifelong Learning and Teamwork

Recommendation

This survey is also based on the perception of graduating students. Hence, it warrants further studies to investigate on the achievement of PEO after three to five years of graduation.

Conclusion

This article discusses on the achievement of PLO of BCIM programme for graduating students 2017 till 2019. The findings, among others, are heavily considered in the curriculum review process. This exit survey shows that, in overall, graduating students agreed they have achieved the PLO of the program.

The achievement of PLO on managerial skills is the highest. This represents the niche of our students in managing the creative industry. The achievement of PLO on practical skills is the lowest hence needs intervention. This has been improved as acquisition of equipment has

taken place and sponsors are generously donated a handful of equipment for teaching and learning. However, the maintenance of these equipment must also be considered and regularly scheduled. Apart from that, the following are the proposed solutions:

Proposed Solution 1: Increase the focus of assessment on practical skills. (Immediate effect for subsequent semester)

Proposed Solution 2: Employ integrated project-based learning (heavily hands-on) during their FYP.

Proposed Solution 3: Provide easy access to ample resources (equipment, facilities) (Upgrading is in progress)

The achievement of individual PLO has a slight increase in 2018 but then slightly drop in 2019. We did stop taking February admission intake, hence lack of students with relevant background enrolled to our program. However, the relationship between academic background and achievement of PLO warrants further research. Although managerial skills shows a high score, the achievement of this PLO has not increased over the years. Thus, applying an integrated project-based learning during the program, is one of the proposed solutions to increase managerial skills.

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Empowering Teaching with E-Learning Technologies: The Case of Using Classroom Screen, Padlet, and Kahoot! Applications

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Abstract

In modern education, assisting students in higher learning institutions to take controls on their learning and be responsible of their education has been a focus of every lecturer. With the rapid growth of technology-assisted learning and teaching, students can take ownership of their learning and be excited by their education. In this paper, we analysed the usage of three different types of applications namely, ClassroomScreen, Padlet, and Kahoot!. All these three applications were applied for different purposes. Classroom Screen was used to highlight the activities and overview of how the class is to be conducted, Padlet was used to get participation from the class on the posted question and Kahoot! was used for a game related to the output of that day's lesson. Data was collected from a single class consists of 27 accounting information systems students in their third and final year. The results revealed that all students were happy with the use of the three applications in that day's lesson.

Keywords: E-learning, technology, accounting information systems, information systems, education, audit, classroom

Introduction

In modern education, assisting students in higher learning institutions to take controls on their learning and be responsible of their education has been a focus of every lecturer. With the rapid growth of technology-assisted learning and teaching, students can take ownership of their learning and be excited by their education.

The Malaysian Education Blueprint 2013-2025, under Ministry Transformation chapter, has incorporated ICT in education to ensure that students is able to not only use the ICT, but to leverage the ICT effectively in enhancing their learning. However, the effective implementation can be derived from a good infrastructure to support the application used in classroom. As for the new generations' students, Generation Y and Z, lecturers' role as a one-dimensional teacher has been transformed to facilitators, instructors, and moderators. The students, on the other hand, needs to be creative and become the knowledge creator and not the knowledge recipients only (NST, 2018). Therefore, the assistance from the technology on this transformation is a must to ensure the process can be effectively adapted to fit the unique change needs of every classroom.

This paper highlighted the usage of three different types of applications namely, ClassroomScreen, Padlet, and Kahoot! in a classroom. Based on TPACK framework (Mirsha and Koehler, 2006), these three applications were used for different purposes and class activities. ClassroomScreen was used to highlight the activities and overview of how the class will be conducted, Padlet was used to get participation from the class on the posted question

and Kahoot! was used for a game related to the output of that day's lesson.

Figure 1 shows the TPACK framework which consists of technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). Another three knowledge included is (i) technological pedagogical knowledge (TPK) which describes the interactions between technological tools and pedagogical practices, (ii) pedagogical content knowledge (PCK) which describes the pedagogical practices and specific learning objectives, and (iii) technological content knowledge (TCK) which describes relationships technologies and learning objectives.
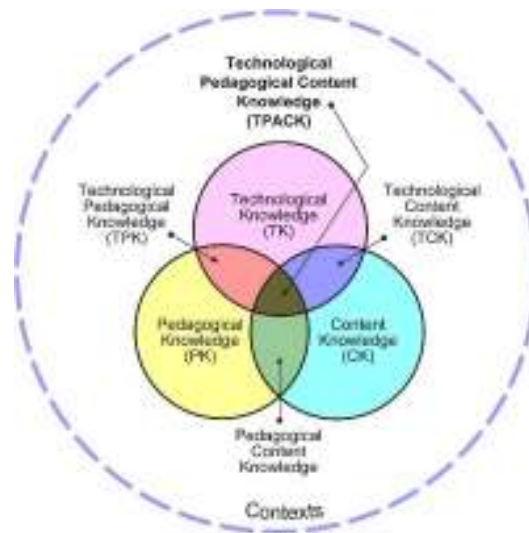
Figure 1. TPACK Framework (Mirsha and Koehler, 2006)

This paper is organized as follows. Next section will present the literature review which discusses related studies that have been conducted. Next, the methodology on how the data was collected is presented followed by the findings section that shows the students' engagement in class when e-learning technologies are employed. Finally, discussion and conclusion section will conclude this paper.

Literature Review

There are various e-learning tools and applications that have been used successfully in classroom to enhance the students' learning process as well as the lecturers' teaching process. Among others is ClassroomScreen application, as shown in Figure 2, which is a simple tool to manage the classroom resources and facilitate class discussion, display information and do exit polls at the end of the class. ClassroomScreen includes variety of useful widgets such as language, timer, clock display, QR Code, random name or dice, drawing, work symbols and many more. However, as this study is concern, very few researches have employed ClassroomScreen as their preferred tool.

Figure 2. ClassroomScreen main page

Another application that has been used widely to increase student engagement in classroom is Padlet. Padlet is a free web 2.0 tool to maintain student interaction and collaborative learning as shown in Figure 3.

Figure 3. Padlet dashboard

A quantitative study conducted by Dewitt, Alias and Siraj (2015) on the usability of Padlet for constructing new knowledge via an online debate among forty students on the use of computers in higher learning institutions. The findings suggested that Padlet could be used to generate new ideas. In another study, Kimura (2017) examined the use of Padlet to motivate students in taking ownership of their learning. Data was collected from 15 secondary school students, aged between 14 and 15 years old. The findings suggested that students achieve better learning outcomes when using learning softwares such as Padlet. Furthermore, it was found that Padlet is a tool that highly motivates students to connect the use of technology with the

content of class.

Padlet also has been used in studies to improve writing skill. A study conducted by Lestari (2017) that aimed to investigate whether teaching and learning process in writing by using Padlet can improve students writing English skill. Data was collected via observation, interviews, and writing test of third semester students of Primary Education Department. Results suggested that Padlet can be implemented as online writing practices to improve students writing skills and the Padlet's wall can stimulate students to explore idea as videos and photos can be uploaded to support writing.

Apart of Padlet, Kahoot! also has been used to create students' engagement and active learning in classroom. Kahoot!, as shown in figure 4 below is one of a popular free online learning tool to create student engagement that has gained wide acceptance globally with more than 30 million users worldwide (Plump and LaRosa, 2017).
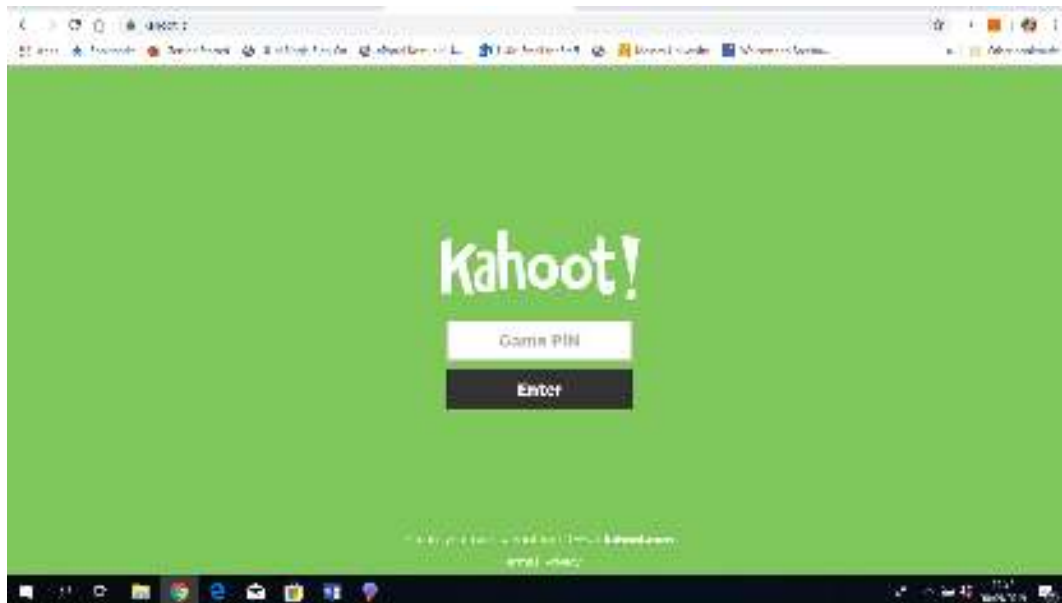
Figure 4. Kahoot! Game

A study conducted by Plump and LaRosa (2017) on student interest of using Kahoot! in classroom. Data was collected via survey with 139 undergraduates and postgraduates in 2015/2016 academic year. Results showed that 100 percent agreed that using Kahoot! has made the class more interactive, 98.2 percent showed that they enjoyed playing, and 86.5 percent agreed that Kahoot! helped them to understand more on conceptual topic. In another study, Bicen and Siney (2018) conducted a quantitative study to determine the gamification method that increased the interest of students in class where the study employed Kahoot! as the gamification tools. Data was collected from 65 undergraduate students of Department of Preschool Teaching. The findings revealed that gamification approach in classroom increase not only the interest of students but also increases the student ambitions for success. In addition, the study suggested that the Kahoot! can be used effectively for gamification of lessons.

The previous studies discussed above revealed that each study only employed one application to increase the students' engagement and active participation in classroom. This study, however, employed three applications for a different purpose, in a single classroom to increase the students' engagement and interest.

Methodology

Data was collected from a single class lesson which consists of 27 accounting information systems students in their third and final year of the 2019/2020 academic calendar at Universiti Utara Malaysia, Malaysia. At the beginning of the class, the students were informed that the class will be conducted using three different applications to manage and support the class activities, namely, ClassroomScreen, Padlet, and Kahoot. The class started by asking each students to introduce themselves face-to-face. Then, the lecturer log in to ClassroomScreen created earlier to show the activities on that day. The lecturer introduced the ClassroomScreen functions and widgets available in the applications. As for that day's class, the widgets used were clock display, QR code, text, and sign mode. Later, the students are required to scan the QR code to open the link to Padlet application that has been set up earlier. Students need to write about themselves. The discussion of what has been written in Text widgets was then took place. At the end of the activity, Kahoot! game application which consists of five questions was used to test their knowledge and understanding discussed in that class. Before the students left for another class, the students were asked to rate their thought of how the class was handled using the three applications.

Analysis and Findings

This section presents the findings of each applications used in this study.

1)   ***Classroom Activity Guide***

The class activity on that day was guide by ClassroomScreen application. The tabs that were used for the analysis were clock to show the time, the QR code to open the link for the activities conducted on that day, task for the students, and the sign how each activities should be conducted either working together with friends, of working alone in a silence mode.

Figure 5. List of activities using Classroom Screen application

Figure 5 above shows the time of the class which is 10.24 am. Besides the time, there were two QR codes which shows that that were two files or applications that need to be run. The first QR code relates to the Padlet application on self-introduction, and the other QR code will open up the Kahoot game application. In addition, three tasks that the students need to prepare for next class. The activity mode during the findings was taken is a working together mode.

2) *Self-Introduction Activity*

At the beginning of the class, the students were required to introduce themselves. They had the opportunity to tell anything they wish to say about themselves. Majority students gave their name and their semester of studies only. Then, the students were required to write about themselves using Padlet application that has been setup earlier by the lecturer. It could be seen that students wrote more than name and semester of studies, which they also include their hobbies, special interest, hometown, hope for the class and even their photos.

3) *Students Formation*

Based on the mode shown in the Classroom Screen, the students should work together.

4) *Testing Understanding on Today's Class*

At the end of the class, the students' understanding on that day class content were tested using Kahoot! application. Figure 8 below shows all students registered as players using their nickname.

Figure 8. Students' Nickname as Registered in Kahoot! Game

The students were given five questions. The score were given based on how fast the students can answered correctly. After each questions, the correct answer will be presented. The students will know whether they answered correctly. The discussion of after each answer will takes place and students may ask questions related to each question and answer. Then, the score of each students was presented. The three highest score for all the questions were presented after the last question which marks the three winners as shown in figure 9 below.

Figure 9. Winners of Kahoot! game

5)   *Summary of using technology in class*

The summary of how the students thought of the class being conducted using technology were rated before the students end. Each students need to give their rate based on the colour. The results in figure 10 shows that all students were really enjoy and satisfied with how the class being conducted on that day using technology generally, and e-learning specifically.

Figure 10. Exit poll on usage of technology in class using ClassroomScreen, Padlet, and Kahoot!

Discussion and Conclusion

Based on the students' feedback at the end of the class, it shows that students were really enjoyed when the class is integrated with technology. This is in line with the study conducted by Plump and LaRosa (2018) where more than 90 percent students felt the enjoyment when the class is integrated with Kahoot! application. When there is an enjoyment, the motivation of the students to success is higher as compared to students who did not enjoy in class. This result is in line with many studies where pleasant emotions (enjoyment) are positively related to motivation and performance (Pekrun, 2006). Therefore, pleasant emotions are very much important in life-long learning process in today's world to create the knowledge-based society.

Apart of the above, through lecturer's observation during class revealed that the students try their very best to adhere to the sign as presented on the screen. When the sign shows a silence mode, the students immediately stop discussing and asked their friends to do the same When the sign changed to working together, they started to discuss and move around the class which shows the active participation from the students have taken place.

This paper highlighted the usage of ClassroomScreen, Padlet, and Kahoot! applications in a single classroom. The results shown were based on the lecturer's observation and the exit poll made by students only. Therefore, in future, a comprehensive and systematic data collection could be performed to get a robust understanding on the effectiveness of these three applications in enhancing the students' engagement and active participation in class.

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Exploring the Factors Affecting the Continuance Intention of Massive Open Online Courses

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Abstract

Nowadays, the Malaysian higher education intuitions are being encouraged to start implementing e-learning with the fast growth in the technology and internet availability in most universities. They include online learning, web-based learning, distributed learning, and virtual learning. Instead, the technology of Web 2.0 enables interactive learning environment and supporting with media richness for education such Massive Open Online Learning (MOOC). The purpose of this study is to investigate the influence of social influence, self-efficacy and perceived ease of use towards of MOOCs' continuance usage among undergraduate student. The Theory of Planned Behavior (TPB) and Technology of Acceptance Model (TAM) were extended to develop a research model. A survey was conducted with 250 questionnaires administered to students who had been assigned MOOCs. The results revealed that social influence, self-efficacy and perceived ease of use have a strong significant influence towards MOOCs' continuance intention. The findings conclude that the higher learning institutions must have a clear policy on implementation and resources in place to promote the use of MOOCs. In addition, the computer skills program shall be part of educational curriculum at all program in university. The findings of this study may useful for understanding students' continuity of MOOCs and online education from Malaysian perspective and contributes to the related literature discovering new findings.

Keywords: MOOCs, e-learning, continuance intention, social influence, self-efficacy, PEOU.

Introduction

The intensity of technology has drastically change of education paradigms which give the freedom to anybody to assess the education resources based on online platform. Massive Open Online Courses (MOOCs) is online course as one of technology evolution in education for teaching and learning activities. MOOCs have experienced gained popularity in educational system over the world. The first cooperation between European Commission and European Association of Distance Teaching Universities (EADTU) have introduced OpenupEd on 2013. This education platform was developed through open up education that assist student to learned with extensive of society (Education, 2015). Initially, this project mainly focused in European countries by the availability of e-learning (Learning Management System) in higher education.

Nowadays, the younger generations are being exposed with technology gadgets of smartphone, desktops and tablets for program of study since in primary school. Malaysia There are numbers of online educational systems are available in Malaysia education system such as Smart School, MOOC, Frog Virtual Learning Environment, e-tuition, Focus-A, Score-A etc.

Furthermore, new technology of Web 2.0 tools and social media such as YouTube, Udemy, Slideshare, Scribd, Flickr, Pinterest, Scoop it and Wikispaces are several platforms being used by most leaners in education (Tariq, Ishak, & Mohd Nafi, 2018). Schuwer and Jansen (2015) highlighted that USA colleagues less involved in MOOCs contrast European institutions where better overview for values in enhance the positive through experiences and attitude to MOOCs. Siemens (2005) led cMOOCs as a new terms MOOCs that created the connectivist educational which aim to motive in sharing wide-ranging ideas in the world. The MOOCs networks will link to another people based on learning whereas digital program that education communities which offer student to form own networks via wikis, blogs, Google groups and included social media such as twitter and Facebook. Thus, it more focused to discussions and experiences on learning. XMOOC as other new term MOOCs was typically the traditional learning with organized such set of assessments, tests or quizzes and pre-recorded video by lectures to amenities. The purpose of cMOOC and xMOOC are offering an open education for public. Moreover, the revolution of MOOC was motivated the cooperation among institutions to international where enhance open education as new method (Jenner & Strawbridge, 2015) and MOOC encourage student to improve personal skills (Malca, 2015).

In Malaysia, a general usage Open learning for the MOOC and Malaysia Education Blueprint 2015-2025 (Higher Education) was announced by The Ministry of Education Malaysia (MOE). The goal of Malaysian MOOCs is mainly to increase value of standard education and open more accessibility to all leaners from higher educational institution and society. Based on Malaysian Education Blueprint 2015-2025, the ministry will work with HLIs to build the capabilities of the academic community and explore the establishment of national e-learning platform to co-ordinate and spearhead content development. Furthermore, the use of MOOCs also able to increase the name of Malaysian universities and standards to international level as well as able to reduce of education costs (Ministry of Education Malaysia, 2015).

The MOOCs acceptance is one of the major issues in Malaysian higher education institutions. Although MOOC has been implemented in Malaysia since 2014 but the uptake has not been smooth. Despite gaining growth across the globe, online learning included MOOCs still needs to be studied to fill the gap between developed and developing countries (Ellahi & Zaka, 2015). The empirical studies on online learning success especially MOOCs are very few which requires more studies to examine the factors towards success of MOOCs. Although the studies on e-learning are growing day by day but most studies are focused on perception and acceptance of e-learning system.

Thus, the aim of this study is to investigative the usage of MOOC among undergraduate students in University Utara Malaysia, Kedah. Where this study focused by examining social influence, self-efficacy, and users friendly that influencing intention usage of MOOC among UUM students.
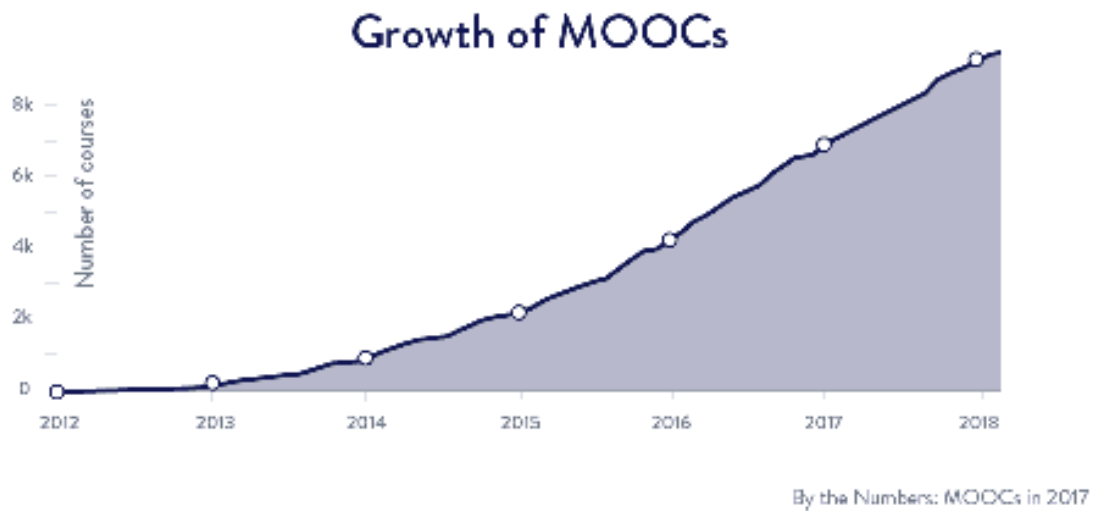
Figure 1. Growth of MOOCs registration (Year-on-Year)

This study will focus on the factors usage Massive Open Online Courses (MOOC) among undergraduate student those studies in School of COB at Univesiti Utara Malaysia, Sintok Kedah.

Literature Review & Hypothesis Development

MOOC is a term coined in 2008 by George Siemens and Stephen Downes after carrying out the online course that succeeded a number of previously open learning course (Fini, 2009). The MOOC is representing an emerging methodology of online teaching. The online learning structure was inspired by the philosophy of connectivism and the implementation requires conceptual changes in perspective from both "facilitators" (tutors) and learners. In Malaysia, the MOOC was becoming the important agenda in promoting free online education through our society. The MOOC initiative in Malaysia is prominently highlighted in the Malaysian Education Blueprint 2015-2025 (Higher Education Ministry, 2015). The Ministry of Education (MOE) launched the first 4 Malaysia MOOCs consisting of first year undergraduate common compulsory courses offered by UKM, UPM, UiTM and UNIMAS. UUM have introduced the MOOCs for undergraduate program such as Introduction to Entrepreneurship, International Business, Export Management, Islamic Banking Management etc. The MOOCs were well adapted by most of students for undergraduate program since the strong encouragement by lecturers.

The purpose of the study is to identify the factors that influence the adoption of MOOCs as an online educational technology to support learning and learning activities. Therefore, technology adoption is essential aspect of the framework of the study. A review of the literature indicated that there are several models/theories of technology adoption, such as the Theory of Planned Behavior (TPB), Social Cognitive Theory (SCT), and the Technology Acceptance Model (TAM). The current study adapted the TPB and TAM for the developing of theoretical framework. The TPB includes: the attitude factor and perceived behavioral control factor that

have an impact on the intention behavior. TAM investigate the psychological factors affecting technology acceptance and the model assumes that both perceived usefulness and perceived ease of use of the new technology.

According to Nordin, Norman, & Embi (2016) social influence is the users' perception of what others believe that they should use the technology. According to Mason, Conrey, & Smith (2007), social influence is related to the way other people affect one's beliefs, feelings and behaviour. According to Alejandro & Mendoza (2017), there are several reasons for adopting MOOC which are "perceived need to receive high-quality content from top universities and well-known professors," "request from instructors and employers as parts of projects and course requirements" and "perceived need to expand one's networking". According to Nordin, Norman and Embi (2016), the result shows that the social influence considered as an important factor to influence of MOOCs' usage.

H1: Social influence has significant effect on students' intention to use MOOCs.

Self-efficacy

A student with a high-level of self-efficacy are more confident in their own skills, self-motivate, regulate their learning and requirement minimal guidance for success (Komarraju & Nadler, 2013). Simmering, Posey & Piccoli (2009) state that to established previous experience with computers and online learning environment can increase self-efficacy of students. Other than that, the more time and experience of learners have on Internet, the more can increase their self-efficacy (Chu & Tsai, 2009). Self-efficacy of student is importance to enhance their participations in MOOCs. Hodges, (2016) says that students have the potential to enhance their self-efficacy through well-designed such as use videos, quizzes and discussion forum. Besides, the student are using MOOC can study by themselves or as a part of a blended learning strategy, in which MOOC resources are reused in or outside the classroom (Bruff, Fisher, McEwn, & Smith, 2013; Tariq, Ishak, & Nafi, 2018))

H2: Self-efficacy has a significant effect on students' intention to use MOOCs.

Perceived ease of use (PEOU)

Davis, F. D., Bagozzi, R., & Warshaw (1989) referred perceived ease of use (PEOU) as to how effortless he or she perceive using the technology in the future and perceived of usefulness as to the degree that the user believed in using the technology may improve their work performance. User friendly is the important factor that of the usage of MOOC. Min, Yamin, & Ishak (2012) found a positive effect of students' satisfaction on the design and use of the online learning system. The authors also added that students feel confident and satisfied with the online learning design such as easy to access, navigation and interface design.

H3: The PEOU has significant effect towards students' intention to use MOOCs.
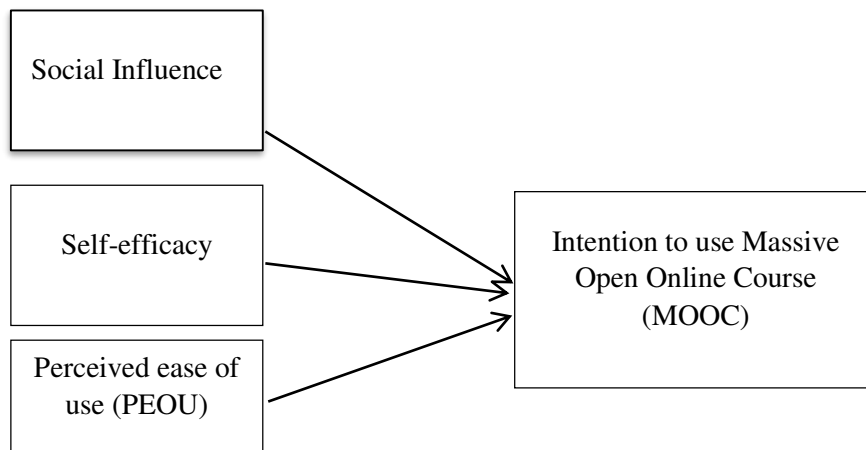
Figure 1. Research Framework

Based on the literature review concerning the study variables for social influence, self-efficacy, user friendly and intention to use MOOCs. The theoretical framework of this study is presented in Figure 1. Technology Acceptance Model (TAM) was utilized in developing the research framework.

Research Method

The questionnaires were distributed to 250 undergraduate students at School of Business Management (SBM), Universiti Utara Malaysia. There are four bachelor's degree program being offered by SBM such as Business Administration, Marketing, Entrepreneur and Human Resource Management. A total 250 questionnaire were distributed to undergraduate students in School of Business Management in Universiti Utara Malaysia.

In this research, we have decided to use non-probability sampling which is a purposiveness sampling technique. We use purposiveness sampling technique in order to ensure the selected students have experienced in using MOOCs from School of Business Management (SBM). In this technique, everyone in the entire target population has an experience in using MOOCs being selected. Five-point Likert scale was used to measure all the constructs with responses ranging from strongly disagree (1), strongly agree (5).

There were four variables (social norms, self-efficacy, perceived of ease of use, and intention to use) tested in the research and each survey for each variable was taken from different author. The survey for perceived ease of use was adapted based on survey developed by Lee (2010). On the other hand, survey for Social influence and self-efficacy were adapted based on the questionnaire developed by Liu, Chang, Sun, Wible, & Kuo (2010). Lastly, the items measuring of continuance intention for MOOCs were adapted from Roca (2008).

Data Analysis

The final measurements model and structural models were tested using Partial least squares (PLS). PLS regression analysis was developed in the late seventies by Herman Wold (Graber, Czellar, & Denis, 2002). PLS is used when ordinary assumptions such as multivariate normality and large sample size are not met. PLS is a statistical tool specifically designed to cope with small datasets, missing values and the presence of multi-collinearity often exists in samples used in marketing research (Graber et al., 2002).

In order to proceed with SEM-PLS, there are two stages for performing SEM which consist of a measurement model and structural model (Anderson & Gerbing, 1988; Hair, Sarstedt, Ringle, & Mena, 2011). Firstly, the measurement model is evaluated by checking the reliability and validity of each measure used in the framework model. The composite reliability and internal consistency reliability (Cronbach's alpha) are evaluated to ensure each value follows the recommended evaluations. The cut-off value for composite reliability and internal consistency reliability (Cronbach's alpha) is 0.7 (Bagozzi & Yi, 1988; Gefen, Straub, & Boudreau, 2000; Nunnally & Berstein, 1994). After all measurement of all constructs have adequate reliability and validity assessment, all the measurement items are kept for testing the structure model. As tabulated in Table 1, the AVE of all latent constructs ranges from 0.572 to 0.815, which exceeds the recommended level of 0.50 (Joseph F. Hair, Black, Babin, Anderson, & Tatham, 2006)

Table 1
Measurement Model

Constructs	Items	Factor loading	CR[a]	AVE[b]
Usage Intention	INT1	0.814	0.905	0.703
	INT2	0.866		
	INT3	0.807		
	INT4	0.865		
Self -efficacy	SE2	0.767	0.879	0.65
	SE3	0.621		
	SE4	0.924		
	SE5	0.878		
Social Influence	SI1	0.928	0.969	0.815
	SI2	0.933		
	SI3	0.869		
	SI4	0.906		
	SI5	0.905		
	SI7	0.861		
	SI8	0.916		
Perceived ease of Use (PEOU)	UF1	0.819	0.889	0.572
	UF2	0.694		
	UF3	0.771		
	UF4	0.779		
	UF5	0.704		
	UF6	0.765		

[a] Composite reliability (CR) = (square of the summation of the factor loadings)/{(square of the summation of the factor loadings) + (square of the summation of the error variances)}

[b] Average variance extracted (AVE) = (summation of the square of the factor loadings)/{(summation of the square of the factor loadings) + (summation of the error variances)}

For discriminant validity, the square roots of AVE for each construct as presented in Table 2 are less than the AVE latent variables. In conclusion, the measurement model demonstrates adequate convergent validity and discriminant validity. between the construct and the other constructs (Compeau, Higgins, & Huff, 1999). In statistically term, the squared root of each construct's AVE should be greater than its highest correlation with any other construct in measurement model (Joseph F. Hair, Hult, Ringle, & Sarstedt, 2014). As shown in Table 2, the squared roots of the AVE latent variables are greater than the correlations for each construct.

Table 2
Discriminant validity of constructs

Variables	Self-efficacy	Social Influence	Usage Intention	PEOU
Self-efficacy	**0.806**			
Social Influence	0.138	**0.903**		
Usage Intention	0.595	0.528	**0.839**	
Perceived ease of use (PEOU)	0.533	0.651	0.653	**0.756**

Note: The square root of AVE values is shown on the diagonals and printed with bold; non-diagonal elements are the latent variable correlations

For hypothesis testing, the path analysis was used to verify all hypotheses generated in this study, the PLS software generates estimates of standardized regression coefficients which refer to beta values for model path (Hammedi, Riel, & Sasovova, 2011). PLS uses re-sampling procedures known as nonparametric bootstrapping to evaluate the significance of the parameter estimates (Henseler, Ringle, & Sinkovics, 2009). The researcher uses 500 resampling procedures for bootstrapping in this study. The results of the model estimation including standardized path coefficient, one-tailed significance of the paths and the amount of variance captured are presented in Table 3.

Table 3
Hypotheses Testing

Variables	Standard Deviation	T Statistics	P Values	**Result**
Self-efficacy -> MOOC Intention	0.066	6.331**	0.00	Supported
Social influence -> MOOC Intention	0.063	5.404**	0.00	Supported
PEOU-> MOOC Intention	0.097	2.145**	0.03	Supported

*Note: **Significant at p<0.05 based on one tail t-statistic table, as t-value greater than 1.65.*

Social influence, self-efficacy and user-friendly system have significant affect towards usage intention of MOOCs. Therefore, all hypotheses in this study for H1, H2 and H3 are supported. When t value is greater than 1.65, this indicates that it is highly significant and

confirming that there is relationship between the usage's intention of MOOC with the all independent variables which is social influence, self-efficacy and perceived ease of use.

H1: Social Influence has significant affects in intention to use MOOC.

The independent variables which social influence obtained a P value 0.00 (a<0.05) which indicate it have linear relationship with usage of MOOC. While t value obtained 5.404 (t>1.65) which place social influence is strong influence in usage MOOC among UUM students.

H2: Self-efficacy has significant influence in intention to use MOOC.

The independent variables which self-efficacy obtained a P value .000 (a<0.05) which indicate it have linear relationship with usage of MOOC. While t -value obtained 6.331 (t>1.65) which place self-efficacy is the strongest influence in usage MOOC among UUM students.

H3: Perceived of ease of use has significant influence in usage of MOOC among UUM students.

The independent variables which user friendly obtained a P value .032(a<0.05) which indicate it have relationship with usage of MOOC. While t -value obtained 2.145 (t>1.65) which the user-friendly of MOOCs' system have influence in usage MOOC among UUM students.

Conclusion

MOOC is a new online medium for course delivery and learning. It enables thousands of learners to participate in the same course with high-quality content and interactive tools for learning. In this study, social influence, self-efficacy and perceived ease of use were found to have significant effect towards on continuance intention of MOOCs. Firstly, the findings suggest that self-efficacy is the strongest influence on MOOCs' continuance intention. The positive relationship between self-efficacy and intention to use in this study reflects that student with high levels of self-efficacy will stay continuing using MOOCs system and contributes to a positive learning outcomes (performance). Secondly, this study also revealed that social influence had positive effect on MOOCs' continuance intention. Therefore, it is very important for lecturers to continue encouraging their students to continue using MOOCs for their learning activities. Lastly, this finding also suggest that student will use MOOCs if they find them friendly, simple and perceive they would not require a lot of effort. Furthermore, MOOCs are very useful to the students whereby they think that using MOOC would have a positive effect on their learning. This signifies that the more students find MOOC useful and ease to use, the more likely they would continue using MOOC.

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The Practice of Becoming Self-Autonomous Learners with Social Learning Skills

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Abstract

Diversity is referring to the differences in race, ethnicity, sex, religion, sexual orientation, gender identity, culture, cognitive and physical ability, age and nationality. It is not only entails a spectrum of similarities and differences but also encompasses mutable differences. Indeed, changes, exposure, experience as well as interpersonal relationship diversity could indirectly develop a new global mind and better person via a proper platform of learning process. As for that, the social learning skills i.e. observing, modelling and interacting with others in particular within the diversify learning environment, is required in creating an appropriate social learning setting as well as improved the learners' soft skills. The objective of this study is to share the experience of social learning skills in developing a self-autonomous learner among Specialized Taxation course students in the School of Accountancy, Universiti Utara Malaysia. The method applied is two-ways communication and self-learning with an assessment of communication skills orally and also written. The observation and assessment from the two difference semester students of the same course revealed that, learning engagement via creativity and presentation skills, knowledge checking, discussion as well as focus of the topic is influence by the groups' background, gender population, age and maturity of the learners. Hence, the reflection shows that diversity of learners do give impact on the assessment which in creating or expecting a self-autonomous learners the factors of learning engagement could not be ignored. The findings could also be re-tested on difference condition of courses such as core course and more technical subject.

Keywords: Learners diversity, learning engagement, self-autonomous, social learning skill

Introduction

Diversity is a broad range of term, experiences and perspectives encompassing a wide range of characteristics i.e. gender, linguistic, background, socio-economic situation, family life, religion, interests, physical or emotional challenges, skills and abilities, motivation as well as life experiences. The differences list could be various and unique to each individual up bringing (i.e. biogenetically programmed) and enhanced self attributes via personal and social learning changes (Grover & Furnham, 2016).

Basically, the learning system is by culturally, linguistically, and ethnically diverse indirectly offer a powerful resource for everyone to learn more i.e. in different ways, in new environments, and with different types of people. Indeed, the enormously diverse in every person as well as ever-changing environment create an invaluable resource for all the community as a whole and are a learning process and sharing experience to each other. Rather

than constituting a problem for learners and educators, the growing diversity in education environment obliges and inspires the development and use of diverse teaching strategies designed to respond to each learner as an individual (Schlueter, 2019). Respecting and considering the global diversified cultural, linguistic and ethic more alike nurtures interpersonal skills and develop open-minded person (Chen, 2017). Surely a diverse learning environment is the ideal test site in which to learn the multiple perspectives required by a global society and to use information concerning diverse cultural patterns. Learners who learn to work and collaboratively perform task with other learners in the learning environment from various cultures are better prepared for the world currently and also in the future (Chen, 2017). Hence, experience, style and strategies incorporating the learners' background and cultures could assist the learning process eventually.

Theory

Theoretically, this study is underlying with social learning theory and social skills. Social learning theory is introduced with an intention to blend psychoanalytic and stimulus-response learning theory as a comprehensive explanation of human behaviour (Bandura & Walters, 1977; Grusec, 1994). The main focus of this theoretical effort is to expand the development of understanding on way of learners internalize, effort, values, attitudes and behaviour of the culture. Hence, the interest is on the issues how to control the aggression; the growth of resistance to temptation and guilt; as well as the acquisition of culturally approved behaviours (Grusec, 1994).

Social learning theory is a development or translation of psychoanalytic theory where it is no longer a stages theory. In fact, it is a cycle of learning from acquiring appropriate actions or responses by learners. Then, influences on behaviour from the impact of physical change or maturity which perhaps could expected for different reaction or new actions with the consideration of increasing in maturity. Hence, it is more than Bandura's theory (Bandura, 2005) which is not mainly concerned on cognitive operations on social experience, but how it could influence the behaviour and development. In fact, take into consideration response-outcome expectancies; perceptions of self-efficacy; and standards for evaluative self-reactions (Deaton, 2015; Grusec, 1994). The emphasised is on the role of observation and participation in learning where the social interaction could indirectly develop the cognitive ability or the learners (Pritchard & Woollard, 2013).

This cooperative learning theory and instructional model guided direct instructional procedures for teaching social skills. It could also develop team building and cohesion activities which could match social skills to the behaviour. Hence, social skills could be benefited learners in promoting appropriate interaction in a social setting; have better relationships with others; improve problem solving skills; improve communication; as well as help in improving understanding of personal feeling and others' feelings. In addition, social skills could also increase confidence; control or reduce aggressive behaviour; increase ability to deal with stress; build up personality with better able of survival; and also could increase self-esteem (Pritchard & Woollard, 2013).

Methodology

Learners' diversity as well as learning engagement and motivational modules of inspirational academician programme is tested in the Specialized Taxation course. This course

is designed mainly for accounting undergraduate students as an elective paper under the taxation stream.

Sample of the study

The focus students are from two different group of first and second semester in the 2018/2019 session. The weakness that educator want to improve or rectify is on encourage learners to fully prepare on the task assigned within the due date. The desired outcomes are expected from the course learning outcome one where learners should demonstrate tax computation for specialized industries (i.e. leasing, construction, banking, air and sea, insurance, petroleum, Labuan IOFC) companies according to latest development in Malaysian taxation system. Indeed, the instructions clearly given in the first week before task commencement so that every learner could adapt to the method applied for the 14 weeks of study period.

Design of the study

This study is a case study of Specialized Taxation course of two semesters in year 2018. The focus skills are on social learning skill and communication skill that indirectly could develop an autonomous learner. Basically, the concepts applied are learning engagement and motivational (i.e. self-autonomous). The learners in both semesters are required to demonstrate tax computation for specialized industries (i.e. leasing, construction, banking, air and sea, insurance, petroleum, Labuan IOFC) according to the latest development in Malaysian Taxation system. The learners are required to do self-study on the given topic for two weeks and use own creativity to deliver the topic to the class which is guided scope within the shared syllabus. The self-study is assessed on the social learning skill and delivery part is assessed the communication skill. This is a group task and the due date as well as topic is randomly selected by the learners.

Literature Review

Educators' role is very important in ensuring effective learning environments could successfully take place. As for that, undeniably the educators' attitudes, knowledge as well as skills are equally important as learners should have. Accordingly, the environment created by the educators indirectly created an opportunity for the learners in promoting critical thinking. Indeed, the rules of the classroom culture explicit and enable students to compare and contrast ideas with other cultures set by the educators is among the effective ways in develop critical thinking among learners. Learners in fact could develop cross-cultural skills in culturally and linguistically diverse classrooms.

Undeniable, that in managing diversity, communication is a vital tool in effective teaching and learning approach. In fact this is also supported by a study which had identified three main themes for a strategic communication planning approach: (i) re-examining the institutional mission statement on inclusive diversity practices, (ii) changing the mindset of academe, and (iii) starting with small steps when introducing change in embracing learner diversity (Yusof, Hashim, Valdez, & Yaacob, 2018). The extensive literature that describes successful teaching approaches for diverse populations has been summarized by Zeichner (1992). Among others, the key elements for effective teaching for ethnic- and language-

minority learners are as the following: (i) educators have a clear sense of ethnic and cultural identities; (ii) educators communicate high expectations and belief for the success of all learners; (iii) educators are personally committed to achieving equity for all learners and believe in capability of making a difference in the learners' learning; (iv) educators have developed a bond with learners and cease seeing the learners as "the other"; (v) schools provide an academically challenging curriculum that includes attention to the development of higher-level cognitive skills; (vi) instruction focuses on learners' creation of meaning about content in an interactive and collaborative learning environment; (vii) educators help learners see learning tasks as meaningful; (viii) curricula include the contributions and perspectives of the different ethno cultural groups that compose the society; (ix) educators provide a "scaffolding" that links the academically challenging curriculum to the cultural resources that learners bring to school; (x) educators explicitly teach learners the culture of the school and seek to maintain learners' sense of ethno cultural pride and identity (xi) community members and parents or guardians are encouraged to become involved in learners' education and are given a significant voice in making important school decisions related to programs (such as resources and staffing); and (xii) educators are involved in political struggles outside the classroom that are aimed at achieving a more just and humane society. Hence, educator education plays a key role in this transition, and there are many approaches it can use to facilitate this shift. There are various ranges of approaches from the intake of teacher trainees with diverse backgrounds; to encourage communication about their different identities; and to exploring basic philosophical concepts such as diversity, identity and controversy.

Indeed, diverse learners is increasingly focused as an important element to be considered of knowledge sharing base for effective teaching in today's environment (Rahman, Scaife, Yahya, & Ab Jalil, 2010). Thus, educators need to be sensitive that learners are and always have been different from one another in a variety of ways. In fact, understand of diversity of learners in terms of abilities and interests in the course or subject as well as the reaction of the learners to the diverse situation; a different approach or teaching strategies applies; and also management of various types of activities are so essential components in enhancing the knowledge of diverse learners (Flynn, Kemp, & Page, 2013; Grant & Gibson, 2011; Jeannin, 2013).

Findings and Discussions

Learners' diversity as well as learning engagement and motivational modules of inspirational academician programme is tested on the Specialized Taxation course for accounting undergraduate students. The focus students are from two different group of first and second semesters in the 2018/2019 session. The composition of each semester is difference as indicated in Table 1. In summary, Semester 1/2018 is difference in terms of composition of international and local students; most of the students are matured students in the final semester; and almost equal in gender difference. The group is dominated by Malay students and five Chinese students.

Table 1
Composition of Learners (Semester 1/2018, n=36 and Semester 2/2018, n=39)

Profile	Semester 1/2018	%	Semester 2/2018	%
Background: International	1	2.8	0	0
Local	35	97.2	39	100
Race: Malay	31	86.1	33	84.6
Chinese	5	13.9	4	10.3
Indian	0	0	2	5.1
Semester: Six	5	13.9	39	100
Seven	31	86.1	0	0
Sex: Male	17	47.2	3	7.7
Female	19	52.8	36	92.7

The class setting for the two semesters also difference in terms of class arrangement. Semester 1/2018 students of Specialized Taxation course are set in a normal arrangement where every student facing the lecturer and white board in front of the class. Whereas for semester 2/2018, students are arranged in a group of maximum six in a round table facing each other (refer pictures (i) and (ii) in the appendix). The setting is important as round table arrangement is more convenience and helpful during discussion. Whilst during presentation and focus needed on the presenters, the normal facing to the front arrangement is more appropriate.

In making the learners learn better, class is conducted by the students in a discussion, group presentation and understanding cross-checking via "kahoot" (refer picutres (iii) in the appendix). In terms of implementation, students are given equal time of four classes (i.e. 8 hours) to prepare pictorial/PowerPoint report and submitted earlier. As for compilation of tutorial, students are given two classes (i.e. 4 hours) to search questions and answers as well as earlier submission is required as per due date given in advanced. More time is given on topic preparation as students need to get and digest the latest Malaysian rules and regulation related to the topic prepared. As every group is given an equal time for presentation (i.e. 4 hours), if the topic is pressed by time, then students adjust the number of tutorial discussion questions and online submission as the alternative. In fact, the information delivery session is not pressed with time as learners have an option to alternatively send tutorial responds via online learning medium. The guideline of presentation and coverage is first shared and exposed by the educator on other topics covered in the syllabus for other course learning outcomes. This is a way to give exposure on the learning method of Specialized Taxation course.

In ensuring the learners master in social learning skills and communication skills via the concept of learning engagement and motivational (i.e. self-autonomous study), educators make a detail tasks by week. The learning engagement is planned before the commencement of the semester' study period with flexibility taken into consideration. The important steps carried out are: (i) class session is opened by the lecturer to guide on the topic going to be discussed for the day; (ii) passed the session to the group assigned for the day; (iii) group conduct the topic for the day and test or cross-check peers' understanding immediately after the presentation session; (iv) discussion on the topic among students and assist from the lecturer taken place in each session; and (v) lecturer closed the session with summary of the topic and reflection in terms of academic and social learning). The reflection is important to highlight the good or best practice shared by the learners and if any improvement needed in promoting social learning engagement among the learners.

The progress of the intended improvements is monitored via rubrics i.e. presentation

rubric and also critical thinking and problem solving rubric (refer appendix (iv) for rubrics). In ensuring the progress as expected achieve, educator refer back to the syllabus to highlight the coverage and if any important information need to apply or extended from each topic's presented. Indeed, the rubric of critical thinking and problem solving is used as benchmark in the topic coverage and learning engagement skill. The presentation rubric is to monitor the social learning skill and communication skill. Hence, the assessment via the rubrics is the evidence of implementation and success (or failure) of the method applied (refer Table 2 and 3).

Learners' performance in terms of presentation or communication skill is clearly reflected as in Table 2 where both groups achieved level good and excellent in the traits. In comparison, semester 2/2018 learners are much better as almost all students at the excellent level in idea presentation, using multimedia or visual aid as well as using non-verbal and verbal skills. In fact, the group of majority female performed better in presentation as preparation is very detail and well-planned ideas.

Table 2
Learners' Performance (Presentation) (Semester 1/2018, n=36 and Semester 2/2018, n=39)

	Semester 1/2018		Semester 2/2018	
Trait	Good	Excellent	Good	Excellent
Organization (n)		36		39
(%)		100		100
Idea (n)	10	26		39
(%)	28	72		100
Multimedia/Visual Aid (n)	4	32		39
(%)	11	89		100
Non-verbal Skill (n)	10	26	2	37
(%)	28	72	5	95
Verbal Skill (n)	12	24	5	34
(%)	33	67	13	87

Note: Scale (i) Poor; (ii) Fair; (iii) Good; (iv) Excellent

In terms of performance on critical thinking and problem solving which assessed the learning engagement and motivational of learners (as in Table 3), semester 1/2018 is better compared to semester 2/2018 learners. Almost 90 per cent students achieved the excellent level which indirectly reflected that semester seven (i.e. matured students) is more critical and able to relate the topic with interest in applying to practical practice rather than focus on academic understanding. This is reflected in the report written and approach of discussion reflecting issue identification, analysis of information, concept applied, evaluation of scenario and decision making in relation to the topic discussed.

Table 3

Learners' Performance (Critical Thinking and Problem Solving) (Semester 1/2018, n=36 and Semester 2/2018, n=39)

Trait	Semester 1/2018		Semester 2/2018	
	Good	Excellent	Good	Excellent
Identification (n)	4	32	15	24
(%)	11	89	38	62
Analysis (n)	4	32	15	24
(%)	11	89	38	62
Concept (n)	4	32	15	24
(%)	11	89	38	62
Evaluation (n)	4	32	15	24
(%)	11	89	38	62
Decision Making (n)	8	28	15	24
(%)	22	78	38	62

Note: Scale (i) Poor; (ii) Fair; (iii) Good; (iv) Excellent

Undeniable that both social learning skill and communication skill embedded into the semesters had successfully achieved despite of diversity of learners. In overall, it could be said that for semester 1/2018, learners are more creative and shared a lively presentation with limited information shared. The element of humours is portrayed in the presentation session from male learners. Compared to semester 2/2018 learners, the presentation session is more focus and serious with heavy coverage and discussion. Irrefutable it is because the class is dominated by female learners. In terms of knowledge checking or cross-check via "kahoot", semester 1/2018 learners approach is more on fun and surface understanding. Unlike the semester 2/2018 where learners are tested with very deep and really test on the spot understanding. As discussed previously, semester 1/2018 is consisted of matured learners (i.e. final semester learners) who tend to apply all skills and trust elements build in among peers in the group. Whilst, semester 2/2018 comprised of majority young students who applies limited skills and less trust on peers in the group. Perhaps it is due to the various backgrounds of learners. In relation to focus of the discussion, semester 1/2018 focus and diverted into real world practice which enjoy knowing the real experience in reality. This is different with semester 2/2018 where the focus is only on reading materials.

Limitations

In relation to this area of study, there are few limitations: (i) autonomous in searching for team members by the learners tend to create close friends with same values and attitudes; (ii) the composition of difference in each group in terms of ethnic and culture is not enough to ensure every group consist of divers in term of learners. Besides that, the two weeks times given for the preparation and submission for written report and preparation is too short and not extensive coverage. This could be seen from the discussion where in semester 1/2018, learners

tend to cover on the surface and the tutorial's coverage is not too depth. In addition, the discussion is limited to the syllabus learning expectations and outcomes.

Recommendation

Accordingly, to the practice of becoming an autonomous learner via the Social Learning Skills, the following recommendations need to be considered in future. Discussion on the tutorial should be immediately after each topic presented which could help in better understanding. Educator need to cover each topic with exercise questions to introduce the expected coverage on the related topic. Besides that, educator could encourage in using other method for understanding cross check of "kahoot" to experience various technology's learning tool. The most challenging part that educator should try in future is to set the group to encourage learning diversity in more effective way and avoid close friends' form of groups even though divers. This is to ensure learners could learn and experience diversity among group members and develop more matured learners.

Conclusion

In monitoring the progress of intended improvements, supporting evidence of implementation and success (or failure) of the method applies is very important to be collected. Indeed, the rubrics of assessment are the essential basis reflecting the achievement of the desired target. The experience of the two semesters in the session of 2018/2019 clearly highlight that diversity in learners do influence the learning engagement and motivational indirectly. Hence, creating a conducive learning environment taking into consideration learners' diversity i.e. maturity, gender, nationality and race, could definitely assist in creating self-autonomous learners. Thus, embedding the Social Learning Skills in forming learning engagement is best shared with peers in the teaching group and reported in the teaching Continuous Quality Improvement.

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Appendix

i- Composition of group members (Semester 2 Session 2018/2019)

ii- Composition of group members (Semester 1 Session 2018/2019)

iii- The method of understanding cross checking and presentation (Semester 1 & 2 Session 2018/2019)

iv- The monitoring rubrics (Semester 1 & 2 Session 2018/2019)

Engaging Learners Diversity to Appreciate International Financial Reporting Standards (IFRS)

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Abstract

Managing learners diversity in the classroom has become an increasingly salient concern when the number of international students enrolling in public universities in Malaysia continues to rise. As a professional course, accounting studies are subjected to standards and guidelines at national and international levels. The aim of this paper is to describe the teaching and learning process in engaging learners diversity to appreciate International Financial Reporting Standards (IFRS) among postgraduates students who enrolled in BKAR5033 (Seminar in International Accounting) Second Semester 2018/2019 (A182) Session. Through observations and active participation in classroom setting for 12 weeks of teaching period, the engagement of international students has been examined and analysed. These students are from different countries, academic backgrounds, cultures, races and religions. The findings of this study reveal that students are perceived to be more appreciated the IFRS if they can understand the major environmental factors that influence national accounting systems which lead to international accounting diversity. The students also are more responsive to the harmonization and convergence of IFRS by understanding the process of accounting standard setting. Hence, this study may help academicians to be more creative in engaging learners diversity to share their knowledge and current practices of their national accounting standards.

Keywords: Learners diversity, Learning engagement, International accounting, Accounting standards

Introduction

Over years, number of international students enrolling in public universities in Malaysia is gradually increased. These students have various academic backgrounds, cultures, races, religions, ethnicities, gender identities, cognitive and physical abilities, ages and nationalities that create learners diversity in teaching and learning process. Academicians in public universities in Malaysia should recognize all of these diversities and facilitate the students' interaction in classroom to reduce the impact of diverse behaviours. The academicians should govern an in-depth knowledge and functional skill application to work with diverse group of students using appropriate strategies to address diversity-related issues and problems (Sikkema & Sauerwein, 2015). Among the main problems that may need to be addressed carefully in managing learners diversity are lecturers should know well their students to build strong engagements and language barriers that may affect their communication skills, motivation and participation in classroom teaching and learning (Sikkema & Sauerwein, 2015; Tompson & Tompson, 1996). All of these skills and values are some of the important element in student-centred learning to create autonomous learners.

On the other hand, learners diversity in classroom is also important component in higher education to achieve its educational goals (Gurin, Dey, Hartado & Gurin, 2002). They

suggested that diversity enables students to perceive differences both within groups and between groups and is the primary reason why significant numbers of students of various groups are needed in the classroom as a preparation for them to work well with their colleagues in the working environments. In addition, appreciating learners diversity may help the students to recognize the interconnectedness of the world, to value the commonality of human experience and to recognize diverse cultural views and beliefs.

With increasing international financial operation and investment that across national boundaries and e-commerce era, the need for a single language of business is really felt. A single integrated language of business can be achieved only with understanding and knowledge on diverse international accounting practices. The field of international accounting is characterized more by diversity than commonality. The diversity lies in the different approaches taken in the various ways like financial accounting and reporting standards, regulatory bodies, business nature and culture and also national trade policies. The diversity of topics in this course with different composition of students in a classroom provides a good platform to conduct this study.

Hopefully, this study may help academicians to be more creative in engaging learners diversity to uplift students' cognitive capabilities, motivation, and communications in teaching and learning process of appreciating international accounting standards. Furthermore, this study also may help accounting students to appreciate the convergence process of international accounting standards.

Research Objective

The aim of this paper is to describe the teaching and learning process in engaging learners diversity to appreciate International Financial Reporting Standards (IFRS) among postgraduates students who enrolled in BKAR5033 (Seminar in International Accounting) Second Semester 2018/2019 (A182) Session. In addition, this study also wants to explain how the students perceive on the importance of the harmonization and convergence of IFRS in accounting standard setting process.

Research Questions

Specifically, the research questions of this study are:
i. How the learners diversity engage in teaching and learning process to appreciate International Financial Reporting Standards (IFRS)?
ii. Why the harmonization and convergence of IFRS is important in the process of accounting standard setting?

Methodology

This study is based on observations and active participation of the lecturer and her students in classroom setting for 12 weeks of teaching period to examine the engagement of international students in teaching and learning process of appreciating IFRS. These students are from different countries, cognitive abilities, cultures, races, religions and gender. The students were from Group A BKAR5033 (Seminar in International Accounting) Second Semester 2018/2019 (A182) Session. For this course, there are several modes of delivery such as lectures, article reviews, discussions, presentation and case studies. All of these modes are

embedded in teaching and learning process to produce graduates who possess management knowledge and professional skills and prepare them for the challenges of managing the organisation in the current global business environment.

In assessing students' competencies, students have to do mini cases, four individual assignments, group projects and presentations. For example, the students were required to prepare a project on the current issues in international accounting. The project required students to demonstrate sophisticated evaluation and critical analysis of the selected topic such as International Transfer Pricing, International Taxation, International Auditing and Corporate Citizen and also Islamic Accounting Framework. The students were also required to make a comparative analysis on the current practices of the topic among two countries in the world. They also needed to support their discussions and arguments by referring to financial statements of companies, related international accounting standards such as IFRS or any local accounting and reporting standards such Malaysian Financial Reporting Standards (MFRS) and Chinese Accounting Standards (CAS). The projects were evaluated using report writing rubric (Appendix A).

Then, the students were asked to present their findings in 45 minutes including question and answer session. The presentation session was a medium for the lecturer to evaluate student's ability to deliver the arguments and ideas by using excellent quality of multimedia support and visual aids. The presentation rubric was employed to assess communication skills of the students.

Picture 1. Presentation Session

There are several transferrable skills that have embedded in this course, such critical thinking and problem solving skills, communication skills, teamwork and ethics. All of these skills were measured using rubrics that had been explained to the students. At the end of the class, students were asked to provide their feedbacks on their understanding of topics that had been discussed through reflection notes (Appendix B). At the end of semester, students were required to fill an online evaluation survey, called as cause evaluation system "eCEVAS" (through their portal) to give their comments and suggestions to the lecturer to improve teaching and learning process.

Literature Review

Learners Diversity

Diversity in higher education is essential to teach students about the human relations and analytic skills that they need to thrive and lead in rapidly changes and borderless of working

environments (Gurin et al., 2002). The authors mentioned that these skills include the abilities to work well with colleagues and subordinates from diverse backgrounds; to view issues from multiple perspectives; and to anticipate and respond with sensitivity to the needs and cultural differences of highly diverse customers, colleagues, employees, and global business partners. Thus, it will help students to foster students' academic and social growth (Gurin et al., 2002; Orfield & Whitla, 1999).

Another study on the diversity issues in higher education is from Orfied and Whitla, 1999. The study claims that the law students have powerful educational experienced when they interact with students of other races and ethnicities. Learners diversity may enrich the discussions and learning experiences (Orfield & Whitla, 1999).

On the other hand, a study by Tompson and Tompson, 1999 mentions that international students create several problematic behaviors such as do not actively participate in class discussions, studying, working and sitting with only other international students in class and also violating ethical guidelines that negatively impact their performance. On the interesting notes, this study suggest a few strategies to facilitate international students such as conducting initial meeting between the students and the instructor, creating culturally diverse small, modifying classroom policies and procedures and creating an open atmosphere to discuss cultural differences (Tompson & Tompson, 1996). The aim of these strategies is to enhance social integration, motivation and communication skills of students.

In Malaysia context, a study conducted by Yusof, Awang-Hashim, Valdez and Yaacob (2018) is discussing on the strategic communication plan needed to enable universities to embrace learner diversity via diversity engagement. From the perspectives of academicians, the study notices that universities should re-examine the institutional mission statement on inclusive diversity practices, the academicians should change their mindset and start with small steps when introducing change in embracing learner diversity (Yusof, Awang-Hashim, Valdez & Yaacob, 2018).

International Accounting

Accountants rely on accounting standards to prescribe their work. But, the standards are constantly evolving due to improvements, amendments and issuance of new standards to reflect the complexity and diversity of business environments. The standards generally accepted as a basis to ensure that the financial statements have been presented fairly and accurately of companies' business activities.

International accounting covers a study of accounting standards, guidelines and rules of accounting, auditing and taxation that exist within a country as well as comparison of those items in other countries (Doupnik & Perera, 2015). At international level, International Accounting Standard Board (IASB) which is formerly known as International Accounting Standards Committee (IASC) is responsible to formulate international accounting standards including exposure drafts, and interpretations. Specfically, the main goals of the IASB are:

i. to develop a uniform set of high quality, understandable, enforceable and worldwide accepted international financial reporting standards (IFRSs);
ii. to promote the use and application of those set of standards;
iii. to take account of the financial reporting requirements of emerging countries' economies by developing a set of IFRSs for the small and medium-sized entities (SMEs);and
iv. to achieve convergence of national accounting standards and IFRSs.

The role of IASB has been shifted from harmonization to global standard-setting or convergence (Doupnik & Perera, 2015). The hharmonization is a process of reduction of alternatives while maintaining a high degree of flexibility in accounting practices. The benefits of harmonisation can be yield from various perspectives:

i. For many countries, there are still no adequate codified accounting and auditing standards. Then, internationally accepted accounting standard may help them to reduce the set up cost to develop their own accounting standards and allow them to become part of the mainstream of internationally accepted accounting standards.

ii. The growing of internationalisation of economic world through international trade and investment flows is a major argument for the demand of harmonisation in international accounting standards. Such internationalisation will assist international transaction, transfer pricing, resource allocation decisions become more efficient.

iii. Can help companies to rise outside capital to finance projects and availability of foreign loans may increase when the financial statements are prepared in accordance with the internationally accepted accounting standards.

Findings

Picture 2. Group A BKAR5033 (Seminar in International Accounting) A182 Session

Demographic Factor

Table 1
Gender Distribution

Gender	Number of students
Male	6
Female	7

Table 2
Country Distribution

Countries	Number of students
Malaysia	6
China	4
Yemen	1
Somalia	1
Yemen	1

Picture 3. International students

Diversity in Financial Reporting Practices

Most of the students were fresh graduates from national and international students who possess different accounting knowledge background especially on the financial accounting and reporting standards (Table 2). Some of them were not familiar with international accounting standard such IFRS which globally accepted as universal guideline in financial accounting and reporting requirements. The IFRS provides uniformity for financial reporting purposes for

companies doing business worldwide. Therefore, for the first two weeks of lecture, students have been introduced on the diversity of financial reporting practices around the globe.

The learning outcomes of this topic was to explain the effect of accounting diversity on the usefulness of financial reporting and how this diversity may affect the users of financial information in making economic decision. Then, all students were required to explain and present their local accounting standards. They have to discuss the diversity that exists in accounting practices and describe the major factors that influence national accounting systems that lead to accounting diversity. In order for them to have a better on the real practices in companies, they have to download Annual Report of the one public company in their countries and examine how the financial statements have been prepared and presented. Furthermore, students were required to search information and articles on international accounting standards to enhance their understanding on the current development of the financial accounting and reporting standards and practices.

Then, the students need to present their findings in front of the class. From the observations, this study notices that some of the students are lack of communication skills and critical thinking and problem solving skills in discussing their findings. It may due to some of them have language barriers and thus, the lecturer needs to facilitate the discussion by providing leading and probing questions. After the student's presentation, the lecturer provides written feedback, reflection notes and comments to improve their communication skills.

Furthermore, some of their county has not a proper accounting standards and guidelines such as Libya and Yemen. In relation to that, students will more appreciate on the needs of single or universal financial reporting standards such as IFRS at the international level like Student A claimed that *"... I felt more confident in discussing my national accounting standards when I noticed that other countries also using IFRS... either adapt or adopt IFRS".*

Picture 4. Happy faces of my students

Harmonization and Convergence of IFRS

In the third week of lecture, students are required to understand importance of harmonization and convergence of IFRS in the process of accounting standard setting. As an accountant, he or she needs to understand the process of standard setting in order to ensure that financial statements are of a high quality. They have to work in group consist of 3 to 4 students from different countries to examine the process of harmonization and convergence of IFRS. From the observations and participation of students in the group discussions, this study suggest that students are more active in arguing and discussing the idea if they feel comfortable with the teammates who have different ideas but showing a mutual respect to appreciate the differences of thoughts and arguments (Tompson & Tompson, 1996). This cross-cultural communication is a good platform for them to prepare themselves to work at international companies which have a lot of diversities like cultural, races and accounting practices. The students need to prepare themselves to understand how people from different countries and cultures act, communicate and perceive around the world. Thus, this study documents that harmonization and convergence of IFRS is an important process to be understood by accounting students in the process of accounting standard setting.

Picture 5. Small celebration during the last class

Discussion

Learners diversity in teaching and learning process especially in postgraduate courses offers an interesting discussion when it involves in understanding different practices and standards especially accounting field. It creates an awareness of an accountant to be more responsive to the changes of the accounting standards and best practices. The findings of this study reveals students are more appreciated the IFRS if they can understand the major environmental factors that influence national accounting systems which lead to international accounting diversity. The duty of the lecturer is facilitating the discussion among the students

to ensure all students have a chance to speak and explain their thoughts and arguments on topics discussed. Among the weaknesses of the students that have been discovered are to inculcate the questioning and arguing skills to encourage the students to think critically. Therefore, this study suggests the students need to be grouped in different students' background to enhance their communications, motivation, critical thinking and problem solving skills to be autonomous learners. This finding is supported with prior studies that claim the diversity of students in classroom may foster students' academic and social growth and benefits (Gurin et al., 2002; Orfield & Whitla, 1999). When there are grouping in different background, they have to speak in English and be knowledgeable on the accounting practices and standards of the country.

In addition, this study also documents that students are more responsive to the harmonization and convergence of IFRS by understanding the process of accounting standard setting. Accounting students may need to update their knowledge on the current development of standard setting at the international regulatory bodies' websites such as IASB websites and Financial Accounting Standard Board (FASB) websites. The articles review also may help the students to enhance their knowledge on the current improvements in the accounting standards and guidelines.

Limitations and Recommendations

This study is based on the experience of one course (Seminar in International Accounting) in a semester that may has different learning outcomes and teaching approaches. Therefore, the findings of this study may not be suitable and applicable to fit all courses in various field of studies. For the next research agenda, it is highly recommended to conduct a comparative case study to examine how the composition of international students in a classroom may affect the effectiveness of teaching and learning to appreciate international accounting standards such as IFRS and the process of standard setting at international level.

Conclusion

Engaging learners diversity in different races, ethnicities, religions, cultures, nationalities and cognitive abilities urge academicians to be more creative and supportive during teaching and learning process. The academicians should know well their students and recognize the differences to minimize the impact of diverse behaviours. This study is conducted to describe the engagements of learners diversity in appreciating IFRS among students who enrolled in BKAR5033 (Seminar in International Accounting) A182 Session. The engagements of the students have been observed for 12 weeks of teaching period. The findings of this study suggest that students are perceived to be more appreciated the IFRS if they can understand the factors that may influence the national accounting systems and the needs of convergence process of accounting standards.

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Appendix A

	Report Writing Rubric
Pusat Pengajian Perakaunan Tunku Puteri Intan Safinaz TUNKU PUTERI INTAN SAFINAZ SCHOOL OF ACCOUNTANCY Universiti Utara Malaysia	Semester Session : _____ Course Name (Course Code) : _____ Lecture group : _____ Student Name (Matric No) : _____ Task description :_____

CONTENT (Report Writing)					
Traits	**Poor (0-3)**	**Fair (4-6)**	**Good (7-9)**	**Excellent (10-12)**	**Score**
Organization	Totally unrelated. The information appears to be disorganized.	Remotely relevant. Information is organized but paragraphs are not well-structured.	Somewhat relevant. Information is organized with well-constructed paragraphs.	Directly relevant. Information is very organized with well-constructed paragraphs and subheadings.	
Information	One or more topics were not addressed. Information has little or nothing to do with the main topic.	All topics are addressed and most questions are answered with about 1 sentence each. Information clearly relates to the main topic. No details and / or examples are given.	All topics are addressed and most questions are answered with at least about 2 sentences each. Information clearly related to the main topic. It provides 1 - 2 supporting details and / or examples.	All topics are addressed and all questions are answered. Information clearly relates to the main topic. It includes several supporting details and / or examples.	_____ x 2
Analyses	Provides insufficient evaluation and critical analysis of the topic in terms of research and comparison to similar work done by others.	Provides somewhat adequate evaluation and critical analysis of the topic in terms of research and comparison to similar work done by others.	Demonstrates thoughtful evaluation and critical analysis of the topic in terms of research and comparison to similar work done by others.	Demonstrates sophisticated evaluation and critical analysis of the topic in terms of research and comparison to similar work done by others.	_____ x 2

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Grammar & Spelling	Many grammatical, spelling or punctuation errors.	Some grammatical, spelling or punctuation errors.	A few grammatical, spelling or punctuation errors.	No grammatical, spelling or punctuation errors.	
Appearance	Unacceptable appearance. Does not use appropriate table, figure, font, font size, line spacing and border areas. Unclear style.	Appearance is acceptable but a lot could be improved.	Appearance is generally good; only some elements need to be improved	Excellent formatting and appearance. Use appropriate table, figure, font, font size, line spacing and border areas.	
Sources & References	Some sources are not accurately documented. References are not cited in text, and no or few references are provided in the reference list. Style and format are incorrect.	All sources (information and graphics) are accurately documented but many are not in the desired format. Few references are cited in text and in the reference list. Most references use incorrect style and format.	All sources (information and graphics) are accurately documented, but a few are not in the desired format. Most references are cited in text and appropriately provided in reference list. Most references use correct style and format.	All sources (information and graphics) are accurately documented in the desired format. Complete references in text and reference list. All references use correct style and format.	
Timeliness	Report handed in more than 1 week late.	Up to 1 week late.	Up to two days late.	Report handed in on time.	
Total Score					**/108**

Lecturer's Name : _____

Date   :_____

Appendix B

Student Name (Matric No.): _____

SELF-REFLECTION:

1. What are the new things that you have learned?

2. How will this benefit you as an accountant?

3. How do you perceive this new knowledge and information in appreciating the IFRS?

Knowledge Transfer Experiences During Practicum from Students' Perspectives

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Abstract

The primary aim of practicum or industrial trainings is to enable students to experience the practical aspects of the theories and knowledge that they have learned in classrooms. During a specified period, students would be attached to industrial supervisors at various organisations to learn by experiences at the industry. Nevertheless, past research on the knowledge transfer process within the Malaysian context is scarce. Accordingly, this study investigates the knowledge transfer experiences during practicum trainings from the viewpoint of the students. Engaging in mixed-approach of quantitative and qualitative, an online survey using Google Forms was administered on 37 law students of one higher learning institution in Malaysia, who recently completed a two-months practicum training at various organisations relevant to legal studies. The study found various learning experiences by the students throughout their practicum period of two-months, ranging from legal documentation, court appearances and conveyancing matters. Further, the study revealed the importance of being attached to appropriate departments for the purpose of enriching the transfer of knowledge from the practicum trainings. In particular, this study contributes towards better understanding of the transfer of knowledge among the law practicum students, particularly in preparing them for their future career upon completion of their studies. Within the broader picture, this paper is intended to serve as a catalyst for future research on the aspects of legal industrial trainings or attachment. Future research could focus on investigations from the viewpoint of industrial supervisors as well as report supervisors from the university to further enhance the findings by allowing for triangulation of data sources.

Keywords: Knowledge Transfer, Practicum, Industrial Training, Legal Knowledge, Legal Studies

Introduction

Students benefit in many ways from practicum experience especially when they can secure their training at an 'appropriate or relevant practicum place' (the word practicum is used interchangeably with such other words as internship and industrial training). An 'appropriate or relevant practicum place' is practically a practicum place which offers scopes of training that will match the program's (program of studies) learning outcomes. Many studies have shown the potential benefits that students may gain from practicum training (Sprague & Percy, 2014; Novotorov 2001; Tackett, Wolf, & Law, 2001). Knowledge transfer is becoming one of the increasingly important benefits of industrial training especially from the industrial

supervisors to the practicum students (Bernsteiner & Schlogl, 2016; Argote, Ingram, Levine, & Moreland, 2000). Students are presumed to gain a hands-on experience if they are placed at a relevant practicum institution. Within the context of legal practicums, law students are placed at law offices or organisations which carry out legal matters, such as police departments, legal advisory offices of both public and private organisations, as well as land registries. The primary aim of such legal practicums is to expose students to build personal traits and qualities needed in legal practices encompassing on organization governance, communication skills, ability for legal opinions, legal drafting and pleading and conveyancing practices.

Nevertheless, literature on the subject matter of knowledge transfer experiences from students' perspectives remain scarce, and worth to be explored. Although it is claimed that students greatly benefit from practicum trainings, there is no substantiated evidence to support on the effective transfer of knowledge from the industrial supervisors to the students especially when the students are place at a relevant practicum institution. Studies on the process of knowledge transfer from practicum institutions to the students in Malaysia are scarce (Sariwati Muhammad Shariff & Maznah Muhamad, 2010 and Rusnah Muhamad, Yazkhiruni Yahya, Shuhaili Shahimi & Nurmazilah Mahzan, 2009). Limited studies had been carried out to understand the success of knowledge transfer in meeting the program of studies' learning outcome and in particular students' needs (Sariwati Muhammad Shariff & Maznah Muhamad, 2010) and finally no studies had been conducted on the effectiveness of relevant practicum institution in Malaysia in transferring knowledge to the students.

Therefore, this paper will focus on the students as the subject of this study since they are the one who experience the training and are able to verify conclusively the process of knowledge transfer and other learning experiences and their effectiveness. In essence, this study investigates the primary question of: *What are the knowledge transfer experiences of the students in undertaking practicum trainings?* Engaging in case study design involving a law school at one of the higher learning institutions in Malaysia, this paper deliberates on the quantitative and qualitative findings of the research, primarily addressing the practicum students' perspectives in terms of their knowledge transfer experiences.

This paper consists of the following parts, namely, review of the literature on the specific key concepts engaged in this study, namely practicum training and knowledge transfer. The following part outlines the methodology undertaken in this study, followed by the data analysis and findings. In essence, the study found various learning experiences by the students throughout their practicum period of two-months, ranging from legal documentation, court appearances and conveyancing matters. Further, the study revealed the importance of being attached to appropriate departments for the purpose of enriching the transfer of knowledge from the practicum trainings. The paper concludes by recommending suggestions for improvements and directions for future research.

Literature Review

This part outlines the key concepts engaged in this study, namely practicum training and knowledge transfer.

Practicum training

Practicum has increasingly become an important part in university academic programmes (Tackett et al., 2001). The growing awareness is not only academic in nature but also getting the attention from the industry. The contending characteristic of the market means

the competition for higher profits as an important objective which include the competition to look out for potential human resource who could contribute towards this objective. Therefore, practicum training opens up a lot of potentials for the industry. Mutually, universities (private or public) also recognize the role of practicum in marketing their students, hence their academic programmes (Weible, 2009, English & Koeppen, 1993). At this juncture, practicum becomes a test market for both sides; the university and the industry. The guinea pig is the student. As much as they want the job, the students expect the whole experience of the training would enhance their opportunity in job hunting later after graduation. However, with no previous experience in working environment, their highly anticipated gains could sometime become their nightmares since some of them have been 'misused' by the industrial supervisors in doing menial and clerical job (Sariwati Muhammad Shariff & Maznah Muhamad, 2010). Some of these students are exploited, undergoing long working hours for little or no pay at all (Hesmondhalgh, 2015). Essentially, this underemployment interns are not learning any relevant experience nor are they transferring any theoretical knowledge to the industry. Nevertheless, for the university, adding practicum in their curricular structure is believed to enhance career opportunities for their students (Beard & Morton, 1999), expose them to job experiences, enable them to be more marketable and improve students' interpersonal skills (Beard & Morton, 1999).

A few studies had found these many benefits from the standpoints of the students (Knemeyer & Murphy, 2002, Beard, 2007, Rothman & Sisman, 2016). Knemeyer and Murphy (2002) had shown students learnt a great deal of improvement in their learning outcome through communication skills and major personal growth. Ebeid (2004) found that practicum students performed much better than non-practicum students in accounting courses and in general score of grade point average. Similarly, Renganathan, Ambri Abdul Karim and Su Li (2012) provides a positive feedback from students who are generally in favour of industrial internship programme and gained the practical experience from internship. However, it does not stress on the effectiveness of knowledge transfer in particular.

Knowledge transfer

Simply put, knowledge transfer denotes the process of teaching and learning of specific concepts by one party to the other party. Within the context of practicum trainings, knowledge transfer takes place when the industrial supervisor teaches the student practical things in relation to its organisation and the work process involved in the training, and the students learn from the supervisor both hard skills and soft skills. Several studies found that both students and industrial supervisors gave different perspectives over similar sets of expectations (Beggs, Ross, & Knapp, 2006). Tackett et al., (2001), for example, identified ethics, oral and written communication skills, office conduct and technical skills as among important areas where both students and industrial supervisors have different views. The difference between students and industrial supervisors over students' perception and expectations in undergraduates' internship in recreations and as far as knowledge transfer is concerned, only stressed on the perception of the intern agencies (Beggs, Ross & Knapp, 2006). Ross and Elechi (2002) tested similar issues and found that criminal justice students felt that their educational experiences reflected the practical realities criminal justice operations and secondly that their whole internship experience is valuable in preparing them for criminal justice career.

A study by Beard (2007) offers interesting and beneficial insights over the importance of placing students at a relevant practicum institution particularly in this case placing accounting students at accounting firms. Although it did not specifically highlight on the process of knowledge transfer, it did offer, at least, a comprehensive assessment of multiple

methods and measures of students' performance and programme outcomes. and general guideline for academic programme, practicum administrators, and the industry on the 'core competencies for entry' into the accounting profession. Another finding by Azham (2008) indicated that students gave positive perception on the effectiveness of audit education as an ideal way to expose students to professional issues and enables them to have a better understanding of the actual performance and duties of auditors. Perhaps this study could spur a similar insight for this paper to understand whether or not a similar pattern could be traced among law interns doing practicum at legal institutions.

Bearing in mind the key concepts of the study, being practicum training and knowledge transfer, the following research methodology was undertaken to address the research question of the study.

Methodology

This study adopted mixed-methods approach of quantitative and qualitative. The quantitative approach explored the views and preference of the study respondents as to their learning experiences and their relationship with their industrial supervisors in terms of the knowledge transfer process. While the qualitative approach probed further into the students' overall views and recommendations to further enhance their learning experiences during practicum trainings.

Research Design

The design chosen for this study was case study, involving single unit of analysis of law students at one of the higher learning institutions in Malaysia. The instrument employed was online survey using the medium of Google Forms, comprised of both closed ended-questions as well as an open-ended question. The questions explored into the students' learning experiences during their practicum trainings. In total, the survey was administered on 37 students who have recently completed their practicum trainings at various legal departments of various institutions relevant to legal studies.

The breakdown of the student respondents based on gender is as produced in Figure 1 below. Out of the total 37 study respondents, 31 were female students (83.8%) and the remaining 6 were male students (16.2%).
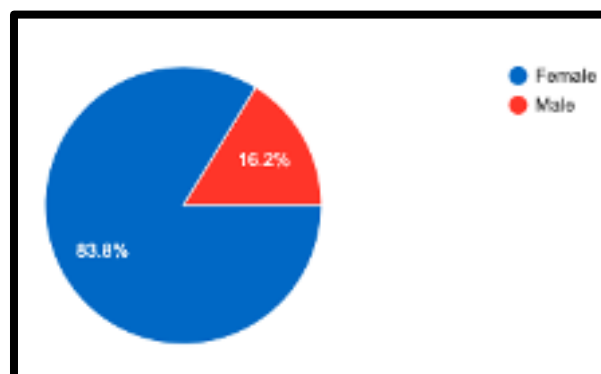
Figure 1. Gender of the respondents

Meanwhile, the breakdown of the respondents based on race is produced in Figure 2 below. Malay and Chinese students were the majority of the study respondents, each comprised of 17 students (45.9%), followed by 1 student (2.7%) each of Siamese, Kadazan and Iban races.
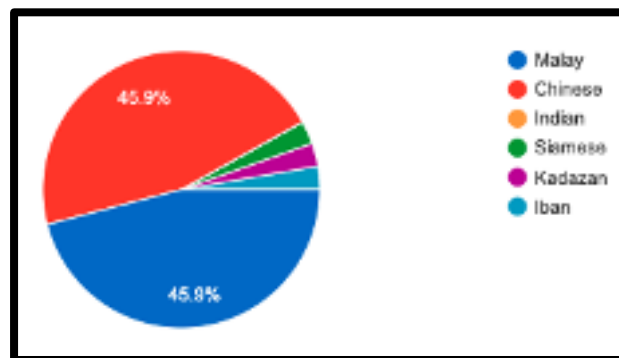
Figure 2. Race of the respondents

With regards to the organisations at which the respondents were attached to during their practicum trainings, the breakdown is produced in Figure 3 below. Majority of the study respondents were attached during their practicum trainings to small-boutique legal firms (4 or less lawyers) being 13 students (35.1%), followed by 10 students (27%) who were attached to medium-sized legal firms (5-49 lawyers). The remaining study respondents were attached to the Attorney General's Chambers and Police Headquarters, each with five students (13.5% each). Finally, two students (5.4%) were each attached to the State Legal Advisor's Office and large office (more than 50 lawyers).
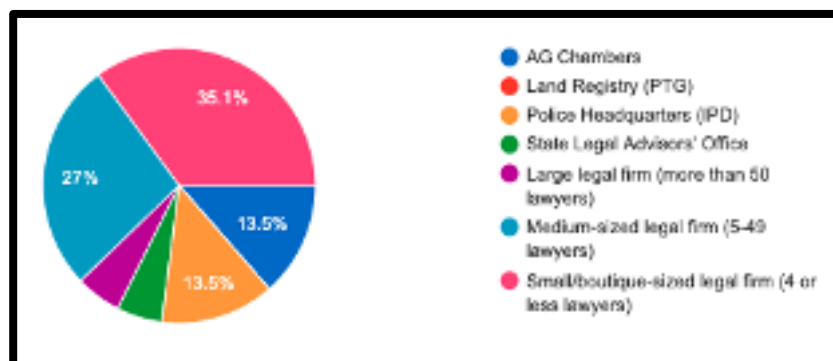
Figure 3. Organisations at which the respondents were attached to during practicum

Data Analysis

The data generated from the online Google Form survey was extracted for the purpose of analysis for both the quantitative as well as the qualitative findings. For the quantitative data which were in the form of closed-ended questions, the findings were easily presented in the form of pie charts and bar charts to indicate the views and preference of the study respondents.

Meanwhile, the qualitative data which were in the form of open-ended responses were added to the computer-aided qualitative data analysis software ATLAS.ti version 8.4 for the purpose of analysis, and generating the main themes of the findings. The interface of the ATLAS.ti 8.4 is shown in Figure 4. The main themes of the findings were generated using pure inductive approach from the data itself (Thomas, 2006).

Figure 4. Interface of the ATLAS.ti 8.4 used for the analysis of the qualitative dataset

The findings of the study are presented in the following section.

Findings & Discussion

This part deliberates on the findings of the study, particularly to address the research question of: *What are the knowledge transfer experiences of the students in undertaking practicum trainings?*

Lessons Learned from the Practicum Training

The study examined the students' learning experiences during practicum, hence they were posed a question of: What did you learn most from your practicum? The answers were then triangulated with the scope of practicum training for this particular academic course, which involve various legal matters expected of the students to learn throughout their two months practicum period. The findings for this particular question are presented in the following Figure 5.

Figure 5. Lessons learned from the practicum training

In essence, the top matters which the study respondents learned most during their practicum trainings are attending to conveyancing matters (11 students at 29.7%), making court appearances (8 students at 21.6%), office management or secretarial works and doing criminal matters (each with 7 students at 18.9%) and finally, attending to corporate documentation works (4 students at 10.8%). It could be seen from the report that the trainings underwent by the students were actually numerous and various, depending on the specialisation of the industrial organisation of which the students were attached to during their practicum.

Importance of Attachment at Organisations that have Diversified Matters

Realising the need for matching of students' learning scope and the training offered by the industrial organisations, a question is posed to the study respondents to understand their views as to the importance of being attached at organisations that have diversified matters. The understanding is that, the more diversified matters handled by the organisations, more lessons could be learned by the students. In response to this question, the findings are presented in the following Figure 6.
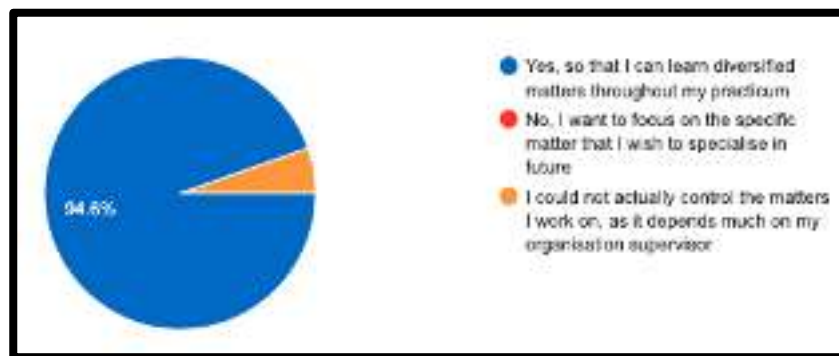
Figure 6. Importance of being attached at organisations that have diversified matters

Interestingly, 35 out of 37 study respondents (94.6%) agreed that it is important to be attached at organisations that have diversified matters so that they could learn various matters throughout their practicum period. While the remaining two respondents (5.4%) opined that they could not actually control the matters they work on, as it depended on their respective organisation supervisors.

Views on the Organisation

This part explored the study respondents' views from five aspects, particularly covering the organisation management and knowledge transfer experiences during the entire practicum period. Each of the aspects were evaluated based on three-scale options of '*Agree*', '*Moderate*' and '*Disagree*'. The findings are discussed in the following sections.

Meeting practicum training interest. The response to the first statement 'I find the works at my organisation meets my training interest' is shown in Table 1 below. Interestingly, all students found that the works they undertook at the organisations had indeed match their training interest to a certain extent, with 18 students (48.65%) agreed to this statement and 19

students (51.35%) found this statement to be moderately agreeable. This finding some sort presented the importance of practicum trainings which the students undertook to be meeting with the course objectives set by the university particularly for the benefit of the students. Meanwhile, none of the students found that the works had mismatched their training interest, which further strengthened our finding that there is, to a certain extent, matching of the industrial trainings and the practicum needs of the students.

Table 1
Meeting practicum training interest

Statement	Particulars	*f*	*%*
I find the works at my organisation meets my training interest	Agree	18	48.65
	Moderate	19	51.35
	Disagree	0	0

Relevance to legal practice in future. The response to the second statement 'The trainings that I underwent were relevant to my legal practice in future' is shown in Table 2 below. In essence, legal practice could be translated into various legal areas, such as public and private lawyering practices, adjudication and executive legal positions, as well as administrative legal practices. To this statement, majority of the students (29 in total, standing at 78.37%) agreed that the practicum training that they underwent were in fact relevant to their legal practices in future. Only 8 students (21.62%) moderately found the relevance of the trainings to their legal practices, while none found no relevance at all of their practicum trainings to their future legal career. This finding is significant as proof that the practicum trainings are indeed structured to shape the practical aspects of the legal profession of the students towards their legal practices in the future.

Table 2
Relevance to legal practice in future

Statement	Particulars	*f*	*%*
The trainings that I underwent were relevant to my legal practice in future	Agree	29	78.38
	Moderate	8	21.62
	Disagree	0	0

Helpful supervision for practicum training. The response to the third statement 'My supervisor was helpful in training me' is shown in Table 3 below. Admittedly, the industrial supervisor plays a highly significant role in the knowledge transfer process from the industry to the students. Not only the supervisor would carry out the supervision, he would also evaluate the students' performance towards the assessment of the course credit earned by the student. Realising the importance of quality supervision by the industrial supervisor, a total of 28 students (75.68%) agreed that their supervisors were helpful in training them during the supervision period, while only 9 students (24.32%) moderately agree to this statement. Excitingly, none of the students disagreed to the statement on helpful supervision by their industrial supervisors during the practicum training.

Table 3
Helpful supervision for practicum training

Statement	Particulars	f	%
My supervisor was helpful in training me	Agree	28	75.68
	Moderate	9	24.32
	Disagree	0	0

Frequency of meeting with the supervisor. The response to the fourth statement 'I met my supervisor almost every day throughout the two-months duration' is shown in Table 4 below. This statement is in fact a follow up statement from the previous statement on the helpful supervision by the industrial supervisor. For this fourth statement, the aim was to explore the frequency of meeting between the student and the industrial supervisor throughout the two-months practicum period. As indicated in the Table, 16 students (43.24%) agreed to having met their respective supervisors almost every day throughout their practicum periods. While 15 students (40.54%) moderately agree to this statement. However, it is quite alarming to note that 6 students (16.22%) disagreed to having met their supervisors almost every day during their practicum period. On this note, it could be well understood that in the legal profession, while some practices require works to be completed in the office, such as lawyers engaged in conveyancing and legal documentation for corporate clients, sometimes they may not be office-bound, particularly if they are attending court sessions at the courts complex, or meeting clients outside of the office.

Table 4
Frequency of meeting with the industrial supervisor

Statement	Particulars	f	%
I met my supervisor almost every day	Agree	16	43.24
throughout the two-months duration	Moderate	15	40.54
	Disagree	6	16.22

Relevance of work to scope of practicum training. The response to the fifth and final statement 'Sometimes my supervisor asked me to do things that are not at all relevant to my scope of training' is shown in Table 5 below. It is to be noted that this statement is worded in the passive context, in order to explore the negative side of the practicum supervision, i.e. students being asked to do things outside their scope of training. Quite surprisingly, while 16 students (43.24%) disagreed to this statement, quite a large number of students agreed having been asked to do things outside their scope of training. A total of 12 students (32.43%) agreed and 9 students (24.32%) moderately agreed that at some points in time, their respective supervisor had asked them to do things that are not at all relevant to the scope of training. This finding is quite alarming, given that past literature had suggested that there should be matching of needs between the industrial organisation's training and the students' scope of training in order to materialise the knowledge transfer experiences during the practicum trainings.

Table 5
Relevance of work to scope of practicum training

Statement	Particulars	f	%
Sometimes my supervisor asked me to do	Agree	12	32.43
things that are not at all relevant to my	Moderate	9	24.32
scope of training	Disagree	16	43.24

Suggestions for Improvements to the Practicum Experiences

This part represents the qualitative data responses from the respondents. To further understand the knowledge transfer experiences during practicum trainings from the perspective of the students, an open-ended question was posed inviting suggestions or reflections by the students with regards to their practicum. Various suggestions were put forward by the survey respondents, covering four major themes, being improving the supervision management for practicum, extending the period of practicum, the need to provide stipend/payment during practicum and finally the need to diversify the practicum works. The finding generated from ATLAS.ti 8.4 is produced in Figure 7 below. Each of the suggestions are discussed in the following sections.
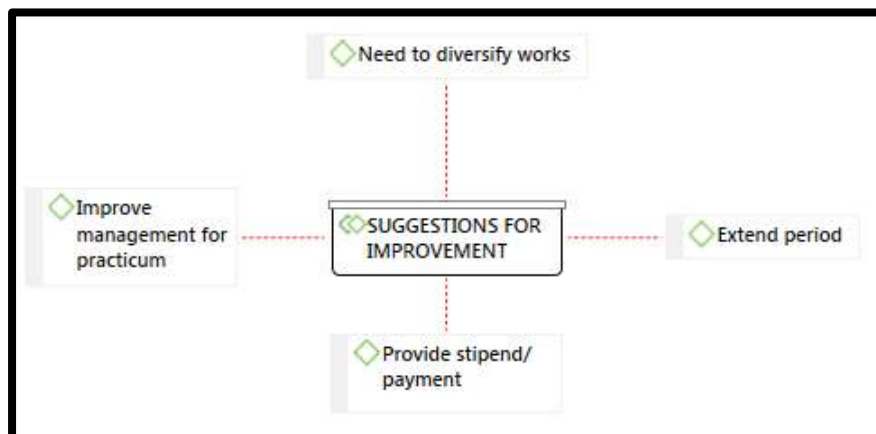
Figure 7. Major suggestions for the improvement of practicum experiences

Improving the supervision management for practicum. The students suggested that the supervision aspect of the industrial organisations should be improved, particularly in terms of better and closer supervision, as well as management of supervision at the organisations, as can be seen in Figure 8 below. Statements from the students to indicate this suggestion include: *"the supervisor should give extra attention", "the supervisor should supervise more"* and *"the supervisor should be more concern"*. In terms of improvement to the management of supervision, a student remarked: *"the firm should know what to do with attachment students"*.
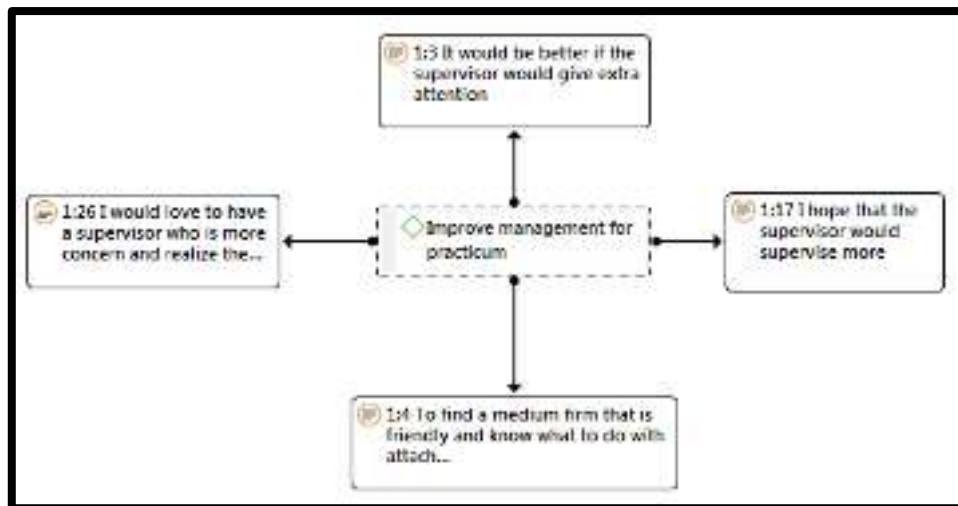
Figure 8. Improving the supervision management for practicum

Extending the period of practicum. Another suggestion put forward by the students for the improvement of the knowledge transfer experiences during practicum was to extend the period of practicum from two-months to a longer period, as shown in Figure 9 below. This suggestion was primarily to provide more time for the knowledge transfer process to take place, as the two-months period was repeatedly remarked as *"not enough time"*. The students also mentioned that they need longer time *"to learn more knowledge"* during the practicum trainings.
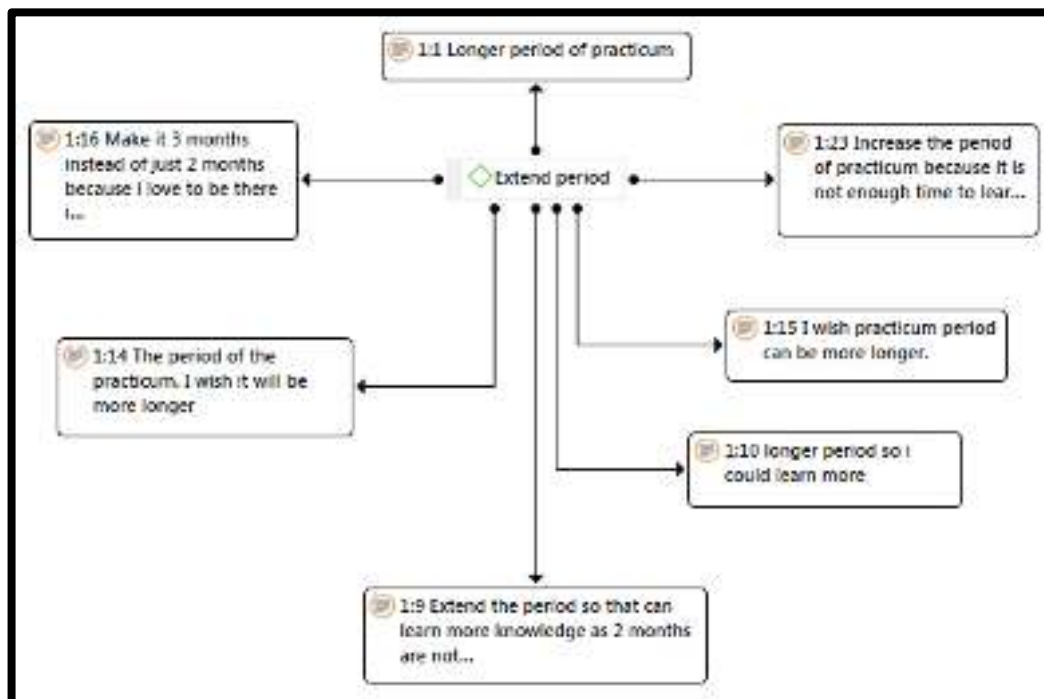
Figure 9. Extending the period of practicum

The need to provide stipend/payment during practicum. Understandably, different organisations would have different policies in terms of payment of stipend for the practicum student during the practicum period. In the absence of any rules and regulations imposing the necessity to make such payments, the situation remained that while some organisations would

pay for the practicum stipend, while some do not. In addition, while some organisations pay a large amount, some others pay minimal amount of stipend. This different practices by the industrial organisations probably led to this third suggestion by the students, that the industrial organisations should provide the stipend/payment to the students undertaking practicum at their respective organisations as shown in Figure 10 below. Some notable remarks from the survey responses include: *"there is no allowance at my firm", "I hope to get allowance"* and *"allowances should be made compulsory"*.
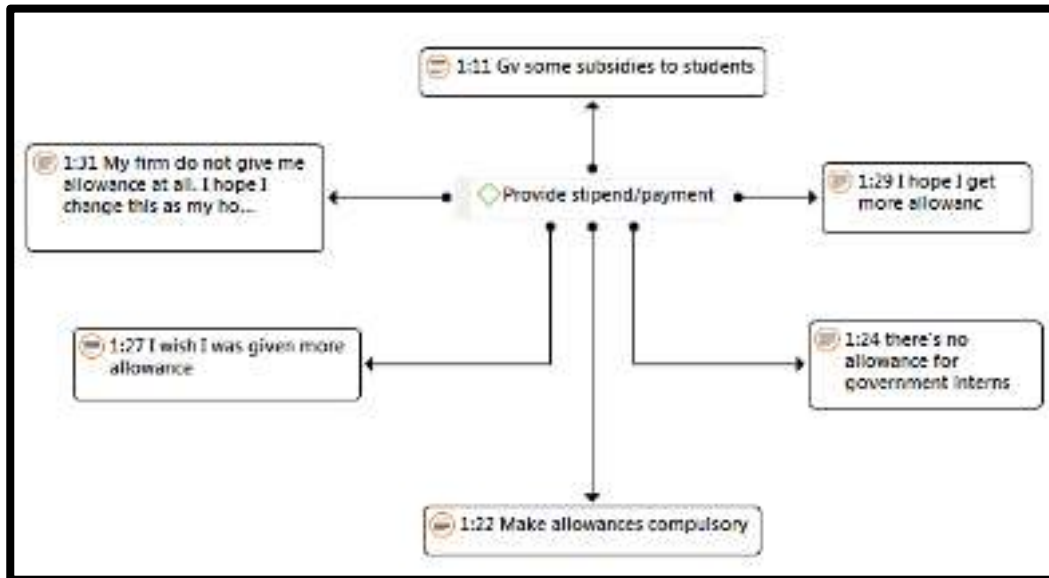
Figure 10. The need to provide stipend/payment during practicum

The need to diversify the practicum works. This final suggestion by the students related closely to the topic of study, i.e. knowledge transfer experiences by practicum students, and an extension of the earlier suggestion, i.e. to extend the practicum period to be longer. While some organisations are highly specialised in specific matters, such as criminal matters, land-related registrations and corporate commercial, some other organisations provide diversified matters. The survey responses revealed the suggestion by the students for the need for the industrial organisations to provide diversified works for the practicum students, so that they could learn various legal matters during their practicum period. This suggestion was generated from ATLAS.ti network and shown in Figure 11 below. Few glaring remarks by the students include: *"I want to find more diversified work"* and *"I wish to be exposed to other (legal) matters, too"*.
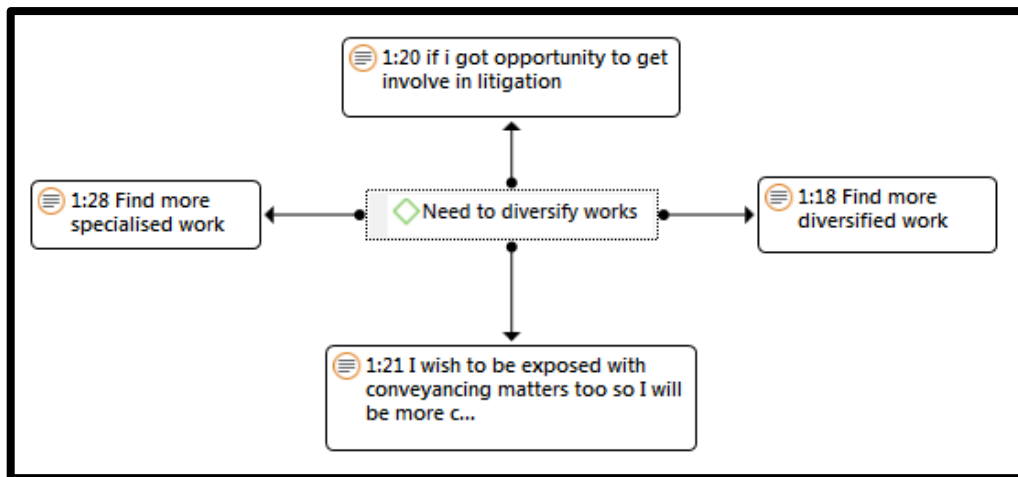
Figure 11. The need to diversify the practicum works

Implications & Conclusion

This paper deliberated on the knowledge transfer experiences during practicum from the students' perspectives, from various aspects, such as the scope of training by the students, the supervision aspect by the industrial organisation supervisors, as well as the relevance of the trainings to the students' future legal career. In particular, the implication of this study is that it contributes towards better understanding of the transfer of knowledge experiences among the law practicum students, particularly in preparing them for their future career upon completion of their studies in various legal matters at various legal departments. Within the broader aspect, this paper is intended to serve as a catalyst for future research on the aspects of industrial trainings or attachments particularly for law students, and generally for any other courses engaging in practicum and industrial trainings.

Moving forward, future research could focus on investigations from the viewpoint of industrial supervisors as well as report supervisors from the university to further enhance the findings by allowing for triangulation of data sources, as had been reported in various past literature on the subject matter. Further research could also be duplicated for any other fields engaged in practicum trainings as one of its courses of study.

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Communicating with the Gen Z: Enhancing Communication Skills Through 'Flipped Learning' Approach

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Abstract

Understanding the preferences in learning for generation Z or Gen Z students is critical to higher education success. Thus, student's perspective is important in the implementation of a new learning method in the classroom. This is necessary because student views will determine whether the approach can be continued or not. 'Flipped Learning' is an approach where traditional one-way lectures are reversed to provide space for active learning opportunities where the learning space is aided by technology. Communication among students is important in this approach as they have to discuss to complete their assignments and projects. This study examines the use of 'Flipped learning' approach to improve communication skills in active learning opportunities among accountancy students at the Tunku Puteri Intan Safinaz School of Accountancy (TISSA) at Universiti Utara Malaysia. This study uses qualitative research method. In this study, researchers have conducted a systematic investigation from their own experiences in teaching the accounting subject. Participants comprised 49 business accounting students to seek reflection from the 'Flipped learning' approach and 5 students were selected to be interviewed for more understanding on the students' perceptions on "Flipped" learning approach. The results show that students feel they have more time to communicate in class through the 'Flipped learning' approach. This has improved their proficiency in communication skills.

Keywords: Flipped classrooms, Generation Z, active learning, communication skills, action research, technology in education, student accounting.

Introduction

Understanding the millennial generation or 'Generation Z' needs and preferences in learning style is critical to higher education success. The students who are in this generation are distinctive in their wants and needs especially when it pertains to learning. The term "Generation Z" refers to the group of people born between 1995 and 2012. They're currently between the ages of five and 19, and they're already are the majorities of students in higher learning institutions.

The Net-Generation or also known as iGeneration, were surrounded by digital technologies from a young age, thus Generation-Z are very technology-savvy. Predictably, they will have a much higher need for technology-based teaching and learning approach, leading to a disinterested attitude towards the traditional methods of education (Jones, Jo & Martin, 2007)

The use of technology in delivering university courses is critical in the era of knowledge enhancement. The usage of technology to deliver accounting courses has been highly recommended (Friedman, 1981). However, the use of technology in university courses has

been reported largely only focused in delivering content rather than as a medium for interactions among students. In a traditional teaching method, also known as instructor-centred learning, the instructor will deliver one way lectures in classrooms. This method encourages students to become passive students where they rely solely on hearing-based learning, repetition and memorisation. In the traditional method of teaching accounting education, courses are taught in the classroom lecture mode, and students have to complete the tasks given as homework (Friedman, 1981).

In the current era, the increased technology used in teaching and learning has progressed rapidly. Many researchers have attempted to study the effectiveness of e-learning as a new concept of teaching and learning processes. In accounting education in particular, researchers have attempted to investigate the impact of technology in learning and delivering accounting courses and various findings have been found (Dowling §, Godfrey §, & Gyles, 2003; Du, 2011; Jones & Chen, 2008; Keller, Hassell, Webber, & Johnson, 2009). Du (2011) who conducts studies on comparisons among the traditional methods of teaching with technology based methods in teaching and learning in an accounting principal course, found that the courses conducted using alternative approach in learning has increased the performance of students ' final exams.

'Flipped learning' approach is an approach in teaching and learning where in this approach, class lectures are conducted using videos so the students may follow the lectures outside of the classroom. In this approach, the lecture videos are uploaded on the internet to replace the lectures in classrooms. In classrooms, only discussion of activities or training will be conducted. Researchers have given various definitions of "flipped learning" (Freeman & Hancock, 2013; Musallam, 2010; Warter-Perez & Dong, 2012). For example, Musallam (2010) described that in the flipped learning approach, educators shifted their teaching approach by giving lectures to students using tools assisted by the technology. This includes the recording process of video and audio lecture or video learning from Internet sites where the video can be viewed by students in their own convenience. In accounting classes, discussions are very important to develop a better understanding of the subject. Without a strong foundation in communication, students will likely face a huge problem throughout their studies and work environment. It is hoped that with the use of "flipped learning" method, students will be active and interact effectively in the classroom and will directly improve communication skills between students.

Methodology

In this study, semi-structured interview was used to collect data. The study involved 49 students from a Business Accounting class at UUM in the first semester of 2017. The objective of this study is to study how the use of 'flipped learning' can help to improve the communicating skills among students in the problem solving activities for the Business Accounting course. The assessment for the results of this study is based on communication skills rubric used to assess the course.

The qualitative data were coded and analysed using thematic analysis (Patton, 2002), which involves assigning each unit of data its own unique code and identifying repetitive patterns of actions and consistencies. Data coding was performed to identify the themes and categories of qualitative data. Data coding is a cyclical process, where usually several cycles of coding processes are needed for a good coding result, and the cycles of coding processes are performed to manage, filter, highlight, and focus the salient features of the qualitative data with the aim to generate categories, themes, concepts and build theories (Creswell, 2013; Saldaña,

2009).

Figure 1 below are snapshots of videos developed using Screencast O Matic application and being posted in Youtube. The lecturer explains the contents of the chapters in Business Accounting course in the videos. The students need to watch the videos before attending the class. In the class sessions, exercise questions regarding the chapters will be distributed to the students in groups and students need to communicate with their groupmates and try to solve the problems given in the exercise questions. At the end of the class, students are given reflection questions on the effectiveness of using 'flipped learning' approach in enhancing their understanding on the chapter and enhancing their communication skills.

Figure 1. Snapshots of videos developed using Screencast O Matic application

Results and discussions

The results have found that most of the students have positive responses to the 'flipped learning' approach introduced to them. The students were satisfied with this concept as it had improved their understanding of this subject. With this approach, they have more time to communicate and discuss with the lecturers and among group members to complete their tasks and learning the subject. The results also show that student communication skills have improved by using the 'flipped learning' method. Students also give positive response on the videos uploaded. The result of the assessment of the students' assignments shows that students had extensively discussed the topics. The classroom environment becomes more lively and full of excitements where students actively communicate with each other to complete the assignment. This is in line with the previous research stating that with the use of 'flipped learning', students can identify issues and problems in complex situations and are able to evaluate and give justifications to the situations (Kashefi, Ismail and Mohammad Yusof, 2012).

Recent studies on Gen Z in higher learning education also support the findings. According to Mohr (2017), Gen-Z students prefer flipped learning methods used in their courses and rely on YouTube as a primary source of self-instruction because the students see themselves as problem-solvers in which individual students seek solution and information online to solve the problem and to contribute specific elements to a larger project.

Through 'flipped learning' approach, students can be prepared prior to class by watching the lecture videos and if they do not understand them, they can watch the video repeatedly to understand the specific parts that need more understanding. This will make them more prepared before they attend the class for the discussion and problem solving activities.

Based on the findings of study, it is also concluded that through the 'flipped learning' approach, lecturers have more time to focus on each student in a class session to help students to solve the tasks given. By uploading the lecture video in advance, students can understand the topic before they attend the class sessions. Therefore, they can also have more time to communicate and discuss to solve the problem in class.

Studies show classes that uses 'flipped learning' approach promotes effective interaction between students and lecturers. Classes become active with discussion. The level of understanding of this subject also rises where students can answer the questions given easily as they take the opportunity to communicate with lecturers and other students when they encounter problems regarding their assignment. With time limits in completing the syllabus, the 'flipped learning' approach can be a solution to increase active classrooms and improve communication skills among students. Below are some of the answers from the interviews with students that support the findings discussed.

"I discuss and communicate with my friends during discussions regarding questions when I do not understand"

"I can ask when I have difficulty in answering a question"

"I can communicate well with my groupmates"

"We can do the assignment together and lecturers can help us solve the problem"

"Yes, (this method) is very useful. After watching a video, we are able to make group discussion and we make sure everyone from us understand the topic and we will bring questions if there are questions or unclear issues"

"We can help to clarify on this topic to each other"

"After discussing together, I think I love this new lesson because I understand better"

"Yes, I like it. It makes me more understand about topics clearly"

"This topic becomes easier as assignment is done in class together"

Nevertheless, some students responded that time is needed for students to view and understand the materials posted online. In addition, video content should be attractive to expand the interest of students to understand and watch until the end. This demonstrates that the Z generation favours information that is meaningful and that they can engage in hands-on learning opportunities. Gen Z students prefers to obtain materials in which they can immediately apply what they learn to real life, in an ideal learning environment and to be

actively doing the learning to obtain the most information (Seemiller and Grace, 2017).

Conclusion

The teaching and teaching process in the lecture room should be diversified with the latest enhancement and application of technology to attract students' learning interest in line with the government's aspiration to create literacy in information technology among the nation. Studies have shown that the 'flipped learning' method can create effective interactions between students and lecturers. Gen Z students are seen to reflect on information before discussing with their group members and ultimately sharing it with the larger group, hence increasing their communication skills. Therefore, it can be concluded that enhancing intrapersonal qualities including high communication skills, fits nicely with the flipped learning approach. This approach is seen better that the old fashioned learning method. This is because, through flipped learning approach, students reflect on content to prepare them for the group discussions in the class sessions rather than assigning homework, which often is done after the learning occurs (Seemiller and Grace, 2017).

The study also proves that classes become active with discussions and students look happy and enthusiastic as they can perform their tasks with friends with the help of the lecturer. The level of understanding also increases where students can answer the questions easily as they take the opportunity to speak and discuss and seek assistance from lecturers and other student in solving problems in their assignments. Therefore, in conclusion, students have a positive perspective on 'flipped learning' approach. Thus 'flipped learning' is the proposed way to be implemented by educators to increase the active classroom and to enhance communication between students and lecturers and among students themselves.

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ISS Success Model in E-Learning Portal on Malaysian Higher Education Institutions

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Abstract

This study used the ISS (Information System Success) Delone and McLean model to investigate the E-learning portal in the Malaysian Higher education institutions. The objective of this research paper is to check the existing E-learning portals accessibility among the students' perspective. The present study included the service quality, system quality, information quality, user satisfaction and system use and E-learning portal success. The online survey was conducted on Malaysian Higher education institutions students. The empirical data of 286 students were analyzed using the Partial Least Squares Structural Equation Modelling. The results showed that E-service quality, information quality, system use, and system quality have significant direct relationships with the user satisfaction and E-learning portal success while system quality has insignificantly relation indirectly with system use and E-learning portal success. The results showed that not all the students are satisfied with the service quality, information quality, and system quality with the existing E-learning portal. Furthermore, the study discusses the importance of user satisfaction and the System to the E-learning portal success. This study also deliberated the students' feedback in term of E-learning portal. Finally, this research paper highlights the few implications for higher institution and policy maker to increase the quality of content and information quality of the E-learning portal in future.

Keyword: E-learning Portal, system quality, Information Quality, ISS D & M, Higher Education Institution

Introduction

In the 21 centuries, technologies have changed the traditional way of education to the modern way of learning. E-learning is covered under a larger term of technology-based learning through the websites, learning portals, video conferencing, YouTube, mobile apps and thousand types of free available websites for blended learning tools. Currently, E-learning is enhancing students' knowledge, even the academic staff and professional and industry people skills through the internet (Adams, Sumintono, Mohamed, & Noor, 2018; Chopra, Madan, Jaisingh, & Bhaskar, 2019). Most of the higher education universities are providing online courses for their students within and off campuses. In Malaysia, the Government are providing a lot of resources to higher education. Based on the news reports, the Malaysian universities, colleges, polytechnics are using Massive Open Online Courses (MOOCs). The growth of the online education market is expected 16.4% annual over the forecast period, 2016-2023. With the massive growth of the internet maybe university teaching and learning model will be changed in the 10 to 15 years' time.

E-learning portal is great activity for learning in the classroom. E-learning portal is enhancing the learning process among the students and lecturers, it provides them several benefits such as time-saving, reach to the large audience (Lwoga, 2014). The good system

quality (SQ), service quality (SVQ) and information quality (IQ) are directed to use the E-learning portal and Application. The higher education institutions are spending huge amount of budget to build and update the E-learning portal and apps. Most of the studies (Hong, Tai, Hwang, Kuo, & Chen, 2017; Muda & Erlina, 2019) mention that SQ , IQ and, SVQ are very important for user satisfaction. Based on the study of (Chiang, Boakye, & Tang, 2019; Pham, Limbu, Bui, Nguyen, & Pham, 2019) argued that SQ, IQ and SVQ are increased the confidence to use the system. Therefore, this research paper will investigate the importance of the SQ, SVQ, and IQ toward the E-learning portals on students' perspective.

Most of the Malaysian universities are offering the online course to the students in campus and off campus. The present study focuses on the user satisfaction and E-learning system use toward the E-learning portal success of the Malaysia universities. Based on the many researchers (Cidral, Oliveira, Di Felice, & Aparicio, 2018; Selvaraj, 2019) claimed that user satisfaction and E-learning system use have huge impact on the success. This study will conduct on the students how are enrolled with Malaysia universities and using the E-learning Portal for their learning. The main objective of this study is to highlight the impact of information quality, system quality, and service quality toward the user satisfaction and E-learning system use impact on the E-learning portal success.

Literature review

E-learning Portal

Electronic Learning is commonly known as E-learning, is among the earliest application of web-based technology (Azhari & Ming, 2015). In today the E-learning getting very popular worldwide, E-learning is defined as the delivery of learning using completely through the Internet and digital technology. Almost all the universities and colleges have developed the E-learning portal of their students and faculties (Moore, Dickson-Deane & Galyen, 2011). In the 21st century, the E-learning create a bigger impact on all types of the student, much as the part-time and Full-time or distance learning student in the higher education institution (Azhari & Ming, 2015). Nowadays, majority of the postgraduate students are registered as part-time student, because they are working in the companies. E-learning really helps them a lot because of their time constrain. Since 2012, Massive Open Online Courses (MOOCs) have been started advance and modern type of E-learning for students, Society, and for Industry people as well (Margaryan, Bianco & Littlejohn, 2015). MOOCs are endorsed as a major development in higher education Million of the peoples and student are taking the benefits and uplifting the existing skill. Most of the Malaysian Universities have adopted the E-learning in the late 1990s (Hussin, Bunyarit & Hussein, 2009). Based on the research of Azhari & Ming (2015) highlighted the issues on the Learning Management System (LMS) of the Malaysian universities such as the lack of trained lectures, slow of internet, WIFI coverage, infrastructure, the interface of design, quality of content, system use and students' adoption. There are However, the quality of content and information quality on the E-learning portal it increases the interest of the user (Panyajamorn et al., 2018). In the present research, we will find out the importance of the E-learning portal success in the Malaysian student perspectives.

Model of DeLone and McLean Model (D&M)

D & M model ISS success model has gained a lot of attention of researchers in the field of information system. This model was initially developed in 1992 by William H. DeLone and Ephraim R. McLean to measure the dependent construct of IS success (DeLone & McLean, 1992) was based primarily based on following three aspects: (Shannon & Weaver, 1949) study on communications, Taxonomy of (Mason, 1978) measuring information output and Research work on information system during that period. There are three levels of communication as per (Shannon & Weaver, 1949) First Level: Technical: (accuracy of information system)Second level: Semantic (success of right information conveyed to right receiver) Third level: Effectiveness (influence of information on receiver). The information success model (1992) has discussed the six dimension such as information quality, system quality, system use, user satisfaction, and organizational impact. After seeing the importance of this model DLML (DeLone & McLean, 1992) model in the last one decade, the author of D & M Model has modified the original model of 1992 and add one of the most important dimensions of service quality and the end replaced the individual impact and organizational impact with the Net benefits. Figure 1 showed the original D&M Model having Six interdependent dimensions (DeLone & McLean, 1992). In this model "system Quality" construct depicts "technical success", while "Information quality" variable demonstrate "semantic success" while the other four elements "use", "user satisfaction", "individual impact" and "organizational impact" show "effectiveness success".
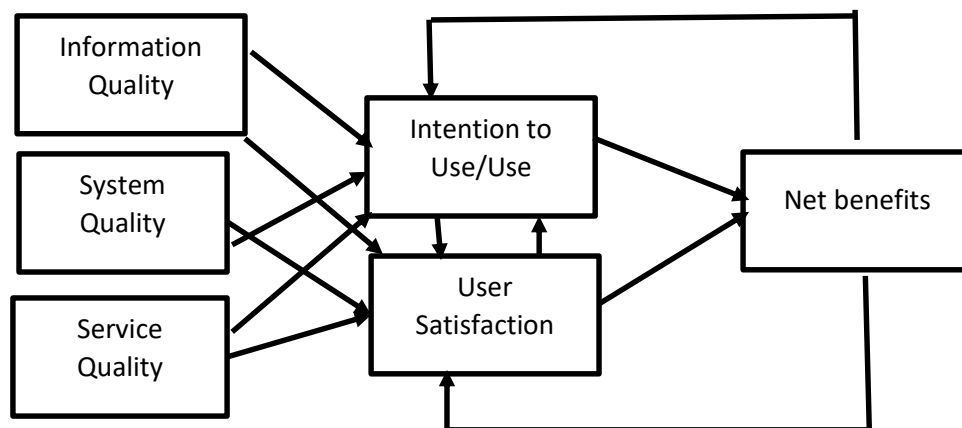
Figure 1. Updated DeLone and McLean IS Success Model (D&MISSM)
Source: Delone and McLean (2003)

As time passed, the researcher used D&M Model to check the success of the information communication system. Many studies suggested to add the new dimensions of D&M model and some have recommended to include the such as "service quality" , "workgroup impact", "consultant/vendor quality" in the D & M model (Gable et al., 2003; Ifinedo, 2006). While, the few researchers criticise on D & M Model "use" and "user satisfaction," dimensions. Many studies have changed the number of dimensions according to their context, but no study consider organization capabilities mediating role in the relation between alone impact and organizational impact.

The study of Ifinedo (2011) highlight the importance of the system quality creates great impact on the E-learning portal. The E-learning system should be working efficiently, response

time of the E-learning portal must be very robust. The system quality of the E-learning will generate query results more quickly. Moreover, system quality will increase the interest of the end user. Also, the user-friendly interface and modern graphical interface increase the level of the user satisfaction. The study of Petter et al (2013) highlighted that service provider should adopt the new changes and modify time to time the system. In addition, system quality construct has been used in the context of E-learning system which depicts whether the user is satisfied with the quality of E-learning portal. "Perceived ease of use" is the most used measure of "system quality" (Davis, 1989).

Furthermore, SQ has been identified as ease of learning, ease of use, the convenience of access, the usefulness of system feature, system complexity, system features, and response time of information system (Beheshti & Beheshti, 2010). Furthermore, suggested by Sedera et al. (2013) SQ means ease of learning, efficient, consistent, modifiable, efficient, personalizable, meets the requirements, ease of use, and reliable. In addition, (DeLone & McLean, 2016) acknowledged system quality by measures: ease of use, availability, flexibility, reliability, usefulness and response time. There are certain modifications in measures of system quality occurs with the passage of time but some measures still remain same and consistently being applied and validated which are as follows: luxury of use, comfort of learning, reliability, personalizabality, reply-time, availability, system Interactivity, and system security.

The IQ incorporates the accuracy of the information depicts the precision in information provided by the E-learning system, timeliness is another important indicator of information quality that information should be generated within time and latest. So, that higher management can take quick decisions, sufficiency is another characteristic of information quality that it should not be insufficient and must contain all information required to the user. Understandability is very effective characteristic of the IQ construct that information provided by the system should be easy to understand by the user and should not complex in nature that difficult to grasp. Conciseness is another vital part of information quality produced by the E-learning system, system in any organization (Petter et al., 2013). Additionally, Information quality demonstrates the output characteristics of the information system that it is proving the timely information to all the departments of organization, the information should relevant to the particular user or the department, and the required information is available at the right time to the right person, the data 'provided by the information system should be understandable to the users.(Ifinedo, 2014).

Furthermore, the main purpose of information quality is to provide users online knowledge with correct relevant information on 24/7. So, it must be considered active for E-learning portal success. Information quality in past literature considered being part of user satisfaction measurement. It is not treated as a separate variable further argued that information quality measures vary depending upon the type of information system success going to be evaluated, but there are consistent measures of information quality for the E-learning success as follows: Relevance, Usefulness, Understandability, Accuracy, Reliability, Currency, Completeness, Timeliness.

Service quality construct refers to the excellence of support provided by the technical department to all the users of E-learning system in organization. Service quality refers to "responsiveness" which is a very important indicator, it means how efficiently technical department respond the queries of users. In addition, empathy is another characteristic of Service quality that how attentively they are helping the users (Petter et al., 2013).

Moreover, service quality in information system success field is often neglected D&M Model and further it is updated in D&M (2013) IS Success Model. Many items have been stated to measure E-learning system service quality but mostly cited instrument developed by authors (Parasuraman, Zeithaml, & Berry, 1986; Parasuraman, Zeithaml, & Berry, 1988;

Parasuraman, Berry, & Zeithaml, 1993; Parasuraman, Zeithaml, & Berry, 2002). They used ten dimensions to measure service quality which later transformed into five dimensions: tangibles, reliability, responsibility, assurance and empathy. This updated model of D&M Model found extremely useful for evaluating the success of different types of technologies related application. Most of the studies used this model of an information system, ERP system success, e-procurement application, e-government application on the user perspective, E-banking application use success, and also several other online application successes business (Hsu, Yen & Chung, 2015; Almarashdeh, 2016; Ojo, 2017; Cidral et al., 2018; Aparicio, Oliveira, Bacao & Painho, 2019). E-learning involves the usage of modern technology to impart learning, thus the present study we need to investigate how much E-learning portal success is accepted by the end-user. In Figure 1 has shown the research framework of the present study and hypothesis.
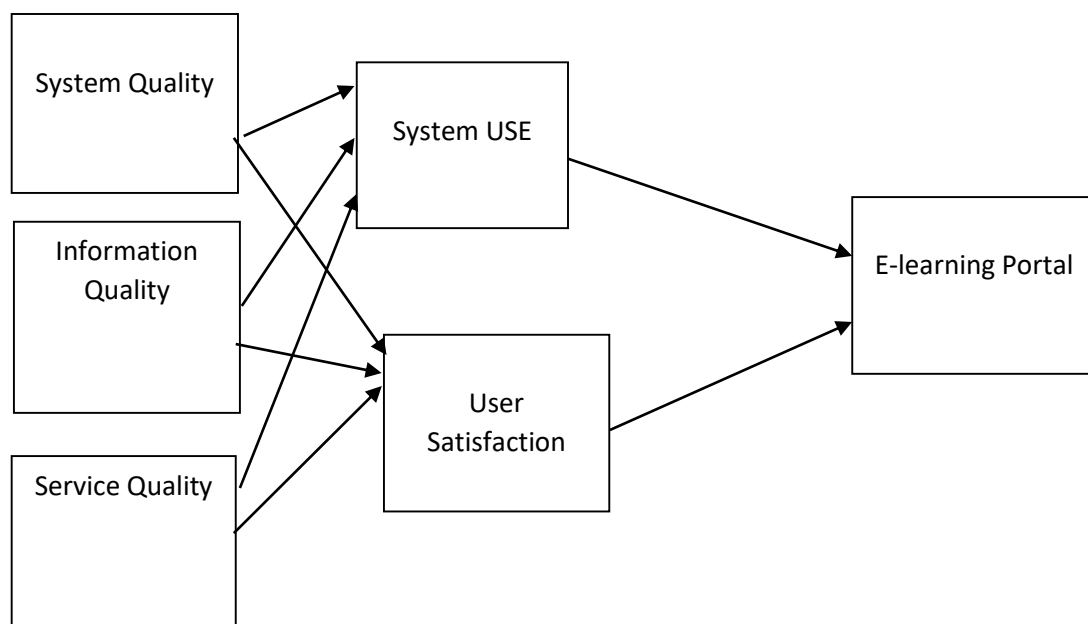
Figure 2. The research Framework of the present study

Hypotheses Development

H1: E-service quality has positive significant impact on the system USE.

H2: E-service quality has positive significant impact on the user satisfaction.

H3: Information quality has positive significant impact on the system USE.

H4: Information quality has positive significant impact on the user satisfaction.

H5: System quality has positive significant impact on the system USE.

H6: System quality has positive significant impact on the user satisfaction.

H7: System USE   has positive significant impact on the E-learning portal success.

H8: User satisfaction has positive significant impact on the E-learning portal success.

Methodology

Instrument Development

The present study has developed the survey instrument based previous study. The questionnaire was adopted/adapted and reworded in the context of E-learning. All items used a 5point Likert scale ranging from 1 – "strongly disagree" to 5 – "strongly agree." The questionnaire items of system quality, information quality, system usage, satisfaction user was adopted from (McGill, Hobbs and Klobas, 2003; Rai, Lang and Welker, 2002). The E-learning portal success survey instrument items were adopted from (Freeze, Ronald D., et al., 2010). All items of E-learning portal success were used a 5point Likert scale ranging from 1 – "Poor", 2- "Fair", 3- "Satisfactory", 4- "Very good" to 5 – " Excellent".

Data Collection

The research used a quantitative approach, the survey was conducted through the GOOGLE form, and the links were shared with the student through the WhatsApp group of lecturers. All the Malaysian University student is participating in the E-learning Portal. The convenience sampling technique was used. This study used a cross-sectional quantitative survey method. In Table 1, the students of undergraduate 217(76.1%), Master 48 (16.8%) and PHD/DBA/D.M 20(7%) have participated in the online survey. The survey was conducted in August and September 2019.

Table 1
Student Participated in the Survey based on the Program enrolled

Program enrolled	Total	Percent
PhD/DBA/D.M	20	7
Master	48	16.8
Undergraduate	217	76.1
Total	285	100

Data analysis

In Table 2, in the demographic analysis, the 'gender' factor showed that female participants have more response rate of 68.4 % as compared to 31.6% who were male. In Malaysian Universities are more enrolment of female as compared to male. Regarding the 'age group' of respondents, data revealed that majority having the age-group of respondents 21-30 years 216 (75.8%). Also, regarding the "Experience Using the E-learning portal", data showed that most of the students participated in the survey they have experienced using the E-learning portal is more than 2 years.

Table 2
Demographic Profile of Respondents (N= 285)

Demographics Respondents Percentage (%)	Frequency	Percentage
Gender		
Male	90	31.6
Female	195	68.4
Age-Group		
Less than 20 years	19	6.7
21-30 years	216	75.8
31-40 Years	36	12.6
More than 41 years	14	4.9
Experience Using the E-learning portal		
Less than 1 year	30	10.5
More than 1 to 2 years	155	54.4
More the 3	99	34.7

In Figure 3, showed very clearly which of the software in the class are used by the lecturer during the lecture. Based on the data Kahoot, Padlet, Quizzes and Slideshare majority of the lecturers are using during the lecture. It means that most of lecturers got the knowledge regarding the web 2.0 application. But still some the lecturers are not using the other renowned online learning software. Based on my survey data showed that still not many lecturers are using the google classroom tools for their teaching purposes. The university should encourage the lectures to use more online software in the class. It will increase the interaction between the students and lecturers. In the spirit of technology for teaching, higher education institution colleges, Lecturers and students should use the more web 2.0 educational tools such as Glogster (multimedia poster 3D), Kidblog, Glogster.Kidblog. Linoit, Storybird VoiceThread, and Wordle in the classroom.

Which online software is being used in your Class?
266 responses

Padlet	117 (40.9%)
Kahoot	223 (78%)
FlipGrid	12 (4.2%)
Quizzes	104 (36.4%)
Edmodo	29 (10.1%)
Slideshare	147 (51.4%)
Cocreative	1 (0.3%)
Spss & psm	1 (0.3%)
Sharepoint	1 (0.3%)
Edpuzzle	1 (0.3%)
SPSS	1 (0.3%)
google classroom	1 (0.3%)
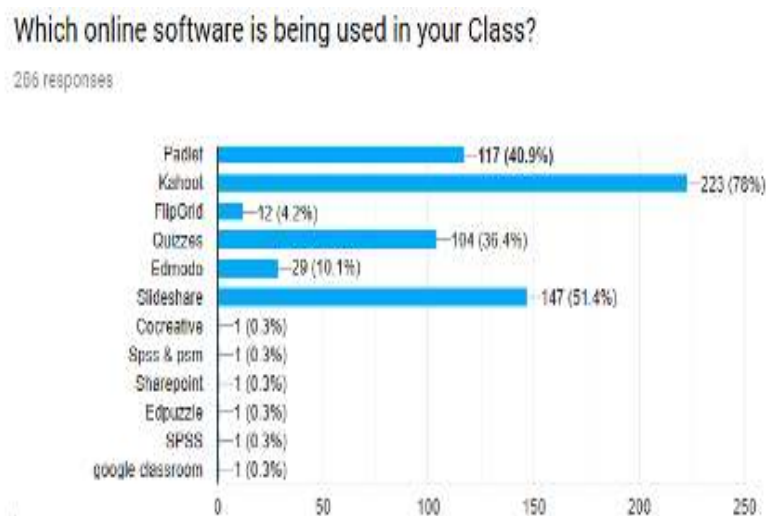
Figure 3. Online software used in the class

In Table 3 and Figure 4, showed the result of E-learning portal success regarding the question "The E-learning portal has a positive impact on my learning" most of the study are satisfied with the current E-learning Portal. Based on the descriptive data still some of the students having a poor feedback on the E-learning portal. Furthermore, more than 80% of students are happy with the services of E-learning portal.

Table 3
E-learning Portal Success

E-learning Portal Success	Poor	Fair	Satisfactory	Very good	Excellent
The E-learning portal has a positive impact on my learning	9	53	101	84	38
	3.2	18.6	35.4	29.5	13.3
Overall, the performance of the E-learning portal is good	13	51	102	85	34
	4.6	17.9	35.8	29.8	11.9
Overall, the E-learning portal is successful	10	56	97	89	33
	3.5	19.6	34.0	31.2	11.6
The E-learning portal is an important and valuable aid to me in the performance of my class work	9	48	96	87	45
	3.2	16.8	33.7	30.5	15.8
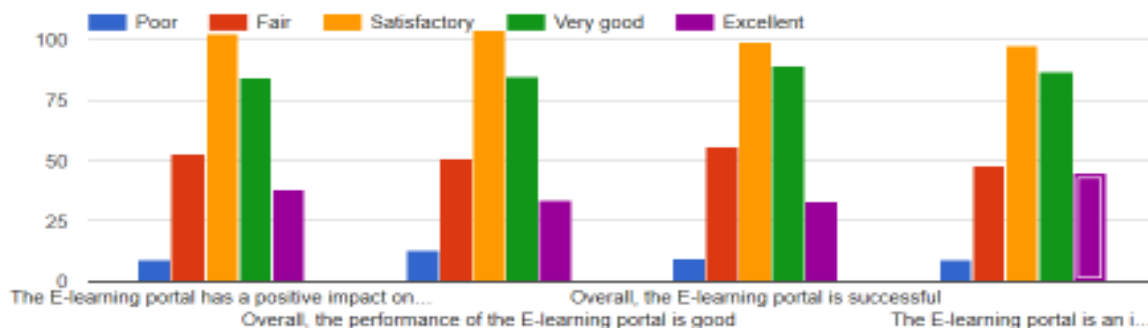
Figure 4. E-learning Portal Success

In the Table 4 and Figure 5, showed that the system uses of E-learning Portal by the students, Majority of the students frequently are using the E-learning portal for their study. On the other side, they provide the answer of their study depend on the E-learning portal, because they are downloading the material and communicate with the lecturers and students through the portal.
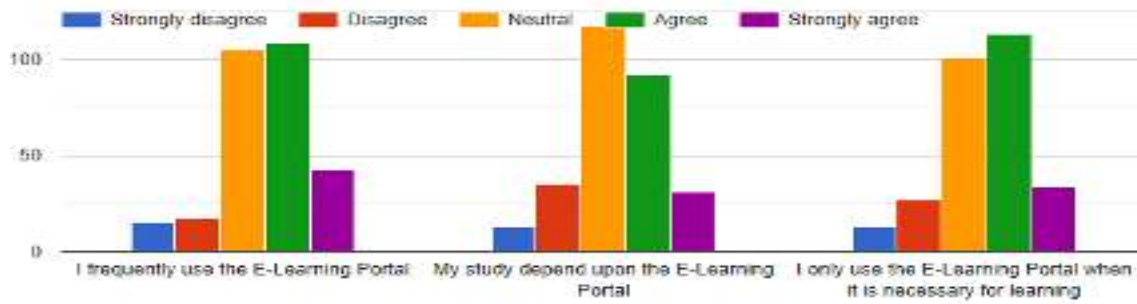
Figure 5. System USE of E-learning Portal

Table 4
System USE of E-learning Portal

System USE of E-learning Portal	Strongly Disagree	Disagree	Neutral	Agree	Strongly Disagree
1. I frequently use the E-learning Portal	15	17	103	107	43
	13.0	35.0	115.0	91.0	31.0
2. My study depends upon the E-learning Portal	5	12	40	32	11
	4.2	9.1	31.6	40.4	14.4
3. I only use the E-learning Portal when it is necessary for learning	13	27	100	111	34
	4.6	9.5	35.1	38.9	11.9

In Figure 6, showed that the user satisfaction of the E-learning portal access, most of the students are happy with the services provided by the University related to the E-learning. Many of the them agree with the current services. Based on the data, most of them satisfied with existing E-learning portal.
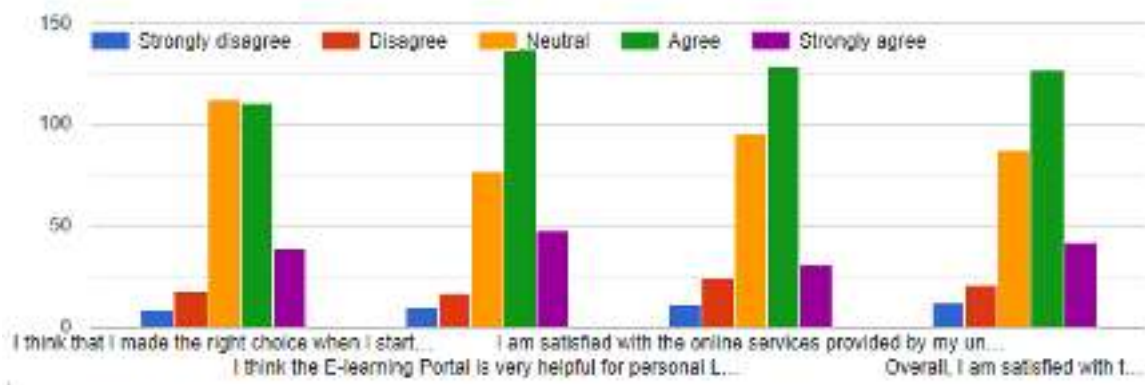
Figure 6. User Satisfaction of the E-learning

In the Table 5, highlight the data related to the System quality on the success of E-learning portal. Based on the question of E-learning portal 24/7 availability not all the students are agreeing with that, there are few students are not happy with the System quality as well. It is important nowadays system must me working 24/7. Due to the vast coverage of the internet,

students can access the E-learning Portal from any places even in the coffee shop, while they are travelling. Based on the data some of the student also not happy with the current design of the E-learning portal. Lastly, whereas E-learning portal excellence and e-learning tutors and course resources quality can be measured as vital, E-learning responsive and support quality also makes significant contribution to complete E-learning service quality.

Table 5
System Quality of E-learning Portal

System Quality of the E-learning Portal	Strongly Disagree	Disagree	Neutral	Agree	Strongly Disagree
1. The E-learning portal is always available.	11	43	115	83	33
	3.9	15.1	40.4	29.1	11.6
2. The E-learning portal is user-friendly.	12	26	90	115	41
	4.2	9.1	31.6	40.4	14.4
3. The E-learning portal provides interaction between users and the system	11	27	90	109	48
	3.9	9.5	31.6	38.2	16.8
4. The E-learning portal has attractive features that appeal to users	9	19	101	116	40
	3.2	6.7	35.4	40.7	14.0
5. The E-learning portal provides high-speed of information access	14	30	100	102	39
	4.9	10.5	35.1	35.8	13.7

In the Table 6, highlight the data related to the Information quality on E-learning portal. Based on the question related to the E-learning portal provides information that is exactly what you need, almost all the students are satisfied with that information. This section also very important for E-learning due to the information quality is played the major role in the success of the portal. At the main objectives of the E-learning portal is hence the learning capability for the individual. The important factors of the information quality are up to date information, easy to understand, and enough information. Nearly, almost all the students are agreed with information quality.

In the following section related to the service quality of E-learning portal success. In Table 7, based on information related to the E-learning portal makes it easy to find and navigate information on E-learning portal success majority of the student are agreed with the E-learning portal. Based on the result 80 percent of the students are agreed with the service quality of the E-learning. The e-learning system's accuracy adequately increase the attention of the students to complete the task more quickly. Information shared on the E-learning portal must be reliable, precise, easily to understand, easily accessible, well organized, which will allow the students to complete E-learning transaction with accurately. At the end most of the students will be more satisfied with the e-learning system.

Table 6
Information Quality of E-learning Portal

Information Quality of the E-learning Portal	Strongly Disagree	Disagree	Neutral	Agree	Strongly Disagree
1. The E-learning portal provides information that is exactly what you need.	4	19	107	120	35
	1.4	6.7	37.5	42.1	12.3
2. The E-learning portal provides information that is relevant to learning	5	9	90	136	45
	1.8	3.2	31.6	47.7	15.8
3. The E-learning portal provides information that is easy to understand	5	12	95	125	48
	1.8	4.2	33.3	43.9	16.8
4. The E-learning portal provides enough information.	10	17	108	111	39
	3.5	6.0	37.9	38.9	13.7
5. The E-learning portal provides up-to-date information	6	14	109	124	32
	2.1	4.9	38.2	43.5	11.2

Table 7
Service Quality of the E-learning portal Success

Service Quality of the E-learning Portal	Strongly Disagree	Disagree	Neutral	Agree	Strongly Disagree
1. This E-learning portal makes it easy to find what I need.	10	20	97	119	39
	3.5	7.0	34.0	41.8	13.7
2. This E-learning portal makes it easy to navigate anywhere on the site.	6	24	101	113	41
	2.1	8.4	35.4	39.6	14.4
3. This E-learning portal is well organized.	7	24	105	109	40
	2.5	8.4	36.8	38.2	14.0
4. This E-learning portal is always accessible.	13	34	106	95	37
	4.6	11.9	37.2	33.3	13.0
5. The Symbols and messages that declare the security of the E-learning portal are shown.	9	18	112	111	35
	3.2	6.3	39.3	38.9	12.3
6. Automated or human email responses are prompt in the E-learning portal	10	28	110	106	31

3.5	9.8	38.6	37.2	10.9

7. It is easy to find the responsible person's contact details.				
15	24	117	97	32
5.3	8.4	41.1	34.0	11.2

8. FAQs are available to help me solve problems by myself on the E-learning portal				
12	26	109	106	32
4.2	9.1	38.2	37.2	11.2

In the Figure 7, discuss the open-end questions answer, in the survey the research asks the student regarding the suggestion of E-Learning portal. Most of them highlight they concern related to the E-learning portal. In the present study we have listed down the key suggestion my the students regarding the E-learning portal success such as interface must me user friendly, E-Learning portal availability, System low down during the peak hour time, lecturers material, speed of internet, make sure the up time 24/7, error on the login, training related to use, quality of material, easy to use information, faster the speed, make sure the availability, notification on the E-learning portal, and information quality. Many students are not happy with the existing E-learning portal services.

Figure 7. Suggestion from Student related to the E-learning

Data Analysis in SmartPLS

To achieve the research objectives, the study has employed Partial Least Squares (PLS) version 3.0 to facilitate data analyses. In the context of inferential analysis, Partial Least Squares-Structural Equation Modelling (PLS-SEM) application has been used successfully in different areas of research, more specifically in management information system, marketing, strategic management, management science and social psychology, among others (Hair et al., 2016). Various PLS-SEM improvements have been made more recently with the inclusion of the following; guidelines for analyzing moderating effects (Henseler et al., 2016): utilization of confirmatory factor analysis for the verification of the measurement model (Hair et al., 2013); model quality evaluation (Hair et al., 2013); and the model 's predictive relevance (Hair et al., 2013). These improvements contribute to the expansion of PLS-SEM that is generally used as research instrument in the field of management information system as well as the social sciences (Hair et al., 2016). In addition, Hair et al. (2016) confirm the importance of PLS's ability to analyse variables in complex models, simultaneously. In PLS models, two main methodological elements are considered (Hair et al., 2013). They are evaluation of measurement model and evaluation of the structural model.

Internal Consistency Reliability

Internal consistency reliability refers to the extent to which all indicators of a particular (sub) scale are evaluating the same concept (Hair et al. 2016). In line with that, the composite reliability score value must be at least 0.70 and AVE score value to more than 0.50 (Hair et al. 2016). Thus, it explained deeply in table 8 below. As depicted in Table 8 all the variables included in this study have AVE and composite reliability more than the threshold value of 0.50 which is a suggestion of measurement model reliability. Hence, Table 8 stated that the average variance extracted (AVE) and composite reliability values of all variables are in an acceptable range.

Table 8 indicates that all variables of this present study have a better consistency. It shows that all the variables have high reliabilities and their AVE's are more than threshold values, which proved the reliability of the measurement model.

Table 8
Factor loadings, CR, and AVE

Construct	Item	Loadings	Composite Reliability	Average Variance extracted
E-Learning Portal Success	ELP1	0.940	0.97	0.88
	ELP2	0.940		
	ELP3	0.940		
	ELP4	0.930		
E Service Quality	ESQ1	0.870	0.97	0.78
	ESQ2	0.880		

	ESQ3	0.860		
	ESQ4	0.880		
	ESQ5	0.900		
	ESQ6	0.910		
	ESQ7	0.870		
	ESQ8	0.890		
Information Quality	IQ1	0.880	0.95	0.8
	IQ2	0.900		
	IQ3	0.910		
	IQ4	0.900		
	IQ5	0.890		
System Quality	SQ1	0.860	0.95	0.79
	SQ2	0.920		
	SQ3	0.890		
	SQ4	0.890		
	SQ5	0.870		
System USE_	SU1	0.910	0.85	0.66
	SU2	0.890		
	SU3	0.600		
User Satisfaction	USAT1	0.900	0.95	0.83
	USAT2	0.910		
	USAT3	0.900		
	USAT4	0.940		

Table 9.
Discriminant, Validity Matrix
HTMT

	E Service Quality	E-Learning Portal Success	Information Quality	System Quality	System USE_	User Satisfaction
E Service Quality						
E-Learning Portal Success	**0.69**					
Information Quality	0.87	**0.7**				
System Quality	0.82	0.74	**0.83**			
System USE_	0.71	0.57	0.76	**0.66**		
User Satisfaction	0.89	0.76	0.87	0.86	**0.79**	

Note: The bolded diagonal shown in Table 9 represent the square route of average whilst those of the diagonal represent latent variable correlations.

Discriminant Validity

In this research, discriminant validity is another criterion which assesses the degree to which a variable is truly not the same from other variables (Hair *et al.* 2016). Thus, it can also be seen as the extent to which a particular element differs from other constructs (Duarte &

Raposo, 2010). In line with that, a greater level of discriminant validity suggests that a variable is distinct and captures some phenomena that other variables do not. In this research, discriminant validity was ascertained using the square root of AVE and it should be greater than the correlations among latent constructs (Hwang & Min, 2015).

Therefore, to determine the discriminant validity, this study has considered the discriminant validity to confirm the external consistency of the model. The comparison among the latent constructs as explained in Table 9 depicts the square root of AVE of the constructs: E-Service Quality (ESQ) = 0.78; E-Learning Portal Success (ELPS) = 0.69; Information Quality (IQ) = 0.7; System Quality (SQ) = 0.83; System USE (SUSE) = 0.66; User Satisfaction (US) = 0.79.

Meanwhile, Table 9 illustrates square root of AVE is greater than the correlation between latent variable indicating the acceptable discriminant validity (Naala et al., 2016). Initially, this research has delivered an explanation of the framework and indicated the links of the relationship among the variables based on what has been obtained in the previous literature that probably has to be revised and modified due to the confirmatory factor analysis that has been conducted in this study. Thus, after performing the CFA in this research, none of the variable has been discarded eventhough there were some items deleted, in line with the recommendation with Hair et al. (2016), the variables with at least two items should be retained.

Hypotheses Testing Results

Table 10 shows that the hypotheses which were supported in this present research have p-values of less than 0.05, while the hypothesis which were not supported in the present research have p-values greater than 0.05. Table 10 also depicts the influence of the variables on E-Learning Portal Success as (dependent variable). In this light, R-square value resulted from the PLS outcome explained that all the variables influence the changes in the independent variable.

In regard to the hypothesis testing, six (6) independent variables were directly supported by the dependent variable while one (1) hypotheses were found to be insignificant to E-Learning Portal Success. While only one were not supported to the System USE.

Table 10
Results of hypotheses testing (Direct effects)

No.	Relationship	Std. Beta	Std. error	T values	P Values	2.50%	97.50%	Decision	R^2	f^2	Q^2
H1	E Service Quality -> System USE_	0.210	0.100	2.010	0.040	0.01	0.4	Supported	0.52	0.02	0.43
H2	E Service Quality -> User Satisfaction	0.390	0.070	5.430	0.000	0.26	0.53	Supported	0.42	0.24	0.26
H3	Information Quality -> System USE_	0.430	0.100	4.480	0.000	0.24	0.63	Supported	0.82	0.09	0.64
H4	Information Quality -> User Satisfaction	0.390	0.070	5.500	0.000	0.24	0.53	Supported		0.24	
H5	System Quality -> System USE_	0.040	0.090	0.490	0.630	-0.15	0.2	Not-Supported		0.001	
H6	System Quality -> User Satisfaction	0.190	0.060	3.300	0.000	0.09	0.29	Supported		0.06	
H7	System USE_ -> E-Learning Portal Success	0.020	0.060	0.390	0.700	-0.1	0.14	Not Supported		0.001	
H8	User Satisfaction -> E-Learning Portal Success	0.710	0.050	13.850	0.000	0.6	0.8	Supported		0.59	

Discussion

This work has contributed empirically to support the relationships between the variables, which has been tested both directly and indirectly in order to answer the research questions and to achieve the related research objectives discussed in the introduction part. The data were collected from universities students to ascertain E-learning portal services adaptability in the student perspective. The necessary analysis procedures have been taken to analyzed the data by using SmartPLS 3.0. The findings of this study were also compared with the findings of other studies to justify the results of the present study.

Theoretical Implication

In regard to the theoretical implications of this study, although technology adoption phenomena have been widely studied across contexts, both at individual (customer) and organizational (management) levels, Thus, there is no coherent attempt to examine the phenomena in the perspectives of E-learning portal success among students to enhancing the portal usage performance, particularly in Malaysia universities content. Basically, the research can be considered unique in the field of information system in general and E-learning portal success in universities specifically. However, this current study provides empirical evidence for the theoretical relationships hypothesized in the study framework. Particularly, it elaborated the relationship between the variables such as, E-Learning Portal Success, E-Service Quality, Information Quality, System Quality, System USE have significant impact on the User Satisfaction.

Practical Implications

This current study has several practical implications in relation to the E-Learning Portal technology in the context of Malaysia universities and other countries as well. Thus, the study findings will help the Malaysia government and universities policy-makers such as top management, ministry of higher education, Malaysia universities union in designing the policies and programs on E-Learning Portal Success in the country.

The results of this study can benefit universities to understand and present adequate indication for confirming a significant relationship between the major variables and mediation variable. In this light, there are several practical recommendations drawn logically from the statistical findings. The top management of universities are provided with practical recommendations in order to develop understanding on the implication of their commitment to E-service quality, information quality, system quality, system USE and user satisfaction in relation to the E-learning portal success.

Conclusion

The main purpose of this paper was to find and explore the existing E-learning portal services adaptability in the student perspective. By doing this kind of research, the present study suggests the few important recommendations for E-learning portal success to the Higher education institution that will increase the student's interest to use the online education in the future. In the future most of the universities will be offering online courses to the students. It

will decrease the education cost, and education will reach outside the border as well. Education will be border less in 5 to 10 years' time. This study recommends some of suggestion to higher education institution such accessibility of the E-learning portal 24/7, error free information, quality of information, content quality, robustness of the server, training module materials related to E-learning portal use for new users, updated information, well organized data, user-friendly design of the portal, and time to time feedback form the user will increase the durability and acceptability of the E-learning portal.

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Understanding Impact of Service Learning Practices in Higher Education

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Abstract

Service Learning is one of the high impact educational practices that enables students to engage with local community to solve community needs issues. Service Learning practices in UUM are unique because they were driven and managed by enthusiastic first-time Service Learning practitioners. This study investigates the impacts of innovative Service Learning projects from five different programmes in UUM. Building on narrative methods of investigation via interviewing six practitioners, we explore the potential of Service Learning as a positive communicative pedagogy in which students and community could work closely in solving community problems. Using thematic analysis, three emerging themes were derived: curriculum enhancement, students' soft-skills improvement and new knowledge acquisition for the community.

Keywords: Service learning, impact, university, high impact practices, community engagement.

Introduction

Service learning is an innovative pedagogy that relates classroom to community. This method of learning has long been pioneered by universities in the United States that have adopted community-based learning methods. It has the philosophy that university via Service Learning act could be a catalyst to improve local community. The feeling of being cared and helped by the university could develop to positive civic engagement between the university and the community. Moreover, this process also involved other agencies such as non-governmental organization, local authority and industry who are motivated to facilitate the Service Learning project of the designated community. The concept of Service Learning can be traced as far back as in 1920s (Johnson & Notah 1999), and became popular with the work of Jane Addams (Daynes & Longo, 2004) and later, John Dewey who developed it with a systematic framework for application to the community (Boyer, 1983; Johnson & Notah 1999). In 1985, Campus Contact was established to develop Service Learning methods at universities throughout the United States (Campus Contact, n.d.). Most recently, The Association of American Colleges and Universities is one of the most accessible sources for Service Learning project reports in the United States (Association of American Colleges and Universities, n.d.).

Reflecting on the importance and effectiveness of Service Learning approaches in developed countries, as of January 2015 the Malaysian Higher Education Department has approved Service Learning as one of the seven High Impact Educational Practices (HIEPs) by mandating all universities to implement Service Learning and any of the four HIEPs to reinforce students' holistic attributes. Recently, the Ministry of Education Malaysia launched the Service Learning Program Malaysia-University for Society (SULAM) which emphasizes on achievement of outcomes via community service. SULAM specifically is defined as "a

course-based, credit-bearing educational experience in which the student participates in a structured service activity that meets identifies community needs, reflects on the service activity and experiences to achieve desired learning outcomes, in such a way as to gain deeper understanding of course content, a broader appreciation of the discipline, enhanced sense of personal values and civic responsibility" (Jabatan Pendidikan Tinggi, n.d.)

Service learning offers students to be creative in using their knowledge and skills learned in classroom to be implemented in a community. They are guided by the lecturers in their involvement with the selected community. Through understanding the needs of the community, they could identify the problems and offer practical solutions by working together with the community. It is a comprehensive learning process where knowledge transfer happens during implementation process of Service Learning. The primary aim of Service learning is to produce holistically developed students who are able to think, act and reflect based on empirical evidences and humanity.

There has been an increased recognition that more attention needs to be paid to Service Learning related area due to its positive impacts to students such as awareness of civic responsibility (Browner & Swaner, 2009), enhanced discipline knowledge and resilience (Lee, Harris, Mortensen, Linsey & Matsuda, 2016) global-mindset (Hamilton, 2019) and high self-esteem (Bosman, Chelberg & Winn, 2017). Although Service Learning has been researched extensively in many countries and contexts, these studies warrant a better understanding of the implication of Service Learning in a public university where lecturers and students are self-exploring on planning and implementing Service Learning activities and projects, with the cooperation of the selected communities.

Literature Review

Here we review some of the contributions which are related to this topic; In High-Impact Practices: Applying the Learning Outcomes Literature to the Development of Successful Campus Programs paper, Brownell and Swaner (2009) highlighted the need to study on student learning outcome that is beyond grades. They suggested few measures that could be researched in this area such as longitudinal approaches and comparison groups, accessing student learning, using mixed methods, exploring program structure, examining the impact of the project on underserved students and venturing into multi-institution studies that could offer rigors and deep data. Another study on humanism and medicine that used Service Learning approach found that students developed higher empathy in serving patience during their Service Learning projects (Lee, Harris, Mortensen, Linsey & Matsuda, 2016). This altruism impact promotes good learning experiences for both students and the patients in managing emotions during Service Learning project. This positive impact as suggested by the authors, needs to be realized in form of training program that will ensure sustainability of the Service Learning projects in the long term. In another study on Service Learning, the question of staying relevant to the curriculum via the engagement of community is vital. Mackenzie, Hinchey and Cornforth (2019) argue that from their experiences dealing with Service Learning and their study on Service Learning in Public Health, they found that sustainable Service Learning project is a collaboration efforts among the students, university and the community. It is hard to imagine sustaining the project without understanding the needs of collaborators and both sides have to be ready in embracing change. Similar work has also been pursued by others (Suckale et al., 2018; Ji & Gu, 2019; Zweekhorst, & Essink, 2019) in which researchers' highlighted positive and negative impacts of Service Learning. Nonetheless, there is a call to look into outcome of the Service Learning in specific as most Service Learning is conducted

based on subject matters.

Stakeholder Communication Model of Change

Outcome is related to feedback of stakeholders. In this study, stakeholders refer to university, students and community. Stakeholder model from the communicative perspective emphasizes on understanding stakeholder needs in order to survive challenges from competitors and enhance the institutions performance. It caters a wide perspective on how an organization can anticipate, coordinate and reflect on change that affects the life of the organization. This model is inspired by Stakeholder Theory that emphasizes on how a stakeholder impacts the institution (Freeman, 1984). In this case is the university as the institution plans and implements Service Learning programs. Edward Freeman (1984) advocated on the importance of alignment of organizational needs with stakeholders needs. There are three main assumptions of the theory namely: 1) Stakeholders' network influences the success of the organizational planning and implementation, 2) Sensitivity on stakeholders' needs ensures the success of the organizational goals, and 3) Values determine the success of the focal organization. This stakeholder communication model of change was proposed and elaborated by Laurie Lewis (2011, 2019). Her main concern was on the stakeholders' perspectives on providing the most appropriate feedback and reflection on the evolution of change in an environment and onto the institution. The model argues that each stakeholder plays an important role in providing reflection on how matters can be solved based on their experiences and exposure.

Methodology

In this research, we interviewed 6 lecturers on their experiences in conducting Service Learning. They came from diverse programs. They were given interview questions that are developed from empirical and practical guides of Service Learning. They were contacted personally and they gave consent to be interviewed. Each interview ranged from 30 minutes to an hour. They were interviewed at their choices of preferences such as at the office, classroom and event settings. The data was analysed using thematic analysis as suggested by Braun and Clarke (2013). Each interview was recorded and transcribed to details. The following Table 1 depicts the profile of each respondent:

Table 1
Profile of Respondents

Respondents ID	Gender	Programme
Practitioner01	Female	Business
Practitioner02	Male	Creative Arts
Practitioner03	Female	Creative Arts
Practitioner04	Female	Social Work
Practitioner05	Female	Computer Sciences
Practitioner06	Female	Communication

Findings and Discussions

Based on the findings, there are three themes emerged from this study. The general three themes were identified as: *Aligning curriculum to learning outcome, improving students soft skills and Acquiring new knowledge for community*.

Theme 1: The respondents explained about the alignment of their course learning outcome to meet Service Learning practice. One of the respondents mentioned that she and her team had been reviewing the course syllabus to ensure its alignment with Service Learning (Respondent 01). Most respondents also highlighted their concerns on suitability of the course to Service Learning as they want to ensure that they meet the requirement of Service Learning components.

Theme 2: Majority of the respondents emphasized that students have improved their soft skills especially in leadership, teamwork and, problem-solving. Moreover, they mentioned that the students were enjoying their learning in their Service Learning projects. However, they also cautioned that it was a tough experience for them and the students during the early stage of planning and implementing the projects. Nonetheless, the enhancement of soft skills was evident based on students' presentation, sharing sessions with stakeholders and their reflection tasks.

Theme 3: A key to successful Service Learning projects is sustainability of community engagement with the university. Most of the respondents stated that the students are still engaged with the community even after they have completed the projects. Thus, universities have to facilitate Service Learning practitioners in engaging relevant stakeholders that could sustain community engagement.

The course and programme learning outcomes are the core of learning output through which an institution can determine the effectiveness of the program. In this study, the outcomes are related to three stakeholders that are the lecturers, the students and the community from the lens of practitioners who are the key in initiating and sustaining the project.

Prior to the present study, existing research suggests that researchers need to know the learning outcomes of Service Learning as different institutions have different results in terms of the outcomes (Brownell & Swaner, 2009; Volchok, 2017). Thus, this can be linked to Stakeholder theory that highlights the role of stakeholders in shaping the outcome of a project. In the light of Service Learning projects in UUM, the outcomes can be felt by the stakeholders namely the staff, students and the community. While recognizing the challenge on meeting the stakeholders demand, it is rewarding to know that the students and the community are engaged in the Service Learning projects. Most interviewees suggested that an effective way to sustain their Service Learning projects is to have support from top management in handling fieldwork and engaging the chosen community with continuous meaningful intervention programs.

Conclusion

This study provided an overview of practitioners' experiences in implementing Service Learning in UUM. Through the lens of stakeholder theory, this study argues on the outcomes of Service Learning as positive albeit with some caveats. The results of this study demonstrate that Service Learning requires guided Guideline as it touches on curriculum, student learning and community well-being.

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Modeling Critical Successfulness Factors of Mobile Game Applications for Military Training

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Abstract

Having a successful mobile game application in military training offers cadet officers the effectiveness, efficiency and satisfaction to help achieve their military training missions anytime and anywhere. Therefore, this study aims at developing the successfulness model as well as exploring the applicability of the model for mobile game applications in military training. The objectives of this research are: 1) to investigate the successfulness factors of mobile game applications for military training, 2) to construct a successfulness model of mobile game applications for military training, 3) to develop a prototype to support the successfulness model of mobile game applications for military training, and 4) to assess the applicability of the successfulness model of mobile game applications for military training. A number of hundreds cadet officers in Malaysian Military Training Academy will be used as sample in the study. The research will be carried out in 5 main phases: designing conceptual framework, 2) defining successfulness factors of mobile game applications in military training, 3) development of successfulness model of mobile game applications in military training, 4) implementation of case study on two prototypes of mobile game applications in military training (e.g. sniper army mission game, and army training mission), and 5) evaluation of the successfulness model This successfulness model is valuable to the field of ICT and Defence Technology as it is beneficial as an alternative method for ensuring the successfulness of the development of mobile applications in defence training perspective. This model also delivers a new successfulness mechanism and assurance to mobile game applications in military training as well as to provide expert ICT Malaysian military cadet officers.

Keywords: Success Factors, Mobile Game, Military Training, Success Model, Military Apps, Game Success Factors

Introduction

The exploration of successfulness factors of mobile game applications in military training in this research focuses and relies on cadet officers view, involvement and expectation. It is the venture into emerging and potentially transformative research ideas as we can educate Malaysian military cadet officers surround the mobile game applications in military training to be more responsible in operating the military mission. Having a successful mobile game application in military training offers cadet officers the effectiveness, efficiency and

satisfaction to help achieve their military training missions anytime and anywhere. Therefore, this study aims at developing the successfulness model as well as exploring the applicability of the model for mobile game applications in military training. This will ensure the optimization in term of time and resources as well as the quality of the mobile game application itself.

Literature Review

Successfulness is an important factor in the design and development of successful user interfaces, and the most widely used principles in the field of software engineering that defines the application's demand and user (Hoffman, 2001). Furthermore, successfulness referred to the key success factors for designing specified user interface to be capable to understand, learn, operate, and be attractive to users (Shneiderman et al., 2016) The main purpose for developing successfulness factors is to achieve the determined goals in the specified environments effectively, efficiently and satisfactorily (Nielsen, 1995). Successfulness factors in addition correlates with the design and the development of user interfaces thus help in the overall acceptability of the applications (CronHolm, 2009).

Due to such wide importance of this rules of thumb, various generic successfulness factors were proposed by many experts and researchers (Shneiderman, 2005; Barker, 1989; Shneiderman, 2004; Mandel, 1997). The term generic is attributed resulting to various types of system being developed, and not only limited to developers but also evaluators. Several studies have been conducted to consider only one aspect of successfulness of user interfaces such as provide limited options to user, building a grid, provide simpler solution, make most appealing apps, presentation of content, proper feedback to user, and adopt error avoidance policy for error handling, and font and color selection, and layout (Nielsen, 1995; ISO, 1996; Scapin and Bastien, 1997, Smith and Moiser, 1986; Sano, 1995). However, these factors were originally developed for desktop applications, and their main focus is the visibility of the system status, guidance about the terms used, and consistent representation of information (Ayob et al., 2009).

There are various problems and difficulties with the existing successfulness factors to be applied in designing user interfaces of mobile applications (Ahmad et al., 2018; Feng et al., 2006; Hashim, 2010; Burigat et al., 2008). Some researchers stated that there are needs to developed comprehensive set of successfulness factors for mobile applications as a result of its smaller screen size and touch-based screen with limited user interface appearances (Wung et al., 2014). Therefore, numbers of successfulness factors have been proposed to overcome the physical limitations and improve the user interface design of mobile applications. For examples, design of mobile user interfaces for enjoyment, limited and split attention, multiple and dynamic contexts, allow for personalization, speed and recovery and etc. (Ibrahim et al., 2013; Antle, 2009; Zhou, 2011; Gerling et al., 2011). These successfulness factors are important not only from a research point of view, but also driven by the recent discussion in the mobile interface designers and developers' community.

The existence of these successfulness factors, however, does not include such studies for designing user interfaces for mobile games applications. As stated by Gerling, mobile games could include visual adjustment features (e.g. regarding the fonts and windows size, colors and contrast settings) that deliver multiple modes (multimodal) feedback other than a single communication channel (Gerling et al., 2011). In addition, the characteristics of designing user interfaces for mobile game applications are different and thus contradicted with successfulness factors for other mobile applications. Only a few researchers anticipated in researching mobile game successfulness factors which included screen visibility, clear consistent navigation, provide visible and well-defined buttons, reducing the button size,

instant feedback and in-game sound effects and tactile (vibration) (Cairns et al., 2014; Salen et al., 2004; Huizenga et al., 2009; Aleem et al., 2016; Browne and Anand, 2012).

The increase in the number of military mobile users has led to the significant importance, and relevance to design and developed mobile games applications that cater for military trainings as well. Previous efforts have been made in developing successfulness factors of mobile game applications for military in several methods and approaches in which concerned with the way of creating an interface suitable for military training; the mode of interaction and skills when handling with the capacitive touch technology (Sostak, 2012; Hill et al., 2006). There are also several works done on developing factors for designing successful user interfaces of mobile game applications for military purposes. These successfulness factors focused on designing game for interaction paradigms suitable for rehabilitation therapy, entertainment and cognitive, interface design and visual adaptability (Bonk and Dennen, 2005; Jackson, 2004; Kankaanranta and Neittaanmaki, 2008; Laamarti et al., 2014).

However, none of the researchers concentrated on developing models for designing user interfaces of mobile game applications exclusively for military training. Due to this reason, there are strong demands for conducting this study in developing new successfulness model for designing user interfaces of mobile game applications for military training. The proposed successfulness model is valuable to the field of ICT and Defence Technology as it is beneficial as an alternative method for ensuring the successfulness of the development of mobile applications in defence training perspective. This model also delivers a new successfulness mechanism and assurance to mobile game applications in military training as well as to provide expert ICT Malaysian military cadet officers with more knowledge in the successfulness aspect of the mobile game application operated in their environment.

Procedures and Methods

The objectives of this research are: 1) to investigate the successfulness factors of mobile game applications for military training, 2) to construct a successfulness model of mobile game applications for military training, 3) to develop a prototype to support the successfulness model of mobile game applications for military training, and 4) to assess the applicability of the successfulness model of mobile game applications for military training. A number of hundreds cadet officers in Malaysian Military Training Academy will be used as sample in the study.

This successfulness model is valuable to the field of ICT and Defence Technology as it is beneficial as an alternative method for ensuring the successfulness of the development of mobile applications in defence training perspective. This model also delivers a new successfulness mechanism and assurance to mobile game applications in military training as well as to provide expert ICT Malaysian military cadet officers. The expert means that the cadet officer has more knowledge in the successfulness aspect of the mobile game application operated in their environment.

Research Methodology

The research will be carried out in 5 main phases: 1) designing conceptual framework, 2) defining successfulness factors of mobile game applications in military training, 3) development of successfulness model of mobile game applications in military training, 4) implementation of case study on two prototypes of mobile game applications in

military training (e.g. sniper army mission game, and army training mission), and 5) evaluation of the successfulness model.
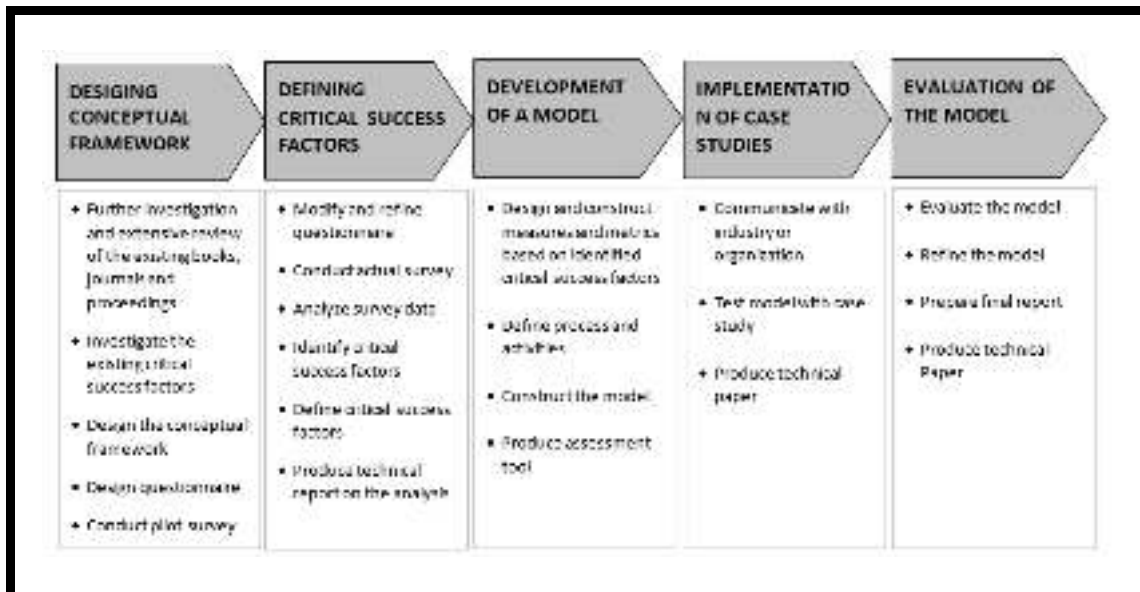
Figure 1. Research Methodology

Based on Figure 1, research methodology used to achieve the research objectives is mixed method approach. A mixed method research approach is a combination of qualitative and quantitative research method. The qualitative method has been used in the literature study involving theoretical, empirical, development of proposed approach and verification of approach phase meanwhile both the qualitative and quantitative method has been used in the empirical phase mainly to analyze the results of the survey and interview.

Phase 1 Designing Conceptual Framework. Extensive and comprehensive background study on the existing research in the areas of the successfulness of mobile game applications will be continuously explored. The aim of this phase is to investigate the mechanisms and problems related to assessment of mobile game applications specifically for military training purpose.

Phase 2 Defining Successfulness Factors. This phase is established in order to define the successfulness factors for assessing the mobile game applications in military training. Based on conceptual framework produced in the previous stage, instruments for collecting data on the factors influencing the successfulness of mobile game applications for military training will be constructed such as questionnaires, interviews as well as focus group.

Phase 3 Development of Successfulness Model. The third phase of this research is the construction and development of successfulness model specifically concentrated on the factors for assessing the successfulness of mobile game applications in military training by analyzing the data obtained from questionnaires, interviews as well as focus group.

Phase 4 Implementation of Case Study. The whole processes for testing the applicability of the successfulness model of mobile game application for military training will be implemented in real case study. Two prototypes will be developed and implemented among military students for the purpose of evaluating the successfulness model of mobile game applications.

Phase 5 Evaluation of the Successfulness Model. The final phase of this research is the confirmation study of successfulness model for mobile game applications for military training which will be carried out through analysis of the questionnaires, interviews, focus

groups data which collected among military students while implementing the prototypes. Data will be carried out from expert reviews as well and feedback from the expert reviews will refine the model.

Preliminary Findings

An initial analysis was conducted to identify the problems faced by the military during the process of preparing a map terrain model. Analysis through quantitative method has been carried out by distributing a questionnaire to the military student as respondents. The respondent comes from a different position in a military operation and the information given is based on their experience and practice in the real field. The quantitative method through questionnaire instrument has been used which involving 25 respondents from a military background in this study. Questions raised are relevant to military practice which focus on terrain modelling before executing the real military operation.

Table 1
Results of Timeliness Measures

Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Creation of models using materials construction requires a lot of time	8% (2)	0% (0)	28% (7)	48% (12)	16% (4)
Finding the materials for model construction consumes a lot of time	12% (3)	0% (0)	24% (6)	60% (15)	4% (1)
Creation of the models with bigger scales requires a lot of time	8% (2)	0% (0)	24% (6)	48% (12)	20% (5)
Creation of the models with complex scenarios requires a lot of time	8% (2)	0% (0)	24% (6)	48% (12)	20% (5)
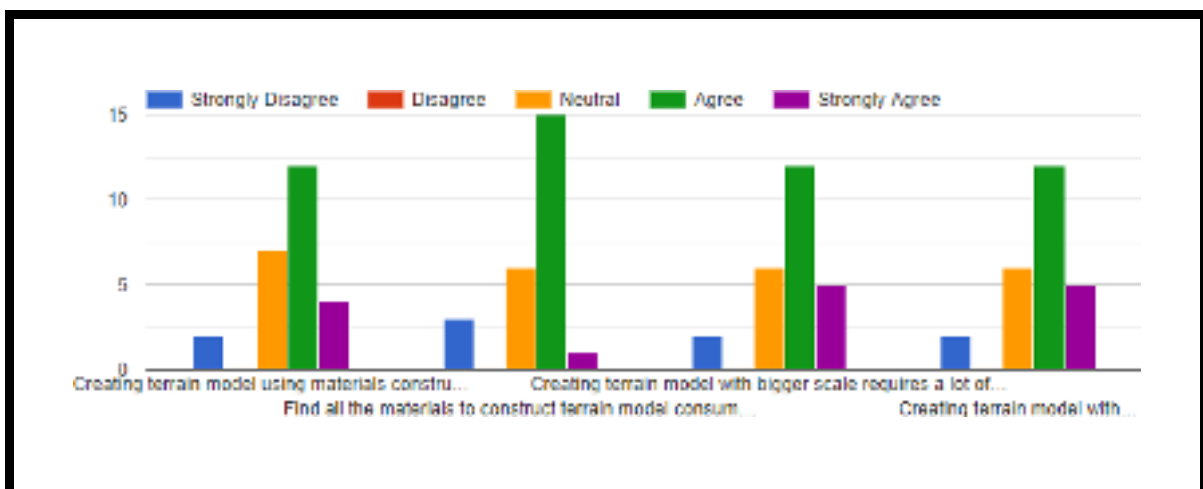
Figure 2. Graph of Timeliness Measures

Table 1 and Figure 2 above show the preliminary findings based on timeliness measures. Whereas, Table 2 and Figure 3 show the preliminary findings based on difficulties measures.

Conclusion

In the end of this research, this successfulness model is valuable to the field of ICT and Defence Technology as it is beneficial as an alternative method for ensuring the successfulness of the development of mobile applications in defence training perspective. This model also delivers a new successfulness mechanism and assurance to mobile game applications in military training as well as to provide expert ICT Malaysian military cadet officers. The expert means that the cadet officer has more knowledge in the successfulness aspect of the mobile game application operated in their environment.

Table 2
Results of Difficulties Measures

Measures	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Difficulty in viewing overall details on the interested areas	0% (0)	4% (1)	32% (8)	36% (9)	28% (7)
Difficulties due to non-existence of interactive features	0% (0)	4% (1)	32% (8)	60% (15)	4% (1)
Difficulties in viewing due to invisibility while zooming in	8% (2)	0% (0)	20% (5)	56% (14)	4% (1)
Difficulties to have binger view of the model	8% (2)	0% (0)	24% (6)	60% (15)	8% (2)
Difficulties in dealing with various individual spatialabilities	4% (1)	4% (1)	28% (7)	56% (14)	8% (2)
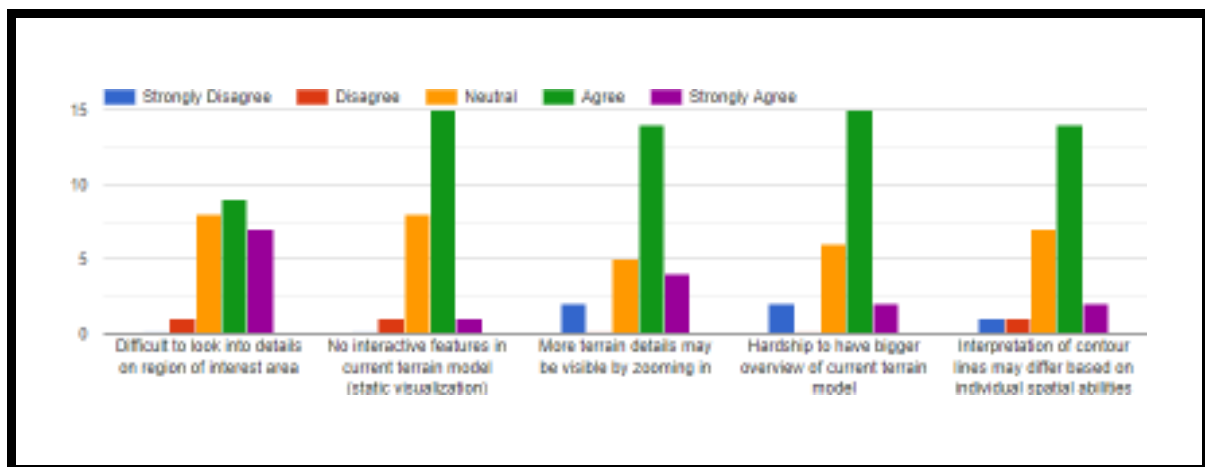
Figure 2. Graph of Difficulties Measures

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Comparative Analysis of Social Media for Effectiveness in User's Experience Using Online Learning

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Abstract

Users today rely more on the internet content rather than television content. Therefore, the amount of view reach using internet content such as social media, blogs and streamed video are growing exponentially. This will also affect learning behavior of student as they are more likely to open their social media. There are three main social media that will be used in this research which are Facebook, Instagram and twitter and the data will be collected only in Malaysia. Each social media has a slightly different algorithm that determined what the user will see in their social media. A comparative analysis is needed to be done in order to find the effectiveness of each social media base on criteria that will be determine in this research. A couple of survey will be performed and monitored through the social media in order to collect data. The data collection process will be conducted for about 4 months. The implication of this study will include the effectiveness of each criterion selected to understand how and why a certain social media is better than the other in creating an online learning environment in the social media.

Keywords: Sosial Media, Online Learning, User Experience Study, Learning Behaviour

Introduction

Creating an environment where student can learn and share information through social media is something that needs to be done. Creating a bulletin board and forum like environment where student and lecturer can discuss and share information is crucial. Before an environment can be created. A research needs to be done in order to understand how each social media post and interaction works. A series of data collection will be done. There are a lot of style or method of collecting data such as surveys and mining live data. This research will be focus on Malaysian student. It analyzes the effectiveness of three main social media platform – Twitter, Instagram and Facebook. Young adults are more likely than older adults to use social media (Maeve Duggan, 2013). Pew Research reports have documented in great detail how the rise of social media has affected such things as work, politics and political deliberation, communications patterns around the globe, as well as the way people get and share information about health , civic life, news consumption, communities, teenage life, parenting, dating and even people's level of stress (Perrin,2015).

Figure 1. Internet and Social Networking Users

This will be one of the major factors in the research. Moreover, each social media platform will be monitored, and the data will be collected base on the several student information and the rate of post spreading. The user's information includes their gender, age and location. Furthermore, the rate of post spreading will include the type of post, the scale of the post and the time of the post posted. The research is to determine which social media platform will proof to be more effective in term of making online learning possible in social media. The data will be analyzed and optimized.

Objectives

i. To identify the demographic of the listed social media in 2019
ii. To analyze and conduct comparative analysis in which social media is more effective for creating online learning environment.
iii. To develop and test the proposed method for effectiveness to help create the environment

Research Question

Each social media has its own traits. A research needs to be conducted to identify which social media is suitable for creating an online learning environment. The rapid growth of the Internet has opened new opportunities for collecting and disseminating research information worldwide. Market researchers have long recognized the advantages of Internet-based surveys, the most important of these being lower costs and faster response (e.g., Ilieva et al., 2002).There are 46% of 18-24 years old prefer to consume news on their smartphone, and 28% make social media their first stop for the latest headlines, broadcast media now must work harder to remain

relevant. (P A, 2016). Therefore, the post must be broadcast through the social media. Between the three choses social media platform -Twitter, Instagram, Facebook, what classification of user and which social media is suitable for the correspondent classification. By the presence of social media, the user themselves or citizens frequently express their views on social issues and events in social network sites. Also, citizens who are on the scenes of accidents and crimes use mobile devices to photograph or video-record the events as they are happening and post the photos or videos on their social media accounts (Yamamoto, 2017). The researcher needs to somehow be alert and collect the post from the user. In conclusion, student nowadays tend to spend a lot of time on social media in which it can be use as a medium for online learning. The research needs to find a way so it would reach a higher amount of user interaction with the post. A research is needed so that the student or lecturer would know when and how to be more effective in their post base on the respective social media: Facebook, Twitter and Instagram.

Theory

The research can contribute enormously to the lecturer and student for the outcome of the research will improve the efficiency and the effectiveness throughout the social media platform. Moreover, the data collected will provide the latest demographic of social media user in 2019 that can be used for marketing, sharing, data collection and future research.

Methodology

The data will be grabbed from the social media using RapidMiner and nodexl. The period of the data collection depends on the method of data collection and the last interaction made by the user. The methodology for this research is Qualitative and Quantitative Data Analysis Method. Quantitative analysis (QA) is a technique that seeks to understand behavior by using mathematical and statistical modeling, measurement, and research (Will Kenton, 2019). This method is used to collect raw data and turn it into usable data. Each social media will be monitored and recorded its users age, gender, location and time base on the interaction with the event posted. The generated data will be optimize using optimization method in order to find the most effective conclusion. Outlines general ideas on fundamental issues related to the distinctive characteristics of spatial data analysis as opposed to data analysis in general. For example, the investigation of real-time nature of Twitter and put particular attention to event detection. The Twitter users are regarded as sensors. Their messages are used for detecting earthquake. A reporting system is developed for use in Japan by their proposed methods. Using twitter as a distributed sensor system. They analyzed the spatial and temporal features of the Twitter feed activity responding to a 5.8-magnitude earthquake. (Xu,2016)

The research will start by making an analysis and preliminary analysis to identify the features in each social media. Next, Conducting 2 case study for development purposes. Test the variable in these 2 cases using quantitative and qualitative analysis. Finally, propose a solution to gain the effectiveness in user's experience using post on social media to create an online learning environment.
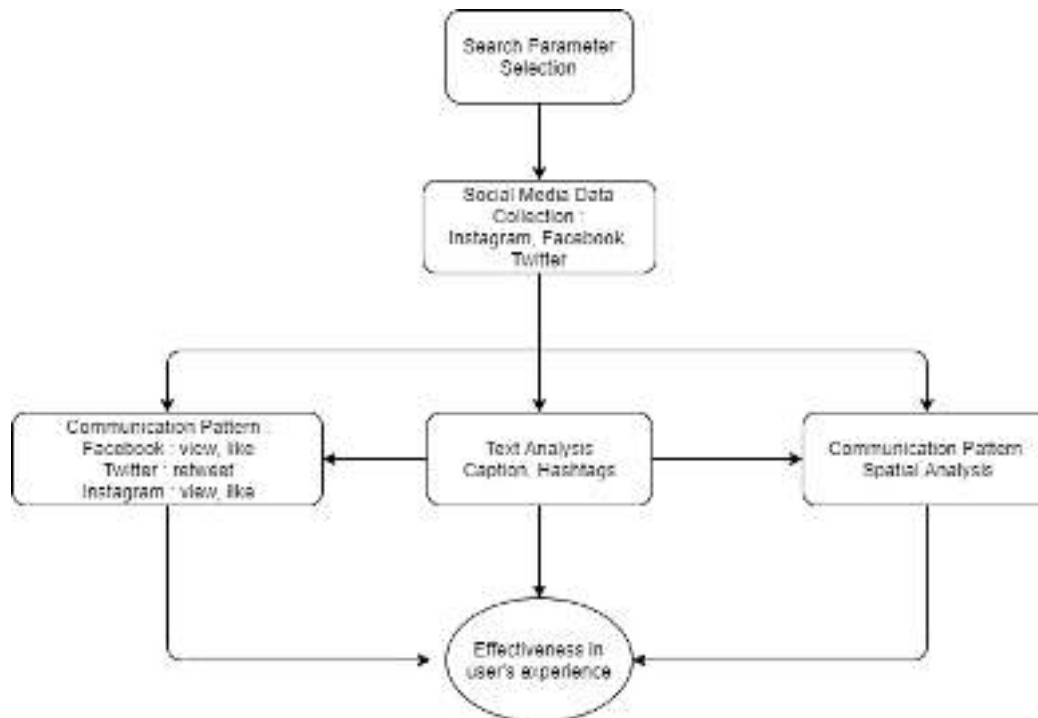
Figure 2. Research Methodology

Furthermore, Qualitative analysis uses subjective judgment based on non-quantifiable information, such as management expertise, industry cycles, and strength of research and development and labor relations. (Tim Smith, 2019). Qualitative Comparative Analysis (QCA) is used in comparative research and when using case-study research methods. The QCA analysts interprets the data qualitatively whilst also looking at causality between the variables. Thus the two-stage approach to studying causality has a qualitative first stage and a systematic second stage using QCA (Rehoux, 2006). A survey will be conducted and the link will be spread through the social media to collect information based on the user's point of view about the effectiveness in data collection and their suggestions, several options can be created in order to get a clearer result of the research.

Literature Review

Social media refers to websites and applications that are designed to allow people to share content quickly efficiently and in real-time (Matthew Hudson, 2019). Internet users under 50 are particularly likely to use a social networking site of any kind, and those 18-29 are the most likely of any demographic cohort to do so (83%). Women are more likely than men to be on these sites. Those living in urban settings are also significantly more likely than rural internet users to use social networking (Maeve Duggan, 2013). The decline in television as a source of news occurs both among 50- to 64-year-olds and 30- to 49-year-olds. The portion of those ages 50 to 64 who often get news on TV fell from 72% in 2016 to 64% today; for 30- to 49-year-olds, this declined from 45% to 35%. And while 18- to 29-year-olds did not show any significant change in their use of television news from early 2016, it was already substantially lower for this age group than for those 50 and older. Indeed, even in early 2016 this youngest age group was about twice as likely to often get news online as on TV (50% vs. 27%), about as large as the gap seen today (52% vs. 23%). (Gottfried, 2017).

Twitter is a social networking and microblogging service that allows users to post real time messages, called tweets. Tweets are short messages, restricted to 140 characters in length. Due to the nature of this microblogging service (quick and short messages), people use acronyms, make spelling mistakes, use emoticons and other characters that express special meanings. (Agarwal, 2011). The interaction behaviors between Twitter users mainly include following and friending in addition to other more implicit ways like favoriting, retweeting and mentioning. A social circle is formed from such interaction behaviors (Chen, 2015). In terms of journalism and Twitter, the January 2009 crash of U.S. Airways Flight 1549 into the Hudson River as among the earliest example of how citizen journalism and Twitter have changed news reporting. He remarks that anyone with a smartphone can snap a photo, upload it into the ether, and "report" an incident. (Murthy, 2018).

Instagram is a relatively new form of communication where users can easily share their updates by taking photos and tweaking those using filters. It has seen rapid growth in the number of users as well as uploads since it was launched in October 2010. Although it is the most popular photo capturing and sharing application, it has attracted relatively less attention from the research community (Hu, 2014). A comprehensive survey was developed in which a total of 212 Instagram users evaluated their motivation, primary activities, use intention, and attitude regarding Instagram. The results suggest that Instagram users have five primary social and psychological motives: social interaction, archiving, self-expression, escapism, and peeking (Lee, 2015).

Facebook is a social networking website where users can post comments, share photographs and post links to news or other interesting content on the web, chat live, and watch short-form video. Shared content can be made publicly accessible, or it can be shared only among a select group of friends or family, or with a single person. (Daniel Nations, 2019). Facebook is about making connections. If Facebook is going to work for your library, you must make connections with others and develop them with the strategies we've discussed. Be prepared to make simple updates several times a week

Findings

Each social media has its own algorithm that determined each viewer see what on their social media feed. Therefore, each social media has a slightly different frequency and timing of posting. For example, Facebook.
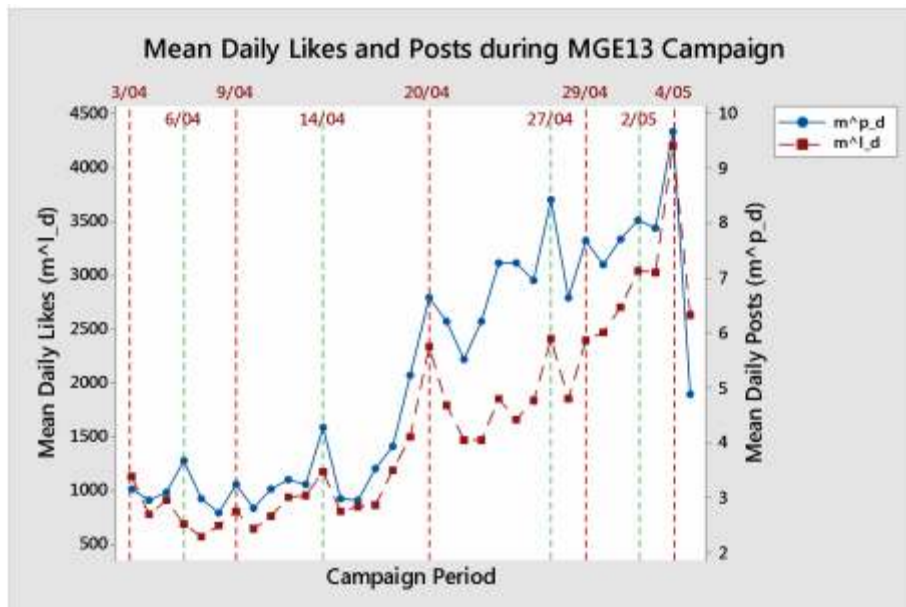
Figure 3. Findings on Mean Daily Likes and Posts in Social Media

Graph of the daily mean of posts and likes across the 33 days of Malaysian General Election (MGE13) campaigning period. Left y-axis indicates the daily means of the likes collected by the Facebook Page (FP), while right y-axis measures the daily means of the number of posts posted on the FP. The reference lines (red and green colored lines) show some significant dates when the recorded means change. The means of posts and likes as illustrated in Figure 3 correspond rather well with the key events that happened in the real world (offline). Almost all the points on the graph except the starting date (3/04) and the end date (5/05) of the campaign show a direct relationship between the mean of posts and the resulting mean of likes for that specific day. Whenever the posting frequency increases, the number of acquired likes also increases. These increases in the rate of posting on the FP and the resulting increases of likes by the public seem to appear in the days before key events. (Adib, 2016). This is one of the examples of the social media usage for news broadcasting and can be applied also in education.

Discussion

The research will mainly focus on Malaysian student and lecturer's social media. All these lecturer or student most likely to have their own social media that they use which are Facebook, Twitter and Instagram. Each of these social media have a slightly different way of interacting with the user when they posted something on the platform. In Facebook, each of the researcher will be monitored by their interaction with their follower through the amount of like, dislike, comment and share. Next, Twitter will be monitored through the amount of like, retweet and mentions. Finally, the Instagram will be monitored through likes and comments and the amount of direct message receive by the researcher.

Recommendation

A qualitative analysis and quantitative analysis are the methodology. Therefore, a survey will be done through social media, polls, survey etc. in order to collect the data for the

qualitative analysis. Research will be done by following steps to create the latest demographic of the of the selected social media in Malaysia.

Conclusion

This research aspires to determine which social media is better in the criteria given in this research by examining an observing the interaction in each social media collected through the specific time frame. Reviewing the literature review, there are several things that make each social media distinctive.

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Mindset and Psychological Attributes for Learning to Empower University Students' Competitiveness

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Abstract

The development of a nation's economy is dependent on the source of its workforce. In this regard, a recent issue that has become a priority is the employability of university students. Consistent with the Malaysia Education Development Plan (Higher Education), Higher Education Institutions are required to produce competent, holistic and competitive students. To date, findings from studies are inconsistent to determine the main factors that influence university students' achievements in academic achievement that may lead to their future employability. Following this, the current study explores constructs that are necessary to cultivate university students for success and lead to higher chance of employability. Therefore, the aim of the current study is to examine the relationships between mindset and self-efficacy towards academic achievement and employability. Two sets of survey research were carried out to achieve the purpose of study. Study 1 involved 200 university students from both public and private universities. These respondents completed the Dweck's Theories of Intelligence Scale and College Self-Efficacy Instrument. Results from study 1 showed a significant difference in growth mindset between public university students and private university students. Results also revealed significant relationships between mindset and academic achievement, as well as between self-efficacy and academic achievement. Furthermore, it was evidenced that mindset and self-efficacy are able to predict students' academic achievement. In study 2, 137 university students from both public and private universities took part in the study. Mindset was measured using Dweck's Theories of Intelligence Scale, while employability was measured using the Employability Questionnaire. Results from study 2 showed that there is a significant correlation between growth mindset and employability. Findings from these two studies confirm that mindset, particularly, can be a determiner towards university students' achievement and employability. The implication that can be deduced from the findings is that higher institutions should focus on individual differences, in this case, improving students' mindset and self-efficacy to determine high achievement that includes both academic and employability.

Keywords: Mindset, Sef-efficacy, Academic Achievement, Employability, University Students

Introduction

The economic growth and development of a country are much dependent on its workforce. As such, it is imperative for a developing country that is striving towards being a fully developed country like Malaysia to have a workforce that is effective and productive. The

world is facing so many challenges in the 21st century. Globalization or a world without boundaries has brought such an impact on countries, particularly developing countries like Malaysia. Globalization is a process of global economic, political and cultural integration. "The history of globalization goes back to the second half of the twentieth century, the development of transport and communication technology led to situation where national borders appeared to be too limiting for economic activity" (Economic Globalization in Developing Countries, 2002). Globalization is playing an increasingly important role in the developing countries. It can be seen that, globalization has certain advantages such as economic processes, technological developments, political influences, health systems, social and natural environment factors. It has a lot of benefit on our daily life. Globalization has created new opportunities for developing countries. Such as, technology transfer holds out promise, greater opportunities to access developed countries markets, growth and improved productivity and living standards. Certainly, these opportunities, or I would say challenges will affect people, particularly a country's workforce. When there are challenges, there will be competencies that are required to deal with the challenges.

Challenges to the 21st century workforce

What are the competencies that are required to cope with challenges? Burrus, Jackson, Xi and Steinberg (2013) have identified 15 components that are important through their principal component analyses (PCAs). These are problem solving, mechanical skills, service orientation, cultural literacy, business literacy, science literacy, civic literacy, information processing, athleticism, visual acuity, fluid intelligence, communication skills, teamwork, achievement/innovation, and attention to detail/near vision. What is interesting is that the 15 Components were then ranked in importance using the mean component scores over all occupations, 5 competencies stand out as important for most occupations: problem solving (e.g., complex problem solving), fluid intelligence (e.g., category flexibility), teamwork (e.g., cooperation), achievement/innovation (e.g., persistence), and communication skills (e.g., oral expression). Note that the first two ranked most important are cognitive abilities. This highlights the utmost important competency is cognitive in nature (i.e. problem solving).

What is a growth mindset?

Following this, my proposal is that having the right mindset is important to ensure an effective workforce. In particular, the growth mindset. The reason is that complex problem solving is often associated with intelligence. Some researchers believe that intelligence can be formed in the individuals. To build this in a person, the person has to have a growth mindset and not fixed mindset. The concept of growth minset was synthesized by Prof Carol Dweck, a Stanford psychologist through her book entitled *Mindset: The New Psychology of Success*. A mindset, according to Dweck, is a self-perception or self-theory that a person holds about him or herself. Believing that the self is smart or intelligent is a simple example of a mindset. There have been studies that have shown relationships between growth mindset and high achievement in academic. For example, Meece and Holt (1993) found that science grades were high when they are associated with the orientation of growth mindset. Stipek and Gralinksi (1996) also found that higher grades and test scores at the end of study among students that have growth mindsets when compared to students who believe that intelligence is fixed. Yeager and Dweck (2012) have shown that academic performance as a correlate to growth mindset. They also

found that this view can lower the aggressiveness and stress in youths that will lead to excellent academic performance.

There also has been a perspective of researchers that believe effective problem solving skills in graduates are very important to be considered by employers in making decision on personnel selection (Stiwne & Jungert, 2010). This perspective reflects a gap in problem solving skills that are sought by employers in graduates that are not taught in academic programs, especially at universities. 21st century employers seek workers who possess a set of general skills, in other words, somebody that is able to solve real world problems by collaborating across many contexts. However, academicians teach problem solving skills specifically in their own discipline (Stiwne & Jungert, 2010). Skills like problem solving are poorly defined. It actually covers various aspects from non-mechanical thinking to high cognitive processes, creativity, and adaptive leadership (Halpern, 1998). In relation to graduate employability, Preet (2015) states that one's ability to proceed in solving complex problems (an ability that is sought after by employers) is functioning from the person's identity and belief. Preet (2015) refers identity as the belief of who the person wants to be and this determines the formation of other skills. Therefore, the issue of identity must be addressed to improve graduate employability. The emphasis on identity refers on mindset, that is, one's belief on learning (an aspect of identity). Similar to Dweck (2006), Peet (2015) also believes that students with a growth mindset are more able to solve difficult tasks in comparison to students with fixed mindset. Students with a growth mindset believe that they are able to learn well. A growth mindset can also form an individual in becoming high and long term achievers. A person with a growth mindset is more likely to persevere in achieving long term goals (Peet, 2015).

Methodology

There are two sets of separate surveys carried out in the study. The first survey consisted of 200 respondents (100 undergraduate students from public universities and 100 undergraduate students from private universities). The instruments used in the first survey were Dweck's Theories of Intelligence Scale (Dweck, 1999) and College Self-Efficacy Instrument (Solberg et al., 1993). In this survey, academic achievement was measured from the cumulative grade point average (CGPA). In the second survey, there were 137 undergraduate students (109 from public universities and 28 from private universities). The questionnaires used in this set of survey were Dweck's Theories of Intelligence Scale (Dweck, 1999) and Employability Questionnaire (Fatimah wati et. al, 2017). The locations of the universities are in Klang Valley and Selangor.

Analyses used for all three sets of surveys were Pearson Correlation and t-test.

Findings

From the first set of survey, the descriptive analysis showed that there were more students having fixed mindset (69%) that students having growth mindset (31%). This is shown in Table 1.

The descriptive analysis on the distribution of CGPA showed that most students in the sample population fall under the category of CGPA 3.67 – 4.00. The least number of students fall into the category of CGPA 0.00-1.99. The distribution is shown in table 2.

Table 1
Percentage of respondents according to types of mindset

Types of mindset	Number (N)	Percentage (%)
Fixed	138	69.0
Growth	62	31.0
Total	200	100.0

Table 2
Percentage of respondents according to CGPA

CGPA	Number (N)	Percentage (%)
0.00-1.99	16	8.0
2.00-2.49	50	25.0
2.50-2.99	38	19.0
3.00-3.33	21	10.5
3.34-3.66	20	10.0
3.67- 4.00	55	27.5
Total	200	100.0

Descriptive analysis showed the percentage of students according to self-efficacy. Table 3 shows that most students have moderate self-efficacy (89.5%).

Table 3
Percentage of respondents according to self-efficacy

Score	Number (N)	Percentage (%)
Low	17	8.5
Moderate	179	89.5
High	4	2.0
Total	200	100.0

Pearson Correlation analysis showed that there was a significant positive correlation between academic achievement and growth mindset ($r = 0.651$, $p < 0.001$). This means that the more the person is having a growth mindset the more the person is high in his or her academic achievement. There was also a significant negative correlation between fixed mindset and academic achievement ($r = -0.636$, $p < 0.001$). On the contrary, the more the person is fixed mindset the less achievement the person has on his or her academic achievement. The results are shown in Table 4.

Pearson correlation analysis also showed that there was a significant positive relationship between self-efficacy and academic achievement ($r = 0.498$, $p < 0.001$). This means that the higher a person is on his or her self-efficacy, the higher is his or her academic achievement. This is shown in Table 5.

Table 4
The relationship between academic achievement and mindset

	Types of Mindset	N	Pearson Correlation (r)
Academic Achievement	Growth	200	.851**
	Fixed	200	-.636**

p<0.001**

Table 5
The relationship between academic achievement and self –efficacy

	N	Pearson Correlation (r)
Self-efficacy		
	200	.498**
Academic Achievement		

p<0.001**

There was also a significant positive correlation between self-efficacy and growth mindset ($r = 0.425$, $p < 0.001$). The more the person is having the growth mindset the higher is the person's self-efficacy. However, there was a significant negative correlation between fixed mindset and self-efficacy ($r = -0.343$, $p < 0.001$). This shows that if the person is high on his or her fixed mindset the lower is his or her self-efficacy. Table 6 shows the results.

Table 6
The relationship between self-efficacy and mindset

	Types of Mindset	N	Pearson Correlation (r)
Self-efficacy	Growth	200	.425**
	Fixed	200	-.343**

T-test was carried out on the data. T-test showed that there was a significant difference in growth mindset between public university students and private university students. Private university students (Mean = 3.8) were more in their growth mindset compared to students (Mean = 3.4) from public universities ($t = -2.58$, $p < 0.05$). There was no significant difference in fixed mindset between the two types of universities ($t = 1.17$, $p = 0.2$). Table 7 shows results growth mindset and Table 8 displays results for fixed mindset.

Table 7
Growth Mindset

Types of institution	N	Mean	Std. Dev.	df	t	Sig.
Public	100	3.383	1.229			
				192.837	-2.585	0.010
Private	100	3.800	1.042			

Table 8
Fixed Mindset

Types of institution	N	Mean	Std. Dev.	df	t	Sig.
Public	100	3.647	0.880			
				198	1.171	0.243
Private	100	3.500	0.892			

In the second set of survey, correlation coefficient analysis showed a significant positive correlation between growth mindset and employability (r = 0.221, p < 0.005). This means that the more the studetns are having a growth mindset, the more perception of employability they possess.

Discussion

What can be taken from these findings? First of all, it is clear that growth mindset is crucial in achieving an effective workforce that will lead to productive organizations. It is also proposed that growth mindset and specific psychological attributes be incorporated into the learning environment at universities. These are very essential as literatures have proven that these factors can predict students' competitiveness. By being competitive, students can be secured of their employability in the future.

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Medical Innovative Teaching Management in Medical Schools: The Creation of Innovative Physicians

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Abstract

Teaching in medical schools often focuses on achievement in examinations to assess a student's knowledge and skills before the student commences clinical practice. This may produce mental pressure that can diminish creativity in students, therefore possibly adversely affecting future medical innovation. The aim was to design a course that incorporated innovative medical teaching, to stimulate medical student's creativity and to enable the students to initiate and explore medical innovation. The learning content on medical innovation was designed and taught as part of the Doctor of Medicine program to students, who were at different stages of their medical training. The group comprised 32 third-year students from the academic year 2018, 29 third-year students from the academic year 2019, 34 fourth-year students from the academic year 2017, 30 fourth-year students from the academic year 2018, and 2 fourth-year Bachelor of Science program (Medical Science) students from the academic year 2018. Multi teaching techniques for supporting creative ideas were used in this project. The students created their own ideas with which to conduct their medical research. The results showed that 12 out of 127 students (9.4%), who studied medical innovation, created 10 original and innovative medical research projects. In 2019, these students received 4 national awards and 1 copyright registration certificate. In conclusion, the integration of medical innovative teaching, in combination with and as part of medical education, can help students create innovative medical research, some of which can lead to future commercially successful medical products.

Keywords: Creativity, Innovative Medicine, Innovative Physician, Medical Innovation

Introduction

To achieve the highest standards of patient care, teaching and learning within the medical profession must be intensive and many exams are required to assess the knowledge of medical students before they graduate, to ensure that they become competent practitioners. This repeated exam phenomenon must occur during medical training programs to reduce medical errors and medical malpractice. Some countries, including the United States of America and the Kingdom of Thailand, assess their doctor's competencies using national tests, called the United States Medical Licensing Examination and also Medical Licensing exams of Thailand (Wanvarie & Sathapatayavongs, 2007; Zahn et al., 2012). In addition to ongoing course exams, before obtaining a valid license to practice medicine in Thailand, medical students must pass a 3 part exam; part 1 – pre-clinical science, part 2 – clinical science, and part 3 – which will be conducted after passing the part 1 and part 2 exams (The Medical Council of Thailand, 2019). This level of academic study can possibly affect private life, for instance neglecting all other domains of life except medicine, resulting in permanent stress, guilty conscience, fear of failure, and unfavourable health effects (Bergmann, Muth, & Loerbroks, 2019). These negative

effects may affect students' creativity. At this time the School of Medicine, Mae Fah Luang University, uses many procedures for improving medical student learning, for example, lecture-based learning, team-based learning, problem-based learning, case-based learning, and flipped classroom. However, these only focus on a student's knowledge and academic achievement outside of the area of creative ideas. This combination results in a poor work/life balance which is likely to reduce the creativity of individuals, which is one of the main requirements that creates medical innovation.

Objectives

1. To design a course that incorporates innovative medical teaching.
2. To stimulate medical student's creativity by multi teaching techniques.
3. To enable the students to initiate and explore medical innovation.

Article Question

Participating in a course that incorporates innovative medical teaching can stimulate medical student's creativity and generate medical products. Yes or No?

Theory

The learning theories used in medical education and in creativity, which relate to this article, are shown as follows;

Creative Education Teaching method. This method is composed of 5 stages, as follows; First, the stage of an idea –driven by an individual's desire or emotion. Second, the stage of discovery – the process of reflection and materialization of the idea using techniques of problem related to the subject or concept. Third, the stage of digging – the process of changing raw content, from the discovery stage to reasonable concepts and then looking forward to the ways of solving relevant issues. Fourth, the stage of manifestation – the content would be researched and rearranged systematically and a plan set for accomplishment, and finally, the stage of development – creating a new value product and attaining the predicted educational goals (Lee, 2013).

Constructivist theory. Lecturers cannot fully transmit complete knowledge to students and cannot expect that they will have a full understanding. Students have to construct their own knowledge, understanding and creativity, based on their experiences, using guidelines from the received instruction (Badyal & Singh, 2017; Kamel-ElSayed & Loftus, 2018).

Active learning. This important activity supports both teaching and learning processes. Active learning can help students to work and learn actively, beyond the level achieved when receiving knowledge in a passive manner. Teachers must provide short activities during a class, for individual or small group discussion, to either create or answer questions (Kamel-ElSayed & Loftus, 2018).

Humanistic theory. This theory focuses on freedom, dignity, and self-directed learning to achieve a learner's potential. Students can generate their self-motivation, self-fulfillment, goals, self-actualization, and independence, through planning, managing, and assessing processes. Teachers act only as facilitators and learning must be conducted in accordance with

student-centered learning goals (Mukhalalati & Taylor, 2019).

Creativity is enhanced when experience is shared between multidisciplinary branches. The same basic mechanism is required when formulating an innovative medical teaching concept. In engineering education, which is the principal branch for creating medical innovation, creative engineers' cultivation is promoted in many ways, combining an environment of creativity, systematic creative processes, student personality, innovative education techniques, and learners' competency (Kirillov, Leontyeva, & Moiseenko, 2015).

In business learning, which supports the distribution of medical innovation products, individuals' beliefs or self-beliefs are very important and may be driven by psychological constructs including creative identity, creative mind-set, and creative self-efficacy (Homayoun & Henriksen, 2018).

In health care education aspects, according to the precious curricular time and heavy contents of the classes, creating something new is not the main outcome of medical students' learning (Green et al., 2016). Another way to generate creativity among medical students is the insertion of creative works, in term of 'Compulsory creativity', woven into the medical core curriculum. Students' reflection is absolutely essential for those creative processes (Thompson, Lamont-Robinson, & Younie, 2010).

Methodology

The author chose two programs, taught by the School of Medicine, Mae Fah Luang University, included as part of the Doctor of Medicine program and the Bachelor of Science program (Medical Science). All students from year 3 and 4 of these two programs, who studied during the second semester of academic year 2017 - the first semester of academic year 2019, were enrolled in medical innovative teaching programs. The content of innovative medical teaching was divided into seven chapters, which are shown below;

Chapter 1: Introduction to Medical Innovation: Meaning of Innovation, Characteristics of Innovation, Types of Innovation, Important Medical Innovation, and Selection of Medical Innovation Topics;

Chapter 2: Statistics for Medical Innovation: Statistical Methodology, Types of Statistics, Level of Measurement, Central Tendency, Statistical Dispersion, and Statistical Tests;

Chapter 3: Basic of Medical Innovation Drawing: Sketch, Geometry, and Pictorial Drawing;

Chapter 4: Engineering and Medical Innovation: Engineering Branches, Scope of Engineering Professions, Medical Innovation Cost Assessment, and Assessment of Contractor;

Chapter 5: Innovative Medical Research: Meaning of Research, Code of Conduct, and Research Ethics, Medical Research, Human Research Ethics, and Medical Innovation Research Proposal;

Chapter 6: Manuscript for Publication: Preparing Manuscript Writing, and Process of Manuscript Writing;

Chapter 7: Intellectual Property: Basic Knowledge on Intellectual Property, Background of Intellectual Property Protection, and Types of Intellectual Property.

The author was the sole teacher of this program. No blame and no punishment approach were used in all classes in the hope of reducing students' stress and increasing their creativity. The content of innovative medical teaching was added into the curriculum of various subjects as follows;

Doctor of Medicine program

Third-year medical students were assigned to study chapter 1, 2, 4, and 5 in the class of Basic Medical Research. Teaching techniques were introduced, with minimal lectured-based learning, for them to gain a basic knowledge of the subject. The students then generated innovative ideas based on their imagination and experience, correlating with creative teaching methods and constructivist theory. According to the humanistic theory, a learner's freedom and potential is achieved by meeting their goals. Small group discussion, which is one of active learning styles, was conducted during the class. Students also created innovative medical ideas by explaining their concepts within small-group tasks and discussion, but not to the level of drawing or displaying. There was an evaluation based on the quality of their work and course final examination results. Students were divided into eight working groups according to the course syllabus. Each group would make one medical research project.

Fourth-year medical students were assigned to study chapter 3, 6, and 7 as part of the syllabus of Community, Family and Occupational Medicine IV. Teaching techniques were as for the third-year students, but there was no small group discussion because they were expected to conduct their own individual research. Students would select a topic of interest and create proposals to present during year 4, then create an individual project and send a completed report within year 5, during the class of Community, Family and Occupational Medicine V. The quality of their work and final exam scores would be combined and evaluated.

Bachelor of Science program (Medical Science)

Fourth-year medical science students were assigned to study chapters 1 to 7 during module relating to Research in Applied Biomedical Science. According to the course syllabus, which was designed as practice based, teaching techniques consisted of self-directed learning and sharing students' ideas with a lecturer. Students would select their topics of interest and make an individual medical research project, in a similar manner to the fourth-year medical students. The quality of their research project would be considered for satisfactory or unsatisfactory grade evaluation.

The number of students who conducted medical projects, the number of medical projects, prizes, and intellectual property registrations were recorded and analyzed. Descriptive statistics, displayed in this article, relate to these results.

Findings

A total of 127 students in two programs, Doctor of Medicine and Bachelor of Science, selected their topics of interest and created research proposals.

In the Doctor of Medicine program, 32 third-year students from the academic year 2018, were taught the medical innovative research topic in the 17th week of study. Each group created medical research ideas and these ideas were presented in the 10th week of study. Therefore, at this time they only presented their medical innovative ideas, but no student had conducted innovative research. In week 5, 2019, 29 third-year students studied medical innovative research and created eight medical innovative ideas. They presented their research proposals in the 12th week of study. One group, consisting of 3 students, conducted medical innovative research, creating video recordings for improving gross anatomy learning performance among medical students.

Fourth-year medical students, from the academic year 2018, had completed the creation of medical innovation research topic module before choosing their topics. Five out of 34 students created 5 innovative medical research projects, creating 4 medical inventions and 1 medical mobile application. Two out of 4 medical inventions received silver awards and a medical mobile application was awarded a bronze award from the National Research Council of Thailand (NRCT), higher education level competition 2019. In the academic year 2019, 2 out of 30 medical students created 2 innovative medical research projects, one of them is a medical invention and another project is a new method treating particulate matter pollution.

In the Bachelor of Science (Medical Science) program, one student created a medical mobile application, which received a copyright registration certificate issued by the Department of Intellectual Property of Thailand and a bronze award from NRCT, presented at the same competitive event as the fourth-year medical students. Another notable project is a renewable waste product for antimicrobial applications. The summary of all research projects is shown in Table 1.

Table 1
Summary of Innovative Research projects

Program	Class	Academic Year	Number of Students conducting Medical Innovations / Total (%)	Number of Medical Innovation Projects/ Total (%)	Prize	Intellectual Property Registrations
M.D.	Year 3	2018	-/32 (0)	-/8 (0)	-	-
		2019	3/29 (10.3)	1/8 (12.5)	-	-
	Year 4	2017	5/34 (14.7)	5/34 (14.7)	3	-
		2018	2/30 (6.7)	2/30 (6.7)	-	-
B.Sc.	Year 4	2018	2/2 (100)	2/2 (100)	1	1
Total			12/127 (9.4)	10/82 (12.2)		

M.D.: Doctor of Medicine; B.Sc.: Bachelor of Science (Medical Science)

Discussion

These results validate the process of Innovative Medical Teaching. However, I have some comments regarding problems, obstacles, limitations, and recommendations as follows;

Medical courses incorporated innovative medical teaching

The incorporation of an innovative medical teaching course at the School of Medicine, Mae Fah Luang University was established for the first time. There were no established protocols. The author tried to integrate knowledge from multidisciplinary branches, with often

little common correlation, including medicine, engineering, innovation, statistics, sketch and technical drawing, medical research, and intellectual property. The contents of each chapter were designed to help students create their projects, but it is very difficult to integrate other disciplines within medical studies. To solve this problem, medical students should learn this course, while collaborating with multidisciplinary student teams from engineering, management, dentistry, nursing, health science, information technology, science, agro-industry, laws etc. A further major initial problem at the commencement of these activities was that we had no budget for purchasing materials necessary for the creation of medical innovations. To resolve this issue, the author requested donations and arranged to formalize these costs via undergraduate research funding regulations at a future date.

Medical students' creativity

Although only some students created viable medical innovation projects, all groups could express their innovative ideas during the class. To ensure that all students can generate innovative ideas by themselves, instructors should assign an individual a task, let that person present their ideas, and discuss these during the lesson. At the start of this module, most students asked that what the best way to create medical innovation is. In traditional medical teaching, students can explore the best answer for each problem from literature searches and so on, whereas in medical innovative teaching they should be encouraged to create new processes and protocols. There were more than 10 fourth-year medical students, from the academic year 2018 and 2019, interested in medical innovative projects but some of them felt they could not do it. Many students had doubts, perceived problems, and were not sure of their competencies and experiences. However, when they received awards, as well as intellectual property registration, possibly a process of inspiration and lifelong creativity was instilled in them. Therefore, supporting students' spirits, establishing positive attitudes of teachers towards their students, and opening of minds are the main keys for introducing creativity and making something new.

Medical innovative initiation and exploration

Although students can create medical innovative ideas by themselves they still have a lack of knowledge, for instance writing code of computer programming, testing chemical reagents, or inventing medical instruments. Some projects needed collaborations, either from other schools in our campus and where necessary, university partnerships became essential. There is a need for an adviser to take responsibility for matching multidisciplinary teams. Fortunately, we have lecturers from the School of Science, and School of Information Technology who are ready to conduct undergraduate innovative projects as part of this integrated science learning model. Although the prizes and copyright, which we received are only small in number, many projects are still forward to competitive events. We hope that medical innovative teaching will be the first step to open the door of integrative learning, extend our medical products penetration into the market, and create innovative physicians in the future.

Conclusion

The integration of medical innovative teaching and medical education, using many

educational theories, which support students' creativity, is an alternative path to improving medical innovative knowledge, imagination, the development of medical software and hardware, by medical students and also medical science students. Future medical innovative teaching should be managed by a multi-disciplined approach, such as combined medicine, dentistry, engineering, business, information technology, science, laws etc. I hope this article will inspire many teachers to teach and learn along with their students to unlock the untapped reservoir of students' creativity.

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Students' Strategies in Overcoming Listening Comprehension Difficulties

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Abstract

Listening is an essential part of people around the world. It has some functions, such as for enjoyment, academic purposes, or getting information. For English foreign language (EFL) students, listening is also an essential part of the language learning process. However, listening comprehension is considered more difficult including for Indonesian students. Without considering appropriate strategies, it seems complicated for them to acquire excellent listening skills. This paper is an attempt to identify problems faced by second-semester students at the University of Pasir Pengaraian and their strategies to overcome listening comprehension difficulties. Researchers gathered the data both quantitatively and qualitatively to study students' listening problems and how they dealt with these issues as they enhance their listening strategies. The result of the research showed that most students had difficulty in non-linguistic issues involving students' background knowledge, environment, psychological, ineffective strategy, and inference strategy. To overcome their difficulties in listening comprehension, most students used metacognitive strategy, followed by social strategies, cognitive strategies, memory strategies, compensation strategies, and affective strategies. This paper is beneficial for EFL teachers in helping their students in listening comprehension. It is also helpful for EFL students in finding the appropriate strategy in learning listening and solving their difficulties in listening comprehension.

Keywords: Listening Comprehension, Listening Strategy, Listening Difficulty

Introduction

In the globalization era, the position of English in people's lives is essential. Almost every people will interact in English. English is not only for its role as an international language, but also for its extensive use in a range of fields, such as education, science, and technology, etc. In Indonesia, English is a foreign language that has been taught as a compulsory subject for junior and senior high school levels. The importance of English includes the ability of how to communicate both orally and in writing. Therefore, students have to master English skills, namely listening, speaking, reading, and writing. Most people think that being able to claim knowledge of a second language means being able to speak and write in that language. From this assumption, it is known that speaking and writing are primary elements while reading and listening are secondary elements in learning the second language.

Although as secondary elements in learning the second language, listening as one of the receptive skills is the most common communication activity in daily life. Nunan (1998) claimed that more than 50 percent of the time that foreign language learners will devote to listening in spending functioning in a foreign language. Ironically, in Indonesia, listening skill still does not receive as much attention as the other skills in teaching English. It is rarely taught in the classroom. Suparmin (1999, as cited in Prasetyo, 2014) argues that listening has now not

been given ideal interest through the instructors in teaching and gaining knowledge of English as a foreign language in a secondary school in Indonesia. So, it is worth saying that although listening skill is essential, it seems to be neglected by the teacher of English. Consequently, listening is considered as the most difficult English skill for Indonesian students.

The Purposes of Study

The purposes of this research were to investigate students' difficulties in listening comprehension and to investigate the students' strategies in overcoming listening comprehension difficulty.

Research Questions

Those purposes of study were formulated into:

1. What are the students' difficulties in listening comprehension?
2. What are the students' strategies in overcoming listening comprehension difficulties?

Theoretical Framework

The researchers constructed the theoretical framework as a basis for conducting this research. It was displayed in Figure 1.
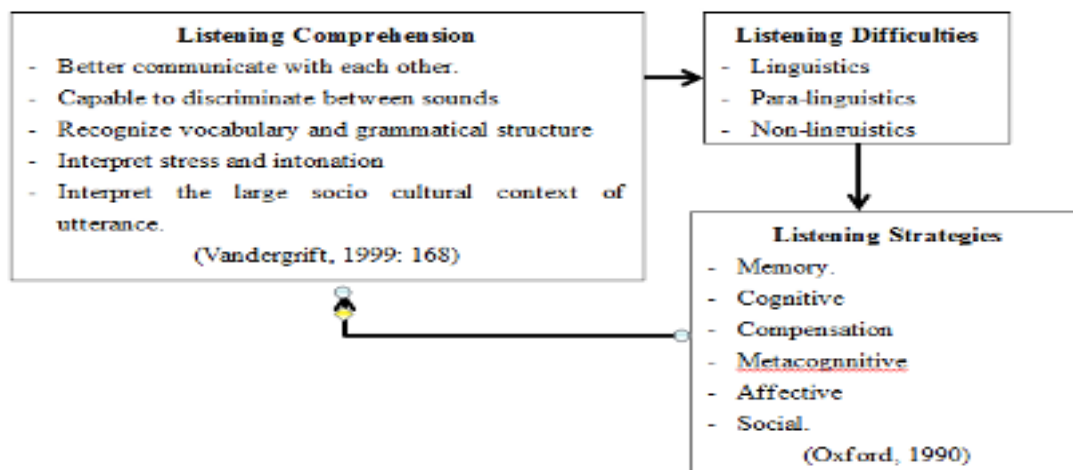
Figure 1. Theoretical Framework

Figure 1 describes the process of research, which started by collecting theories about reading comprehension. It involved the goals of learning listening comprehension. However, in reality, English foreign language students faced some difficulties in learning listening comprehension. In this research, researchers investigated what factors influencing the listening comprehension difficulties from the students. After the data were collected about the students' difficulties in learning listening comprehension, the next step was investigating students' strategies in overcoming listening comprehension difficulties. The results of the research are

expected to give information for students and teachers about the difficulties in learning listening comprehension and what strategies can be applied to solve students' difficulties. So, students can master listening comprehension.

Literature Review

Listening is a complex skill because it is an active activity that involves receiving, understanding, and perceiving a message from a conversation. It is supported by Morley (1991) that listening is an essential skill that needs to be mastered by adult foreign language learners. They wish that listening is twice more than speaking, four times much more than reading, and five times more than writing. It means that listening has essential roles in human life as people listen more than they speak, read, and write.

Moreover, McLafferty (2015) says that if EL students can be taught to increase listening comprehension, they can have better communicate with each other and participate in classroom discussions. It is due to the fact that in listening comprehension, listeners must be capable of discriminating among English sounds, recognizing vocabulary and grammatical structure, interpret stress and intonation, continue what used to be gathered and then understand it in the immediate as nicely as the immense socio-cultural context of utterance (Vandergrift, 1999: 168). Learning listening should be an interactive process. It means that listening is more complicated than other skills, and it is the not only passive activity that receives the message, but it is also an interactive process that needs to comprehend the message.

One of the reasons is lacking equipment for the listening lesson. Moreover, Novalia (2011), as cited by Prasetyo (2014), said that not many schools in Indonesia give attention to listening skill practice. Additionally, there are so many schools that do not possess a language lab and some schools that have had a language laboratory still left it idle. Therefore, when students study at the university stage, they will cause problems with mastering listening skills, particularly in listening comprehension.

Based on the researchers' experience in teaching listening, students tend to have difficulties in listening comprehension. Yousif (2006) identified various factors as salient influences on EFL listening comprehension. These include linguistic ability, the ability to judge the meaning of unfamiliar terms, ability to use verbal and non-verbal strategies to make up for gaps in linguistic knowledge, ability to understand the meaning, ability to contain notes, failure to understand the principal stages, and logical parameter. Moreover, Anderson and Lynch (2003) say that students' background knowledge or schemata are influencing students listening skills. Furthermore, Yagang (1994) identified the sources of students' difficulty in listening comprehension involving the message, the speaker, the listener, and the physical setting. In this research, the researchers categorized students' problems with listening comprehension as linguistic, paralinguistic and non-linguistic factors. Linguistic knowledge is needed to understand the sounds made by others. Paralinguistic is verbal communication, which does not involve wording. It is essential because it can change the meaning of the sentence based on the tone and pitch of voice. It is also a crucial component in all human communication. Even if the listeners do not have problems with both of them, their ability in listening comprehension will still be influenced by some non-linguistic factors.

To solve these problems, not only improving the teacher's methods in teaching listening or various media used in education but also it is from the student itself. Students need to enhance their listening learning. Students need to find their listening strategy while in listening comprehension. One path to treat listening problems would be to transfer the attention from test-oriented instructing toward more student-oriented pedagogy, in which the central focus is

on helping college students to increase their listening techniques and analyze how to listen actively (Richards, 2005).

Oxford's classification system of LLS utilized now not only in gaining knowledge of the language but also in mastering language competencies such as reading, listening, writing, and speaking, is divided into two widespread types of strategies, direct strategies, and oblique strategies. In the present-day study, the two standard sorts of strategies are analyzed and applied to study the listening skill. They are constructed in Table 1.

Table 1
Oxford's strategy classification

Main Group	Strategy Group	Subgroups
Direct	Memory Strategy	Creating mental linkage, applying images and sounds, reviewing well, employing action
	Cognitive Strategy	Practicing, receiving and sending messages, applying images and sounds, Analysing and reasoning, Creating Structure for input and output,
	Compensation Strategy	Guessing intelligently, overcoming limitations in speech production and authorship
Indirect	Metacognitive	Centering your learning, arranging and planning your education, evaluating your learning
	Affective	Lowering your anxiety, encouraging yourself, considering your emotional temperature
	Social	Asking questions, cooperating with others, empathizing with others

The above table describes the listening comprehension strategies constructed by Oxford. In general, there is two strategies classification; direct strategy involves memory, cognitive, and compensation strategy and indirect strategies involve metacognitive, affective, and social strategy.

Methodology

The method of this study was descriptive. To answer the research questions, researchers applied a naturalistic approach. There were twenty-seven English students from the University of Pasir Pengaraian participated in this study. The data were drawn from:
a). listening test scorers,
b). questionnaire,
c). observation,
d). interview.

The tests were given twice with different but equal test questions. These were done to gain consistency. The questionnaire comprised questions on problems in listening comprehension dealing with three categories (linguistic factor, paralinguistic factor, and non-linguistic element). To validate the data, the researchers did observation during listening practice and interviewed some students about their difficulties in listening comprehension and how they solved these difficulties.

Findings

The findings are the results of the research based on the purposes of the research. They are to investigate students' difficulties in listening comprehension and to investigate the students' strategies in overcoming listening comprehension difficulty. Here are the descriptions of the research findings.

Students Difficulties in Listening Comprehension

To find out the students' difficulties, the researchers gave a listening test to students. The listening test was given twice. The result was displayed in the table below.

Table 2
Students' Score

	Average Score
First Test	46. 43
Second Test	48.30

From table 2, it can be seen that there was no significant difference result between the first and second test score. However, the students' average score is under 50. It means the students' listening comprehension ability is still low.

After giving the test, researchers gave a questionnaire to students to find out students' difficulties in listening comprehension. The result of questionnaire was displayed in the following table.

Table 3
Students' Problems in Listening Comprehension

Types	Average Score
Linguistics	3.26
Para Linguistics	3.42
Non-Linguistics	3.65

Table 3 displayed the result about students' problems in listening comprehension. The data showed that the main problem from students in listening comprehension is in Non-linguistic problems (3.65). It involves students' background knowledge, environment, psychological, ineffective strategy, and inference strategy. It was followed by Paralinguistic problems (3.45) involving Inability to deal with Fast of Speech, Stress and Intonation, and Unfamiliar accent. The last was linguistic problems (3.24) involving Non-recognition of

unfamiliar words and Non-recognition of the Sequence of words.

Students' Strategy in listening comprehension

To find out students' strategies in listening comprehension, the researcher gave the questionnaire to students by using Oxford's strategy classification system. After collecting data, the researcher calculated it by using SPSS 17. The result of students' strategies in listening comprehension is at the following table.

Table 4
Students' Strategies in Listening Comprehension

Types	Average Score
Memory Strategies	3.22
Cognitive Strategies	3.28
Compensation Strategies	3.18
Affective Strategies	3.12
Metacognitive Strategies	3.91
Social Strategies	3.81

Table 4 shows that the strategies most used were metacognitive (3.91), followed by social strategy (3.81), cognitive strategies (3.28), memory strategies (3.22), compensation strategies (3.18), and affective strategies (3.12). It means that students frequently used metacognitive strategies in listening comprehension.

Discussion

Considering the result of data analysis, it showed that from twice tests of listening comprehension, the mean scores of second-semester students in the English education program of the University of Pasir Pengaraian were 46.43 and 48.30. It was considered poor. So, the students' ability in listening comprehension was qualified poor, then. It means listening comprehension was seen as a difficult skill in learning English for foreign language students. Field (2008b; Graham & Macaro (2008) said that listening is one of the most challenging capabilities for foreign language novices due to the complexity of its manner and distinctive kinds of information required for effective listening.

To find out the causes of poor ability in listening comprehension, it is necessary to look at the factors that influence their difficulty in making the inference. It was done by analyzing the students' responses on each of the items in the questionnaire using a Likert chart. The questionnaire asked them about how frequent they had the problem, as stated. Then, the mean score for each item was analyzed.

The problems of students in listening comprehension can be categorized into three; linguistic, paralinguistic, and non-linguistic. Non-Paralinguistic problems involve students' background knowledge, environment, psychological, ineffective strategy, and inference strategy. It was followed by Paralinguistic problems involving the inability to deal with fast speech, stress and intonation, and unfamiliar accent. The last was linguistic problems involving Non-recognition of uncommon words and Non-recognition of Sequence of words.

Some students had a lack of information about traveling. Nowrouzi (2015) said it as discoursal problems. These issues show up when the listener is unable to understand the drift of thoughts in linked speech. For example, when beginners fail to understand the complete set of views in a text, they have discoursal problems. While for the environment factor, students lost concentration because of the noise from outside. In the psychology factor, students argued that they tend to down if they missed the beginning questions. For an ineffective strategy, students said that they had problems while they listen long talk in listening test. The last problem was in inferring strategy. They argued that this part was the most difficult for them. In addition, they said that they needed more concentration to understand implied speech.

Paralinguistic problems were the problems that students have because of the inability to deal with the way utterance is spoken to understand the meaning of the statement. The result of this study indicated that the students had more difficulty in the speed of spoken communication. Sometimes it will affect students' psychology. Students said that it could make them frustrated. In the second place, intonation also became one of the factors that influence students' difficulty in listening comprehension because it could affect the meaning of the utterance. It could be a barrier for students especially when listened to speakers with assimilation sounds such as in the sentence "won't you" heard as "wonchoo". These issues show up when the listener is unable to understand the drift of thoughts in linked speech. For example, when beginners fail to understand the complete set of ideas in a text, they have discoursal problems. (Ur, 1984). Such issues are in many instances, related to listeners' low language competency (Goh, 1999).

Two major linguistic problems as the factor in listening comprehension difficulty were unfamiliar words and inability to get specific content words. Both could be a barrier for the students to understand the literal meaning, which was then being a barrier for listening comprehension. When it was deeply explored to students, getting unfamiliar words can be because they had not heard the words at that time yet, and they have listened to the words, but they were confused in pronunciation of words, for example in word "data" which pronounced as "deita". Field (2008a) mentions reduction, assimilation, elision, syllabification, and cliticization as systematic variations in the connected speech that inflict several potentials for the lexical segmentation of L2 listeners.

To solve these problems, students did some strategies in listening comprehension. They are memory strategies, cognitive strategies, compensation strategies, affective strategies, metacognitive strategies, and social strategies. In this research, the participants mostly used metacognitive strategies in overcoming listening comprehension difficulties. It was followed by social strategies (3.81), cognitive strategies (3.28), memory strategies (3.22), compensation strategies (3.18), and affective strategies (3.12). Mansoor and Ebrahim (2014) proved that metacognitive strategy helped students to improve their listening comprehension ability. Moreover, raising students' recognition of the listening method through tasks designed to enhance advantageous listening techniques enlarge motivation and understanding of students' questioning techniques in the course of listening tasks. It means that students frequently used metacognitive strategies in listening comprehension.

Limitation

This study was done to several students of the English Education Department in a private university in Riau province, Indonesia.

Conclusion

Considering the results of research, it can be concluded that there are three kinds of students' difficulties in listening comprehension, namely linguistic, paralinguistic and non-linguistic. Among those difficulties, non-linguistic was the most frequent involving students' background knowledge, environment, psychological, ineffective strategy, and inference strategy. To solve those difficulties, the strategies used by students in listening comprehension were metacognitive strategies (3.91), social strategy (3.81), cognitive strategies (3.28), memory strategies (3.22), compensation strategies (3.18), and affective strategies (3.12).

Recommendations

From the results of research, researchers would like to give some recommendations. For teachers, they should be able to cooperate with students in increasing students' English skills, especially in listening comprehension by knowing their problems in listening and suggest to them to use appropriate strategies in solving the problems. While for students, they should be able to use an appropriate strategy in listening comprehension. The last for (next) researcher, this research can be the trigger for the next research.

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Pantomime as a Strategy in Exploring Students' Speaking Skill: A Descriptive Quantitative Study

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Abstract

This study aimed to evaluate students' speaking skill through pantomime on their progress in speaking class at english department in university of pasir pengaraian. In this case, the pantomime is used as one of the strategy for developing students' skill in speaking. Pantomime is a performing art that employs body, expressive face through sign language. Besides, it is a performance art without speak even without any sound. This is descriptive quantitative study in which sample consisted of 30 students of the third semester. The data were analyzed by using speakings' rubric asessment from arthur huges through students' presentation in delivering ideas after pantomime was showed. The results of the research showed that students'speaking skill through pantomime was at average to good level in term of accent, grammar, vocabulary, fluency and comprehension. It was indicated also that students were more motivated in teaching and learning process because pantomime provides meaningful and enjoyable language practices especially in speaking class.

Keywords: Pantomime, Students' speaking skill

Introduction

Speaking cannot be separated from human being that is used as a tool for communication. Through languages, people can socialize and interact with their neighborhood, they can express and share their feeling to people around them directly for . Speaking is oral skill where information is transferred orally. When people want to speak, they do not need to take a pen and paper to write it down what they want but they just need to sound words. The process to produce a word stated that speaking is the productive, oral skill that consists of producing systematic verbal utterances to convey meaning.

Speaking is the process of building and sharing meaning through the use of verbal and non-verbal symbols, in a variety of contexts. It means, through speaking people can share information about everything among them such as sadness, happiness, anxiety, pain and others. Speaking can be done by verbal just like produce words and nonverbal symbols like gesture, body language and eye contact during speaking. (Chaney & Burk, 1998)

Teaching speaking for second or foreign language especially English is very challenging. Brown in lazaraton (2001:103) mentioned that a number of feature that interact to make speaking as challenging language skill. Speaking foreign language is not easy for students because they are not familiar with that language, so many students are reluctant to speak. Lecturer have to be able to create and apply appropriate techniques in teaching speaking

so student will be motivated to learn speaking. As nunan in lazarton (2001:110) inferred that the biggest challenges in the EFL classroom to be lack of motivation and getting students to speak.

The students of English Department in University of Pasir Pengaraian have learned many English subjects. One of them is speaking. Speaking subject is divided into four levels; speaking I, speaking II, speaking III and speaking IV. All speaking levels are intended to encourage the students to practice the language that they have already known. Sometimes when they want to state their ideas, it is not easy for them to utter in the correct words of the language. Furthermore, there are some objectives of speaking III subject based on the English Study Program syllabus. First, the students are expected to be able to develop their fluency and confidence in speaking by having many opportunities to speak. Second, they enjoy learning English by providing variety activities that is given by the lecturer. Third, the students can express their own views clearly and regularly. However, in the classroom, most of the students in third semester Students University of pasir pengaraian do not use English, as Syllabus required. They are not self-confident to say what they want to say something important expected in the subject.

From the explained above, it can be seen that it needs something for motivated students in teaching speaking in the classroom. In this paper, pantomime is one of the strategies in teaching speaking used in the classroom. Pantomime is a performing art that employs body, expressive face through sign language. Besides, it is a performance art without speak even without any sound. It was a performance art that tends to be dumb with its power not in words but dialogues with a full body of gesture. In this case, the researcher hopes through pantomime, students will be motivated in practicing speaking in the classroom so their skill will be improved automatically.

Research Problem and Objectives

It was clearly stated before that there were some factors indicated in their learning process so their speaking skill was limited. it needs some strategy in exploring students' speaking skill. Here, the objective of this study were to investigate students' speaking skill through pantomime. The objective was formulated as the following question, "How good is students' speaking skill through pantomime?"

Methodology

This research applied descriptive quantitative approach in which the design of the research consists of one variable to be observed- students' speaking skill through pantomime. As stated by sugiyono (2013), a descriptive quantitative study is constructed using positivism principle in which it is used to investigate a certain population or sample, the data collection is done using a research instrument, the data analysis is quantitative or statistic to test the research questions. In this case, the descriptive quantitative research is aimed at knowing the students' skill in speaking after pantomime strategy was applied.

The number of samples of this research was 30 students. In collecting the data, the researcher used performance or speaking test to the students. Furthermore, the researcher asked

the students to deliver their ideas in short presentation through pantomime performed by other student. Then, the researcher chooses three ratters in analysed students speaking practice through speaking scoring rubric from Arthur Hughes.

Literature Review

Speaking Skill

English is one of the foreign languages in Indonesia. The single most important aspect of learning a language is mastery art of speaking and success as measured in terms of the skill to carry out a conversation in the language. what the students need in a target language is the skill to use the language in acts of communication, because speaking is a very complex and different skill to learn especially by the foreign language students. In other words, learning to speak a foreign language will be facilitated when students are actives to communicate, because there is a proverb which says that we learn to read by reading and we learn to speak by speaking. Speaking is a language skill or means of communication in which one can express his/her ideas, feeling and information to others orally. Speaking skill needs direct interactions, in which someone speaks to someone directly. Furthermore, speaking shows cap skill to use a language. Hornby (1989:27) supports this viewpoint by stating that to speak is to reproduce words or to use words to utter the words by using conversation.

According to Chastain in Yossi (2004:6), speaking is a productive skill since it produces ideas, messages, and suggestions and we need to practice it. To increase our skill in communicating in English, it is not enough in the classroom but practice outside of the classroom it will be influenced our speaking skill.

When people speak, they do more than just exchanging information. They use language to make social interaction possible. This involves the skill to carry out the different kinds of conversational tasks and speech function, such as to greet and acknowledge people, to open and close conversation comfortably, to introduce and develop topics naturally. According to Richards (1985:12), when we speak to people we do not only say things, we do such things as describe events, feelings, things, ideas, plans, and accomplishment; we make request, offer suggestions and recommendation; we respond and react to suggestions, opinions, requests, orders and so on. It means that when we communicate we not only speak but we need the comprehension of what we are talking about, therefore speaking is a language skill or means communication in which we can express our ideas, feelings, and information to other people orally. Speaking skill needs a direct interaction, in which someone speaks to someone else directly.

It can be concluded that speaking is a language skill or a means of communication in which one can express his ideas or information in a good logical order and master the convention mechanics of speaking (pronunciation, grammar, vocabulary, fluency, and comprehension). In other words, the purposes of speaking or communication in English, besides being able to describe things, peoples, places, and sequences of even orally, we should

be able to express our ideas, opinions, feelings simply and to encourage ourselves to communicate to other people. Based on Ur in Hormailis (2003:7), the aim of speaking is to make people able to communicate to others.

Pantomime

As a part of drama, pantomime can be a supplementary technique used by lecturer in varying the way of teaching foreign language, in this case, speaking. Learners should bring experience and knowledge to their speaking for speaking skill is most likely to be successful and meaningful for the learners if they are well prepared for what they are going to speak. Pantomime is a good source to bring students' experience and knowledge to their speaking because it deals with what is absolutely necessary to communicate; the symbolic movements that are common to all (Aubert, 2005). Moreover, despite it is not verbally mediated as is conventional drama, it shares many central features with spoken drama, among them role playing, dramatic conflict, and story structure. The dramatic structure of pantomime video which is similar to the generic structure of narrative paragraph helps students to organize their thoughts or ideas into a well structured communication.

Pantomime prompts the students to be more active in learning process. It is because a mime (a person who does pantomime) tends to dramatize every gestures and facial expressions which, most of the time, look funny. Students will enjoy the learning environment and, simultaneously, have good comprehension in interpreting the story. This makes them comprehend more since general meaning and moods are often conveyed by expressions, gestures, and visual clues. That pantomime can successfully stimulate speaking activity should come as no surprise, the researcher believes that pantomime strategy can explore student's speaking skill for it has the similar structure with drama.

Pantomime is a wonderful way to motivate students and in teaching English speaking. The fascination with pantomime is that they involve mental math, chance, skill, social interaction and sometimes cheating and bluffing. They combine these things and have the appeal of interactive games.

Pantomime provides meaningful and enjoyable language practice at all levels and for all age groups. It can be used to practice any of skills. In here, speaking skill at any stage of the learning process, from controlled repetition through guided practice to free expression, make the language stick in the student's head. The gestures are so important. As many students remember by moving their bodies, they may forget the English, but they will never forget the gestures. Then as they re-do forget gestures the English very often comes back to them. Plus, the pantomime game keeps the students happy and excited and Very important to get a motivated set of learners.

The previuous research deals with pantomime had been conducted by Slawomir Wacewicz 2016 from Department of English at Polan in 2016 under the title "defining pantomime for language research". He concluded that pantomime as a communication mode to occupy in language origin which will eventually bring a definition encapsulating all the aspect in language evolution research.

Besides, edwin setiadi 2015 conducted his research for english departments' student in tanjungpura university, under the title " the use of pantomime in teaching narrative paraghraph writing" , he concluded that the use of pantomime can increase students' narrative paragraph writing achievement with moderate effect.

The previous experimental research deals with pantomime had been conducted also by Angelina Linda Hartani from Universitas Mulawarman, Samarinda in 2012. She tried to find out whether or not pantomime game is effective in teaching English grammar. The finding showed that teaching English grammar using pantomime game was more effective than that of without using pantomime game. During the experimental study, learners showed their enthusiasm, enjoyment, excitement, motivation, and involvement. They enjoyed the activities better than the deskwork.

Pantomime and English Learning

Pantomime is a simple English game which is ideal for small or big group competitions for students' class. Students have fun laughing at each other and trying to guess in English what is on the pantomime picture card (Helene jarmol uchida ,2004).

1. Pantomime is fun and students like to play them. Through game student will experiment, discover, and interact with their environment.
2. Pantomime adds variation to a lesson and increase motivation by providing a plausible incentive to use the target language. For students, especially the youngest, language learning will not be the key motivational factor. Pantomime can provide this stimulus.
3. The pantomime context makes the foreign language immediately useful. It brings the target language to life.
4. The pantomime makes the reasons for speaking plausible even to reluctant students.
5. Through playing pantomime, students can learn English the way they learn their mother tongue without being aware they are studying; thus without stress, they can learn a lot.
6. Even shy students can participate positively.

Pantomime is an effective introductory activity because there is not yet any pressure on the students to use English, they learn the rule of "no Indonesian". They learn about the effectiveness of non–verbal communication;

Pantomime is a form of non-verbal communication made with a part of the body, used instead of or in combination with verbal communications. The language of pantomime allows individual to express a variety of feelings and thoughts, from contempt and hostility to approval and affection. Most people use pantomime and body language in addition to words when they speak. The use of pantomime as language by some ethnic groups is more common than in others, and the amount of such gesturing that is considered culturally acceptable varies from one location to the next (Helene jarmol uchida ,2004)

There are many aspects of gestures, including their role in communication, conventionalization of pantomime, integration of pantomime and speech and the evolution of the language. (Helene jarmol uchida ,2004).

Kinds of Pantomime

1. Hand pantomime : Gestures performed by one or two hands, is the most numerous categories of gestures due to the ability of the human hand to acquire a huge number of clearly discernible configurations, the fact of importance for the sign languages.

2. Body pantomime   : A pantomime of shame, subduing, or agreement/confirmation. An interpretation depends on the way it being performed and overall body context. Or, can be used as a greeting.
3. Head/face pantomime : Facial expressions are a rich language in their own right and some facial expression are byproducts of emotions, while others, such as winking or eye-rolling are a kind of gestures (Helene jarmol uchida, 2004).

Many educators use pantomime for all kinds of activities. Describing the person for a partner gives students a chance to use imagination of vocabulary if people from many cultures and lifestyles are shown on the pantomime style. For a lesson on adjectives, students can describe the person's face. For a lesson on clothing, students can describe the things the people are wearing. Students may also role-play with partners practicing introductions or creating dialogs playing the part of the person showing on the gesture.

Findings

There five aspects that must be scored in this research they were accent, grammar, vocabulary, fluency, and comprehension. The result was analyzed in separate sections in this chapter but the summary of the student' score of speaking skill through pantomime by three raters had been explain in this section.

a. The students' skill in Accent

According to the Table 1, it can be seen that the students' skill in accent have variety point because, 12 students (60%) were fair or they range between 21-40, it means that they no conspicuous mispronunciation, but would not be taken for a native speaker. 18 students (40%) were average in accent because they in range between 41-60 its mean that they have made frequent errors that showing some major patterns uncontrolled and causing occasional irritation and misunderstanding.

Table 1
The Analysis on the Students' Accent

No	Range	Category	Frequency	Percentage
1	81-100	Excellent	-	-
2	61-80	Good	-	-
3	41-60	Average	18	40%
4	21-40	Fair	12	60%
5	0-20	Poor	-	-
Total			**30**	**100%**

b. Students' Skill in Grammar

Based on the Table 2, 4 students (13%) were in good because they in range 61 -80, it means that Few errors, with no patterns of failure. 18 students (27%) were in average because they in range 41-60, it means that they had made frequent errors that showing some major patterns uncontrolled and causing occasional irritation and misunderstanding. 8 students (60%) were in fair because they in range 21-40, it means that they constant errors showing control of very few major patterns and frequently preventing communication.

Table 2

The Analysis on the students' Grammar

No	Range	Category	Frequency	Percentage
1	81-100	Excellent	-	-
2	61-80	Good	4	13 %
3	41-60	Average	18	27 %
4	21-40	Fair	18	60 %
5	0-20	Poor	-	-
Total			**30**	**100%**

c. Students' Skill in vocabulary

According to the Table 3, we can see that the students' skill in vocabulary have little good understanding because about 8 students (27%) were in good range between 61-80, in other hand professional vocabulary adequate to discuss special interest, general vocabulary permits discussion of any non-technical subject with some circumlocutions.13 students (43%) were in range 41-60 it mean they in average categories, choice of words some time inaccurate, limitations of vocabulary prevent discussion of some common professional and social topic. The last 9 students (30%) were in 21-40 it means the students fair in vocabulary because they limited in vocabulary to basic personal and survival areas (time, food, transportation, family, etc.).

Table 3

The analysis on the students' vocabulary

No	Range	Category	Frequency	Percentage
1	81-100	Excellent	-	-
2	61-80	Good	8	27 %
3	41-60	Average	13	43 %
4	21-40	Fair	9	30 %

5	0-20	Poor	-	-
Total			**30**	**100%**

d. Students' Skill in fluency

The Table 4 shows that 4 students (20%) were good in fluency, or they had made the speech that was occasionally hesitant with some unevenness caused by rephrasing and groping for words. 12 students (40%) were average or they had made speech that was frequently hesitant and jerky; sentences may be left uncompleted.12 (40%) students were in fair or she/he has speech that was very slow and uneven except for short or routine sentences.

Table 4
The Analysis in the Students' Fluency

No	Range	Category	Frequency	Percentage
1	81-100	Excellent	-	-
2	61-80	Good	6	20%
3	41-60	Average	12	40%
4	21-40	Fair	12	40%
5	0-20	Poor	-	-
Total			**30**	**100%**

e. Students' Skill in comprehension

The students' skill in terms of comprehension can be seen in Table 5. Based on the table above, 8 students (27%) were in good comprehend the topic or they understand everything in normal educated conversation except for very colloquial low frequency items, or exceptionally rapid or slurred speech. 3 students (10%) were in average or they understand careful, somewhat simplified speech when engaged in a dialogue but may require considerable repetition and rephrasing. Therefore, the students' skill in fluency was average.

Table 5
The analysis in the students' comprehension

No	Range	Category	Frequency	Percentage
1	81-100	Excellent	-	-
2	61-80	Good	8	27%
3	41-60	Average	19	63%

4	21-40	Fair	3	10%
5	0-20	Poor	-	-
Total			**33**	**100%**

f. The result of students' speaking skill through pantomime

In order to make clearly, the result of the students' stating opinion by 3 raters can be seen in the following table:

Table 6
The Students' speaking skill through pantomime

No	Students Number	RATER 1	RATER II	RATER III	Average Score	Level of Classifying
		(Accent, Grammar, Vocabulary, Fluency, Comprehension)				
1	1	73,04	50,4	73,04	65,49	Good
2	2	47,04	43,7	47,04	45,93	Average
3	3	38,68	43,7	38,7	40,36	Average
4	4	38,68	47,06	42,04	42,59	Average
5	5	35,34	50,4	35,34	40,36	Fair
6	6	45,4	50,4	42,04	45,95	Average
7	7	73,04	57,02	69,74	66,60	Good
8	8	73,04	50,4	69,74	64,39	Good
9	9	38,68	47,04	38,68	41,47	Average
10	10	38,68	47,04	38,68	41,47	Average
11	11	66,42	60,32	66,42	64,39	Good
12	12	31,9	43,7	38,68	38,09	Fair
13	13	38,68	50,4	38,68	42,59	Average
14	14	56,34	50,4	59,84	55,53	Average
15	15	42,04	47,06	38,6	42,57	Average
16	16	31,9	40,34	31,9	34,71	Fair
17	17	59,84	53	50,3	54,38	Average
18	18	35,34	50,4	41,44	42,39	Average
19	19	31,9	36,9	35,24	34,68	Fair
20	20	63,12	50,4	53	55,51	Average
21	21	31,9	47,06	31,9	36,95	Fair
22	22	38,68	50,4	38,68	42,59	Average
23	23	45,4	50,4	45,4	47,07	Average
24	24	63,12	53,68	63,12	59,97	Average
25	25	42,04	50,4	42,04	44,83	Average

26	26	42,04	47,06	42,04	43,71	Average
27	27	42,04	47,06	43,7	44,27	Average
28	28	31,9	47,06	31,9	36,95	Fair
29	29	59,62	50,4	59,62	56,55	Average
30	30	53	43,7	53	49,90	Average
Students' Speaking Skill through Pantomime					**47,41**	**Average**

According to the table of the result of students' speaking skill through pantomime the percentage of students has the result if the students have point in average. Because from the table can see that most of thee students were in average. It means that the third semester students of English study program of university of pasir pengaraian had average in speaking skill through pantomime. 4 students (13%) had the good score,20 students (67%) had the average score, 6 students (20%) had the fair score. In conclusion, the table above shows that the students' speaking skill through pantomime was Average.

Discussion

In short, teaching speaking through pantomime had some influences to students' speaking skill. Even though it cannot improve significantly but students felt happy and enjoy the learning process. They more motivated than conventional atmosphere classroom before. According to pan (2008) of motivation is to give reason, incentive, enthusiasm, or interest that causes a specific action or certain behavior. Based on the expert say that motivation is very important because if the student's low motivation so the students cannot enthusiasm with their subject.

The situation in the campus is one the influence to the students. The students can practice outside the class. Students can practice from the outside the class if the situation the campus can influence.in addition, the various strategy and techniques even from games and another's way of teaching was very needed in enhancing student's motivation more over in teaching speaking skill.

Limitation

This study was done to several students of English department in a private university in Riau Province, Indonesia. So, the result of this study only deals to specific area not for another place with different situation and condition.

Recommendations

1. The lecturer
   The lecturer should be creative in teaching speaking skill to the students. Lecturer's creativity is a significant factor in implementing the playing game effectively, so that

they should be creative to make the class life. Especially in speaking subject that is usually difficult to speak, and express their ideas.

2. The students

   Students should be able to use appropriate strategy in improving the way their learning English especially practicing English.

3. The Next Researcher

   This research is hopeful give the contribution to other researcher to do the next research. It can be a guided for the next researcher in their paper especially in speaking skill. More attention to do the research in speaking because many aspects that can include in the research to be analyze.

Conclusion

The researcher took spoken test and video record to know the students' speaking skill through pantomime of the third semester students at English department in University of Pasir Pengaraian. The result of students' speaking skill through pantomime at the third semester students was average to good category. It can be seen from all indicators by Arthur Hughes. The students' speaking skill in accent was 39,72 or in average category. The students' speaking skill in grammar was 44, 18 or in average category. The students' speaking skill in vocabulary was 49, 43 or in average category. The students' speaking skill in fluency was 48, 42 or in average category. The students' speaking skill in comprehension was 55, 46 or in average category. In conclusion, pantomime had influences for students' speaking skill but it is not significantly. There were many factors can be noted for that, but otherwise this strategy had been motivated students in learning speaking in classroom so the class is not monotonous.

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Element in Designing Problem-Based Learning (PBL) and Students Feedback

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Abstract

This paper discusses problem-solving methods of Problem-based Learning (PBL) in the classroom to ensure the implementation of the PBL affect the learning process of students. There is some misunderstanding among educators when they feel that they have implemented PBL but the methods they used are incorrect. This situation causes students to feel that they are not getting the true knowledge, or the educators are not doing their job properly. This paper outlines several aspects or elements that educators should emphasize when designing PBL project. This paper also discusses feedback given by the students after following the PBL method. The students' feedback indicates that they can sense the elements of PBL occur during their learning process. Students also find that this PBL method gives them a chance to deal with real problems and challenge their minds by requiring critical problem-solving skills as well as the confidence to interact, communicate and work in teams as a preparation for post-university life.

Keywords: Problem-based learning (PBL), Student-centered learning, Slements of PBL

Introduction

Problem based learning (PBL) has been widely adopted as innovation in teaching and learning that can help to improve quality of learning in the 21st century (Licht, 2014). The effectiveness of PBL has also been widely researched and compared to traditional teaching method (Mergendoller, Maxwell & Bellisimo, 2006). However, PBL is often confused with problem solving learning methods. Traditionally, a lecture or tutorial requires students to use information that has been prepared and taught by educators to solve problems. This is to ensure that the students understand what has been taught theoretically or to demonstrate the ability of the students to apply the theory. Although this problem-solving method in traditional teaching is considered effective, it does not allow students to use knowledge to solve real-life problems (Mayer, 1996), so it is not PBL.

In PBL, learning begins with challenging and authentic problems where the process of exploring and finding answers to these problems will inspire or stimulate students' interest in learning. The PBL method provides students with ownership of learning in which they are given the opportunity to voice out what they will do to solve the problem within the PBL. Educators do not teach concepts from A to Z or provide students with all the details they need. Educators are expected to challenge students' curiosity about the problem and facilitate their understanding of the concepts and knowledge they need to know (Azer, 2005). The role of the educator is simply as a facilitator. It is the students themselves who decide what to study and what are they expected to learn by solving the problem. Next, with the group members, the students will work together to solve the problem by finding new information and knowledge.

Solutions to the real and complex questions will usually take time and have a number of alternative answers, which the students need to decide. The process of studying and finding their own information trains self-directed learning to the students, which is essential for lifelong learning. The issue is that some educators admit that they use PBL when in fact they do not use the correct method. Thus, improper designing and managing of PBL will cause the positive effects of learning PBL to be unnoticed by the students.

The purpose of this paper is to discuss the process and criteria in the true sense of what PBL supposed to have. Next, this paper shares the feedback received from students on how PBL affects their learning.

Research Question

This is study to explore the following question:

Do students who are studying using PBL can feel that they are exposed to the PBL method that has the necessary features of PBL?

Designing and Facilitating PBL

If PBL is set up, designed and implemented correctly, it will have a positive impact on students as it engages students in deep and long-lasting learning processes, and it stimulates them to be interested in learning as a result of their learning experiences. Various studies have shown PBL has significantly improved students' soft skills and hands-on approach learning (Deep, Salleh, & Othman, 2019; Jabarullah & Iqbal Hussain (2019). Strobel and van Barneveld (2009) through a meta-analysis found that PBL methods are far more effective than traditional methods for preparing students for work as PBL provides learning experiences that train students to be competent and skilled for a long time. On the other hand, if they are not properly prepared, designed and implemented, it will cause frustration for educators or facilitators as well as students.

Generally, PBL occurs if the answer to the question below is "YES":

- Is the problem given to students before a lecture?
- Do students work collaboratively in small groups to solve complex problems?
- Are the complex problems engaging and could they occur in the "real world?"
- Does student learning occur as a result of solving the problem?
- Does the educator serve as a guide or consultant rather than the source of information?
- Does the problem require students to search for multiple sources of information?
- Do the students learn new social skills in communication, cooperation, collaboration, leadership, and problem-solving?

In PBL, learning is stimulated by the needs and desire to know. When the students actively seeking and solving questions, it involves conflicts between what students know and what they want or need to know. The learning process occurs when there is a discrepancy between what is known and what is encountered. Resolving conflicts on students' problems in

the PBL is the essence of knowledge-building or learning. This is the key point in the PBL method, where students are able to engage in understanding and solve real problems that they are motivated to solve (Marra, Jonassen, Palmer, Luft, 2014).

The manner in which PBL is implemented in the classroom is also an important factor in giving impact to the student learning. A study by Beringer (2007) found that some students could not easily adapt to the PBL approach and felt that the implementation was not organized. Therefore, a more systematic approach to implement PBL will enable students to adapt and fully benefit from PBL. Early exposure to students at the beginning of the semester regarding the PBL method to be used is particularly important when students have not been exposed to PBL before.

Educators need not have to stand out and admire students for their theoretical knowledge, but they need to teach students how to apply knowledge in practical situations. Educators can make sure students understand their lessons not by answering every question that students may have, but by teaching the students how to find their own answers. Learning takes place not by teaching as much as educators want their students to know but by addressing students learning needs. It is important for educators to develop personal skills in order to become better facilitators.

The purpose of facilitating PBL is to make the learning process easier rather than answering questions or giving lectures. Facilitators need to ensure that students in the group focus on their tasks and guide them towards their goals (Azer, 2001). The facilitator's role is important in guiding and training to reduce student anxiety in the early stages of PBL (Borhan & Md Yassin, 2013). In managing PBL, facilitators need to devise strategies to engage students and stimulate critical thinking and encourage students to seek information (Azer, 2005).

To avoid misunderstanding among educators when they feel that they have implemented PBL method, but the methods used by them are inaccurate, BIE has outlined guidelines or elements needed in planning and preparing for PBL to ensure the process will give impact on the student learning. According to Buck Institute for Education (BIE), PBL is a systematic teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging and complex problem or challenge.

There are eight key elements that need to be in accordance with the BIE Gold Standard (2019) as shown in Table 1: key knowledge, understanding and skills; challenging problems; sustained inquiry, authenticity, student's voice and choice; reflections, critique & revision, and public products (Larmer, 2015).

BIE Gold Standard (2019) also include element of public product where students can demonstrate what they learn publicly, beyond the classroom. Making students work publicly will motivate and encourage students to produce high quality of work.

Designing a good PBL problem or question is not an easy task. It is challenging for educators to plan and present a scenario or problem that is authentic, interesting and complex and at the same time the educators have to ensure students are given such a scenario or problem that will make the students realize and achieve the learning outcomes of the course. However, to optimize student learning, educators who aspire to master the PBL method have no choice but to consider elements or components that can create real and challenging problems to enhance students' desire to solve the problem in which learning outcomes are achieved in exciting ways. There are many studies conducted to identify the most effective PBL component or element that significantly impact students learning, but yet no exact answer to this issue. In general, all the components of PBL are necessary in influencing students' learning outcomes (Yew & Goh, 2016).

Table 1
BIE Gold Standard-Essential Project Design Elements

Key Knowledge, Understanding, and Success Skills	The student learning goal is clear and specific focused on student's key knowledge and understanding. Important success skills including critical thinking/problem solving, collaboration and self-management are explicitly targeted and assessed. By doing the project, students learn how to apply knowledge and solve problem in the real world. The project may also help students to have habits of mind and personal qualities.
Challenging Problem or Question	The project is based on a central problem to investigate or question to explore, which is framed by an open-ended, engaging driving question. The open ended question will allow students to come out with more than one reasonable answer.
Sustained Inquiry	The project involves an active, in-depth process, in which students generate questions, find and use resources, ask further questions, and develop their own answers. The inquiry process takes time that might last for a few days.
Authenticity	The project has a real-world context. It can involve real-world tasks, processes, tools, or quality standards that provide a real impact on others. Authenticity increases students' motivation and stimulate their learning.
Student Voice & Choice	The project provides opportunities for students to express their voice and choice which creates sense of ownership. They can make some choices about the products they create, how they work, and how they use their time. Students take the responsibilities to work independently with the guidance of the teacher.
Reflection	The project provides opportunities during and after the project for students and teacher to engage in thoughtful and comprehensive reflection. Students and teacher should reflect on what and how they are learning, and on the project's design and implementation. Reflection is part of classroom culture.
Critique & Revision	The project includes processes for students to give and receive feedback regularly on their work. The feedback helps students to revise their works or conduct further inquiry for improvement.

Methodology

This paper examines only one part of the reflections done by 55 students who attended the Company Secretariat Practice (CSP) course. This course is a compulsory course for the undergraduate students in Accounting. In this course, the PBL method is implemented to achieve three out of five course learning outcomes (CLO) which covers a period of 9 weeks from 14 weeks of study. Most of the students are in year three or four out of four-year program.

In order to ensure that this PBL method of teaching affects the learning process, students were asked to do the reflection on their learning from time to time. The students were asked to response via online to the open-ended question.

This paper examines whether students realize the necessary features of PBL when the students were asked to give feedback on their overall experience doing PBL. The question is not specifically about the elements of PBL. Only contents of their feedback that include the elements of PBL are categories into seven elements of PBL as suggested in BIE Gold Standard (2019): key knowledge, understanding and skills; challenging problems; sustained inquiry, authenticity, student's voice and choice; reflections and critique & revision.

Findings

It is very interesting to explore the students' thoughts and feelings about the experience they had while solving the PBL question. Although the students were asked to share their experiences in doing PBL in general, they responded positively and answered more about the benefits they gained from this learning process through the essential features of PBL. In general, students believe they gain knowledge of the CSP by being responsible for solving challenging questions with their peers. They can also improve their skills such as communication, collaborative, critical thinking, and time management skills.

To observe whether the students be able to realize the benefit from each of the PBL elements, we categorized the students' views according to those elements. The views are classified according to the elements recommended by the BIE Gold Standard as presented in Table 2.

Table 2
Students' Feedback

Key Knowledge, Understanding, and Success Skills	
"We have clearer picture regarding how to conduct an company meeting. We learned more than what we got from the books."	*"The cooperation between teammates to accomplish a specific task given enhance my collaboration skill with other people"*
"gives a clearer view and create a real situation for the students to act as a company secretary"	*"This task shows that group work is very important. Communication and cooperation between group members are important"*
"I learned about proper way to conduct a meeting and all related document that needed before, during and after meeting"	*"Learn to manage our time wisely to complete all the tasks."*
"it cultivates a spirit of cooperation"	*I believe that PBL really help students to sharpen their memory"*
"The spirit of cooperation and tolerance among groupmates"	*"We have learned how to tolerate with others members as well"*
"I get benefit in peer learning activities through exchange of information and knowledge about this subject with my classmates"	*"Working in group enhance my communication skill"*
"It teaches the students how to handle stress"	*"This task brought us to be more sociable with groupmates, to be resourceful and not to be free rider"*
Challenging Problem or Question	**Sustained Inquiry**
"It is quite hard since it focuses more on practices rather than just studying it theoretically"	*"It was BLURRING at the beginning. When we are not clear with the particular problem, we will keep explore, explore and explore until we find the relevant fact. While in the process of exploring, we keep finding something new knowledge"*
"This task make us learn more through the practice of real problem, so that it would be challenging than just through the lecture in the class"	

"The good aspects of this task is we can has practical experience, not only read about the theory" *"We get to learn and solve a real problem instead of learning all those theories from books. With this, it is easier for us to relate to the real world outside and also as the early preparation for us to face the real issues when we graduate"* *"The task is very challenging to me"* *"It is a difficult task that need all my attention and effort to do this task"* *"We can come out with some creative ways to solve the problem given".*	*"At the beginning, I felt so confuse and don't even know how to start it. After a few meetings and arguments, I learnt many things that I can't gain from text books. This is what I appreciate the most'* *"I feel like it is not going to be an easy task because it takes me some time in order to just understand the questions itself"*
Authenticity	**Student Voice & Choice**
"Look like in the real practice" *"Expose to how real situation can arise. So we are prepared and familiar to face this kind of situation in the future"* *"we are closer to the application of the knowledge to the real world"* *"give opportunity to the students to solve the real problem and feel the real atmosphere"* *"Exposure to the real life practices"* *"I very like this PBL where we are been exposed to some real positions"* *"This task brings me to a real-life situation instead of just study theory from book. This is more interesting compared to lecture in class. Make me more understand on what I learned.*	*"This task let us be independent and figure out by our own"* *"A lot of group discussion and study by our own"* *"it let me have the self-discover and study independently"* *"leads the student to think critically and find out their own way to get the answer"* *"we are given the opportunity to fully utilize our creativity in producing the output"* *"Encourage the students to find out the information required by themselves"* *"I had developed self-learning in this course with the guidance of lecturer. Through self-learning process which we need to figure out what is needed, find the solution ourselves and prepare before going to class"*
Reflection	**Critique & Revision**
No one say anything about reflection.	*"we can learn from the mistakes, so that next time we will be more alert to avoid such mistakes"* *"By having the hand on experience and getting prompt feedback from peer and lecturer, we can learn from the mistakes that we have made, and we will remember those mistakes whenever we are having the same type of question. It is actually quite helpful in student learning process"*

From students' feedback, generally there are students who can sense the essential features of PBL that can improve their learning. However, one of the important elements in learning that none of the students mentioned in their feedback about PBL is "reflection". Even though students do the reflection when they were asked to do so, but they do not feel that reflection is part of their learning process. Educators might want to emphasize the positive of reflection. Dewey's famous phrase (1933) about reflection is "We do not learn from experience ... we learn from reflection on experience." Reflective practice enables students to revisit their own experiences, reflect and clarify learning issues and develop new perspectives by adjusting their actions for the next learning process in a positive way (Boud et al, 1985).

Beside the above elements, students feel that the learning process through PBL can prepare them for future careers. Here are some of the students' views that PBL can help to prepare them for life beyond university.

"We are prepared and familiar to face this kind of situation in the future"
"We will remember more when we apply it in real world event"
"As a preparation to us when we want start a business in the future"
"It is indeed a good preparation for us to face our final exam as we know what we have done wrong previously and it is easy to be remembered"

"Other than learning the theories, we are actually doing the tasks that are really useful for our career life"
"I'll remember what I have learned in the class"
"It makes me easy to remember. I hope I can apply it in real live when have opportunity to do it"
"It let us experience the real world business style, before we step out into the working field"

What is interesting about this feedback is that students also come up with an affective dimension they feel in the learning process of PBL, for example:

"Have fun experience in the class with friends".
"It is more fun and can learn more if compare with just read to the book"
"The process is enjoyable. All the hard works have paid off. I have learnt a lot from this PBL"
"Searching answers to the problem together with friends is exciting"
"Create a valuable memory with the members"
"I realized that I am not just a student"

Conclusion

PBL is an appropriate teaching method in preparing students for the demands of the workforce later (Licht, 2014). However, before students can succeed in the workforce, they need to find success in the classroom. Therefore, educators need to be able to engage students in the classroom for their success now and in the future by helping them through the right learning process.

The success of PBL depends on the readiness and acceptance of students even when students are pursuing a program of study that is as challenging as accounting. This study shows that the students think that PBL has a significant impact on their learning. This is because they can feel that the method has important elements to help their learning process. The students will work hard to engage themselves to solve the challenging question given to them if they feel that the learning process will benefit them. Furthermore, if the method is designed and done properly, it will not cause confusion to the students (Beringer, 2007). Thus, PBL requires careful planning by educators to ensure that the necessary elements of the PBL such as challenging problems; sustained inquiry, authenticity, student's voice and choice; reflections, and critique & revision are adhered.

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Challenges in Embracing Learner Diversity in Higher Education

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Abstract

The study aims to identify challenges faced by higher education practitioners when teaching diverse learners. Using purposive sampling, seven lecturers from various disciplines from one public university participated in the focus group discussion (FGD) which lasted for an hour. They consisted of five female and two male lecturers ranging from four to fifteen years of teaching experience in various disciplines. The FGD was recorded and transcribed. Data analysis was conducted by organizing the data and undertaking an initial familiarisation with the data, followed by generating categories, themes and identifying patterns in the data. Four emerging themes can be clustered as follows: awareness of learner differences; readiness of lecturers and students to accept learner diversity; limited curriculum; and inadequate facilities to meet the needs of diverse learners. The findings indicated that even though the lecturers were aware of the diversity issue and learner differences, they still needed some training to understand the whole concepts of learner diversity as many of them were unable to internalise the diversity concepts. They also reported challenges in managing diverse learners and requested for more training on utilising different methods and approaches in teaching and learning at the university level. The findings also suggested that a learner diversity training is needed not only to expose lecturers to various teaching methods and approaches but also to provide avenues for discussion on managing learner diversity.

Keywords: diversity, higher education, qualitative

Introduction

Globalization movement in a society where a macrocosm of multicultural pathways exists, demands a transformative enlightenment of its future direction. What must have brought society along with its constituents flow close to the transformative sphere in its education system. As such, higher education is most endemic to change (Yusof, Awang-Hashim, Valdez, & Yaacob, 2018). Today, higher education institutions by virtue of their specialized roles in society's culture not only investigate into the newer conditions of accessed practices and knowledge creation, they also need to develop their own practices of creating greater equity for diverse communities and vulnerable people (Ainscow, Dyson, Goldrick, & West, 2012; Valdez, Awang-Hashim, & Miguel-Aclan, 2017) to ensure that varied educational opportunities cut across social strata and settings (Roderick & Stephens, 2012).

Globalization increases interactions and social integration among people. In education, the influx of foreign students has dramatically changed the local landscape of higher education

institutions into a global village whereby international students along with their culturally unique values and beliefs have to contend with the existing social fabric of the country. The increasing number of students from different racial or ethnic background is considered as one of the important elements in having diversity on campus as students learn to appreciate the uniqueness of other cultures and have the experience of learning with people from different cultural or ethnic groups (Awang-Hashim, Kaur, & Valdez, 2019; Hurtado & Rona, 2014; Hurtado, Milem, Clayton-Pederson, & Allen,1999).

In Malaysia, internationalization has gained precedence as the other six thrusts under the National Higher Education Strategic Plan (NHESP) 2007-2020. The internationalization thrust aims at transforming the country into a regional education hub with a total enrolment of 200,000 international students by 2020 (Abd Aziz, Siong, Tin, & Abdullah, 2011). As such the new internationalization policy was introduced. The policy is formulated by looking at six core aspects of internationalization: student mobility, staff mobility, academic programmes, research and development, governance and autonomy as well as social integration and cultural engagement, based on collaborative participation from both public and private higher education institutions, as well as various government agencies which contributed to internationalization of higher education in Malaysia (Internationalization Policy for Higher Education Malaysia, 2011)

Having said that, diversity in Malaysian Higher Education Institutions has created an educational value whereby it has allowed students the opportunity to live with and learn from their peers whose life experiences differ from their own (Awang-Hashim, Kaur, & Valdez, 2019; Awang-Hashim, Valdez, Yusof, & Tengku Ariffin, 2013). This has further created a diverse educational environment in the classroom where students are being challenged on their ideas and arguments, forced to understand issues from different perspectives, reflect on their own actions and test their hypotheses against those of opposing views (Rudenstine, 2001). As more ideas are generated, more opinions are voiced out thus enriching in-class discussions and project group meetings (Rowney &Taras, 2008). At the same time, interactions with classmates from different countries present a first-hand experience of working in a multicultural environment as well as preparing them for work in the global setting (Awang-Hashim, Kaur, & Valdez, 2019).

Studies on Diversity Climate and learning

Earlier studies demonstrated evidence of the effect of diversity climate on students' outcomes (Gurin et al., 2002; Harper & Hurtado, 2007). They posited that hostile campus climate could lead to psychological distress and achievement. Other studies acknowledged that cultural diversity plays an important role in students' learning (Nield, 2004; Sulkowinski & Deakin, 2009; Boland, Sugahara, Opdecam & Everaert, 2011). Sulkowinski & Deakin (2009) argue that cultural understanding enhances students' learning and they provided evidence of a positive correlation between culture and learning approaches.

However, the presence of students from diverse cultural backgrounds in a classroom will not only present itself as a challenging condition for learning, but it may also give rise to feelings of inferiority or superiority rather than promote growth and development. A study on the impact of cultural factors on students' learning style preferences of 244 undergraduate students studying in Japan, Australia and Belgium conducted by Boland et al. (2011) discovered that the students from Australia and Belgium tended to be more individualistic in their learning and were more willing to learn by doing, while Japanese students preferred learning by watching. In addition, Nield (2004) who investigated the learning, teaching and

assessment preferences of Chinese students discovered that Hong Kong Chinese students were rote learners who have certain preferences for certain methods of teaching and assessment, and have a different view of the role of the teacher. Having this in mind, he concluded that learner differences need to be addressed by the lecturers if they intend to maximize their students' full potentials. Swartz also mentioned that, "When teachers engage in practices that centre students both individually and culturally, when school knowledge is inclusive, and when efforts to end all patterns of restriction based on group identities are evident and ongoing, more classrooms will be able to create equitable learning opportunities and outcomes for children" (Swartz, 2009: p.1044).

Even though efforts have been made to increase diversity, scholars continue to write about the lack of diversity in higher education (Turner, 2013; Chang, 2013; Flores & Rosa, 2015). Turner (2013) argues that longstanding challenges continue and that lack of racial, ethnic and gender diversity among students, faculty and staff remain intact. Similarly, Chang (2013) posits that it becomes a challenging situation for universities today to increase diversity. In a similar vein, despite the fact that diversity has become a major concern in many countries with diverse populations, very little research has examined the effect of diversity in the educational sector (Morrison et al. 2005 cited in Lauring & Selmer (2011). Lauring & Selmer (2011) claim that "very few studies deal with diversity in the education sector and hardly any focus on staff diversity" and that "while the number of diversity climate studies is rapidly growing, we are still in need to identify antecedents for a positive social climate in diverse organizations" (p.349). Taking this into account, we feel that there is an urgent need to address the issue of diversity in a multicultural context like Malaysia. Furthermore, diversity related issues are not widely studied and the level of awareness among university lecturers are often not addressed (Yaacob, Awang Hashim, Valdez & Yusof, in press, 2019; Abdul Razaq Ahmad, Norhasni Zainal Abidin, Zalizan Mohd Jelas & Anisa Saleha, 2011). Responding to this gap, this paper aims to:
1. identify the issues and concerns on learner diversity that different institutions face;
2. examine and explore diversity-related strategies deployed by lecturers in their diverse classroom.

Methodology

Participants

Seven lecturers from various disciplines from one public university were invited for a focus group discussion for duration of one hour. They were chosen on the basis of purposive sampling method with consideration on their willingness to participate and availability on the date of the discussion. They consisted of five female and two male lecturers ranging from four to fifteen years of teaching experience in various disciplines.

Research Design

Qualitative inquiry was employed to address issues related to diversity from the lecturers' perspectives. Creswell (2007) noted that the qualitative approach is chosen when the researcher needs a complex, detailed understanding of the issue by listening to the participants' voices within the context in which they construct and interpret their own realities. A focus group was conducted as it enabled the researchers to understand similarities and differences in

participants' opinions, beliefs, and experiences on diversity. A focus group has been described as a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment (Krueger & Cassey, 2000). They stated that a focus group is useful when the researchers are looking for the range of ideas that people have about something, and when they are trying to understand differences in perspectives between groups of people.

The focus group was conducted in a quiet meeting room and the discussion was recorded, transcribed verbatim and analysed. The participants responded to the following questions:

1. What are the challenges you faced when teaching diverse learners and how did you overcome them?
2. What are the issues in learner diversity that your university is currently confronted with?

Analytical Methods

In dealing with the qualitative data from the focus group discussion, the analysis was conducted by organizing the data and undertaking an initial familiarisation with the data, followed by generating categories, themes and identifying patterns in the data. To make meaning of the data, all data assigned to each code were pulled together to see the similarities and the differences within the categories and between the categories. During this process, data reduction was used to sharpen, sort, focus, discard, and organize data in such a way that 'final' conclusions could be drawn and verified (Miles & Huberman, 1994).

Main Findings

The focus group interview revealed some issues pertaining awareness on learner differences, lack of structural diversity, absence of a standard curriculum, and lack of pedagogical strategies in managing diversity. Figure 1 indicates the responses from respondents.
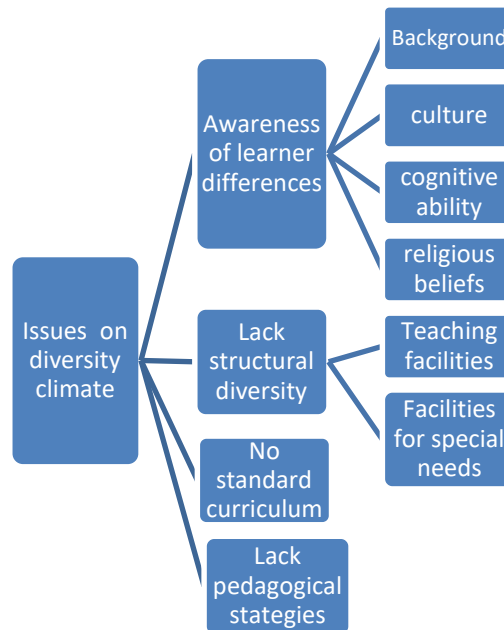
Figure 1. Issues on diversity climate

Awareness of learner differences

Most of the respondents were generally aware of the learner differences and their needs. They reported that the learners in their classrooms came from diverse cultural background and have different personality, beliefs, experiences and attitudes.

Personality, Cultural background, religious beliefs, attitudes

R7 reported that as a lecturer she was aware that the learners are unique and different based on their cultural backgrounds, religious beliefs and personality. R1 claimed that students from different culture and ethnic backgrounds had different attitudes towards learning even though she believed that these students had the ability in contributing ideas and knowledge.

> *<we need to> understand and recognize that all students are unique and different<they have> different personality, cultural background and religious beliefs... Teacher or lecturer acts as a model...<we have to> recognize and respect people's differences (R7).*

> *Students from different culture have different attitudes towards learning...<they have> different credibility< ability> to contribute ideas and knowledge...some have language barriers (R1).*

> *<it's the> Learner's attitudes and maturity... they lacked interpersonal skills to handle or accept diversity issues the challenge is the maturity and psychosocial development of our students...it's the learners' attitudes...they cannot respect and accept diversity in terms of race and religion...(R7).*

Cognitive Ability

The lecturers were also aware of the differences in students' cognitive abilities. R6 mentioned that she knew that her students had different cognitive ability that her classroom was made up of good and weak students.

> *Students have different cognitive ability…some are good/weak students on different subject matter based on different races for example Chinese are good in Mathematics…(R6)*

It was discovered that even though the lecturers were aware of learner differences, they mentioned about lack of pedagogical strategies, no standardized curriculum, and lack of facilities as barriers in managing diversity.

Lack Pedagogical Strategies

They felt that there was lack of awareness and understanding among lecturers on diversity. R5 asserted that lecturers were not prepared to teach diverse learners in their classrooms and in their day-to-day interaction. Participants R1 and R4 admitted that academicians were diverse in their thoughts and they used different approaches in their classrooms. Undoubtedly, these approaches which were based on their preferences somehow may not be appropriate to meet the diverse learners' needs.

> *I think one of the challenges is perhaps some lecturers themselves are not prepared or trained to teach students from diverse background i.e. international students, mature students (R5)*

> *academicians have different thoughts and use different approaches," (R1)*

> *Different kind of thoughts among academicians… We should actually have a standard approach when dealing with students…<particularly on> how to treat students equally regardless of their listed diversity," (R4)*

No standard curriculum

R4 for instance, commented that the university should have a standardized curriculum to treat learners with diverse backgrounds and abilities. She proposed that lecturers needed to be exposed to various methods and approaches in teaching diverse learners from different nationalities, races and attitudes.

> *"we don't have standard induction set in class to handle these diversities since the curriculum does not address the issue."(R4)*

Similarly, R5 mentioned that despite having university programmes which encouraged diversity, many students of certain ethnic groups refused to participate due to the language barrier particularly when the medium of instruction is in English.

"although the university practices non-discrimination in student selection, there are programmes with limited diversity and students from certain races or groups may not be inclined to choose certain programmes (R5)".

Lack Structural Diversity

Another issue emerged from the focus group was concerning the facilities provided by the university. Not only the majority of the respondents were dissatisfied with the facilities provided for disabled learners (which they claimed to be limited and needed improvement) but they also complained about the facilities available for teaching and learning to meet the needs of diverse learners. R5 reported that the facilities such as lifts, escalators, ramps for the disabled students were limited.

"one of the major issues with diversity that the university needs to address is very limited facilities for disabled students such as no lifts, escalators, limited ramps, no disability unit" (R5).

R1 stated that facilities for teaching and learning were needed to cater to the multiple needs of the learners. In a similar vein, R6 requested for the facilities required in meeting the demand of the 21st century teaching and learning.

<we need> good facilities for teaching and learning esp. tutorial rooms" (R1)

various facilities for teaching and learning suitable for 'classroom for tomorrow' need to be provided as well as the facilities for disabled (R6).

Discussion and conclusions

This study reveals that the majority of the respondents addressed a few issues related to learner diversity at the university level. Among them were awareness of Learner Diversity among lecturers (Behavioural), readiness of lecturers and students to accept learner diversity, the curriculum which did not consider learner diversity in the planning (legal and historical) and the lack of facilities provided to meet the needs of diverse learners (structural). The findings indicated that these lecturers have shown their awareness on learner diversity, whereby they touched on all the four aspects of diversity climate (Hurtado, et al., 1999) such as legal and historical, structural, behavioural, and psychological but they did not seem to have a thorough understanding of the diverse concepts of diversity. In other words, they have not internalised the concepts well. Most of them discussed issues related to learners' beliefs and perceptions (psychological), pedagogical aspects of teaching and learning (behavioural) and the facilities (structural).

As such, the lecturers need to equip themselves with greater knowledge on learner diversity which has been expanded to include other aspects such as learning styles, learning approach, motivation and expectations, social context of education and individual life style beyond ethnicity, gender, religion, disability, culture and community (Dimitrova et al., 2003). As postulated by Price et al. (2005), an institution's diversity climate would be improved by increasing a) faculty members' and leadership's awareness of their own attitudes and

behaviours, b) institutional commitment to diversity, and c) diversity among leadership as well as other faculty and staff.

The qualitative data also highlighted some important issues concerning the awareness of learner diversity at the university level. The findings indicated that even though the lecturers were aware of the diversity issue and learner differences, they still needed some training to understand the whole concepts of learner diversity as their understanding was still at the foundation level. Many of them were unable to internalise the diversity concepts and they reported not knowing how to manage diverse learners and requested for more training on utilising different methods and approaches in teaching and learning at the university level. The findings also indicated that a standardized learning module for understanding and managing learner diversity is required. Learner diversity training is needed not only to expose lecturers to various teaching methods and approaches but also to provide avenues for discussion on managing learner diversity. The current approaches such as service learning, problem-based learning (PBL), Case studies, and learning objects are all useful in managing learner diversity

Acknowledgements

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Learning Engagement and Motivation: Transfering Learning into Practice

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Abstract

Training has always become the cornerstone in human resource development. Thus, with the changes in education in the 21st century, the Ministry of Education Malaysia, via the Higher Education Leadership Academy (also known as AKEPT, *Akademi Kepimoinan Pengajian Tinggi*), has initiated series of training to elevate the standard of education and build leadership in learning and teaching among educators in higher education institutions in the country. However, there is lack of empirical studies which evaluate training on teaching and learning, to signify further improvements. This research extends the basic routine of the training evaluation practices, by investigating beyond the "smile sheet" level of evaluation. The study was conducted using a survey research method, whereby a questionnaire which has both likert-type scale items and open-ended questions, was distributed to the participants just after the training. The quantitative data was collected from a total 114 participants of four Basic and two Intermediate Learning Engagement and Motivation training series. Results indicated that participants reacted positively to the training – they rated the content structure as well-organized, easy to understand and highly relevant. Findings also indicated the participants learn through the innovative activities designed by the facilitators and that they are confident and willing to transform their learning into their classrooms. The findings therefore, helped AKEPT to furnish evidence to Ministry of Education, as well as stakeholders, and continue to make academic leadership training and development in teaching and learning, a strategic management agenda towards creating inspiring academic leaders.

Keywords: training evaluation, teaching and learning, academic leadership, learning engagement, professional development

Introduction

Many developed countries such as the United Kingdom, the USA, Korea, China and Japan has made it compulsory for university teachers to attend pedagogical training (Gibbs & Coffey, 2004). This is due to the fact that effective academic professional development that focuses on teaching and learning aspect results in improved teaching practices, and thus upgrade the quality of students learning in the universities (Chalmers & Gardiner, 2015; Hanbury, Prosser & Rickinson, 2008).

In Malaysia, the Ministry of Education, via the Higher Education Leadership Academy (AKEPT), has conducted series of training to elevate the standard of education and build

leadership in learning and teaching among educators in higher education institutions in the country. However, there is need to evaluate training on teaching and learning beyond the smile sheet (Chalmers & Gardiner, 2015), to signify the impact of training more substantially. This paper reports a research on evaluating the Learning Engagement and Motivation training sessions for academics from the public universities in Malaysia, organized by AKEPT, by including analysis of participants' reflections of the training, on top of the usual post training questionnaire on reaction and learning.

Methodology

The evaluation of the training outcomes programme takes into consideration Kirkpatrick's four levels of training evaluation (Kirkpatrick, 1959a, 1959b, 1960a, 1960b) – Level 1: Reaction; Level 2: Learning; Level 3: Change of Behavior ; and Level 4: Return on Investment. The research was conducted via survey research method and reflective writing to measure Level 1 through 3, whereby a questionnaire which has both likert-type scale items and open-ended questions, was distributed to the participants just after the training. The quantitative data was collected from a total 114 participants of four Basic and two Intermediate Learning Engagement and Motivation training series.

Evaluation for Level 1 and Level 2 measure the immediate reaction of the participants about the training. It measures the level of learners' extent of satisfaction with the training and how much participants have really learned as a result of having attended the training, respectively, ranging from 1 to 5 (1-strongly disagree, to 5-strongly agree). For Level 3, the measurement was divided into two parts, i.e. immediate change of behaviour (measured right after training) and distal change in behaviour (actual transformation in practice). The first part of the measurement was gathered through reflections by the training participants and this is the part which is shared in this report. Participants were asked to reflect on their intention to apply their knowledge into actual practice.

Data gathered through survey questionnaires were analysed by SPSS 22.0. Descriptive statistics was analysed to identify participants' reactions level of interest, perceived importance, and perceived usefulness and applicable to their actual work. For the reflective writing, analysis of themes was done manually to see the patterns in the data. Validation of findings were done through member checking technique, and then compared with the findings from the quantitative data, specifically on the participants' perceived usefulness and motivation to transfer the knowledge from training to practice.

Findings and discussion

Careful analysis made through this research has revealed several important and interesting findings, most of which, can serve as empirical evidence for making informed decisions about this particular training. On the whole, the feedback was very positive in all

aspects of participants' reactions under study. Participants found the training interesting, important, useful and applicable to their actual work. In terms of learning, the intended learning outcomes were reported by participants as accomplished and over a period of time, ratings of the training keep improving in its overall performance from one session to another one which was held later with a different group.

The findings in this study also shows that the training, which largely requires the participation of the instructors, has created opportunities for them not only to grasp threshold concepts but also become engaged in the learning process as well. Activities like case studies, role plays, group work, video watching, and discussions help instructors to deliberate on issues that challenges their current practices and consider making a change in their pedagogical approaches. Therefore, activities that are focussed on the learners (training participants) being active in the learning process, allowing them to feel, think, and act (or in other words become engaged) becomes actual exemplary for them to realize how their own teaching transformation can take place (Hedden, Worthy, Akins, Slinger-Friedman & Paul, 2017; Tengku Ariffin, Bush, & Nordin, 2018). In other words, use of case studies, role play and other innovative methods in the training and the consolidations on related issues on teaching and learning, can spark motivation for changes in how the participants conduct their teaching in the actual classroom settings later. This is because activities like the case studies provide a contextual framework for discussion among the participants to share their knowledge and collaborate to solve the problem given. Such activities have rooms for individual differences to be catered to. Whilst getting themselves immersed in understanding the case, solving the problem and discuss with colleagues provide an eye-opener session for them to see different perspectives of solving the case and introspectively examining their own expectations, roles and responsibilities as an instructor (Bonney, 2015).

Through the reflection session, instructors consciously examine the participants' belief, values and expectations whilst making connections with their motives and in the classroom and its impact on the students' learning. Nonetheless, the turning point of some of the instructors is the when they themselves are engaged in the learning process and witness the effect and impact of the process on their own cognition (knowledge), emotion (attitude) and action (skill) especially in relation to the concept of student-centred learning, deep learning approaches and motivating learning (Anderson & Anderson, 2015). It is only when they go through the learning process through learner-centred activities themselves that they become convinced of the approaches so much so that they are able to take control of their action and witness through their reflection of their transformations or the need to change. What is more important from this study is that in the training provided the instructors, having been convinced of the transformation that they go through, the participants became confident and more willing to share what they have experienced not only with their students in the classroom but also with their colleagues in their respective institutions. Within the short period of time during the training and through their reflection, the instructors move from grasping threshold concepts to being in the transitional stage of transformation in which they show their willingness to make a difference in their students' learning experiences as they see their important role as a catalyst

to change. Such transition can boost academics' confidence and self-efficacy in teaching (Zee & Koomen, 2016).

Conclusions

The current study has provided some useful information to the researchers and facilitators for further improvements. It adds to the literature on evaluating the impact of a professional development programme for academics and/or teachers. According to Chalmers and Gardiner (2015), research on training evaluation should report beyond the 'smile sheet'. In In this research, however, although the feedback given are mostly positive, we thought that there are still more improvement to be made especially in terms of innovative delivery approaches. Based on the feedback given by the participants with regard to how the training was able to promote innovativeness in teaching and learning, it was noticed that there has been comments made by the participants which specifically describe the training effectiveness in this sense. Previous research have also acknowledged the positive impact of pedagogical training on the changes of behaviour among the teachers (Postareff, Lindblom-Ylänne, & Nevgi, 2007; Tengku Ariffin, Awang Hashim, & Yusof, 2014).

One of the way forward to influence the participants to innovate in their teaching and learning is by being exemplary. Among the current innovative strategies in teaching and learning which we thought should be incorporated in our training is the use of blended learning approach. Use blended learning mode in the current training sessions whereby both face-to-face and online learning so as to demonstrate an example of innovativeness in teaching and learning which can be applied in the classroom setting. Besides, a virtual portal has also been used for ease of communication between participants and to create a virtual community of practise who can share knowledge and experience in teaching and learning. By being exemplary, we hope to be able to live up to the current required IR4.0 skills in teaching and learning. Indeed it has been emphasized by many scholars (e.g.: Khan, 2019) that the current trend in training is by giving quick but meaningful pieces of knowledge, or what is termed as snippets, for a more flexible, micro-learning sessions.

For AKEPT, the funder of this research and also organizer of the training sessions, the findings of this research should provide information in making decisions with regard to the sustainability of this training programme in the future. Although positive feedback are gained from the participants with regard LEM training, what is more important than this is the ripple effect which is expected to happen at the university level. Before that could even be realized, AKEPT needs to have the mechanism for ensuring that all participants follow through all three levels for the modules that they have attended. As such, there must be some form of support provided to all participants to keep them motivated and up-to-date with the relevant modules.

Having a virtual community of practise among participants who have the training, to a certain extent, can create a sense of belonging among them and thus should support their journey into becoming the master trainer. Indeed use of virtual platforms has been acknowledged and widely used among teachers and academics alike (Cavanaugh & Roe,

2019). They would feel like they belong to a certain group of academics who share certain knowledge and skills, which need to be continuously upgraded. The community of practice, being virtual, can also help resolve the distance problem in communication among academics who came from different universities throughout the country. However, this platform may not be enough to boost the participants to remain in the ToT program throughout. So, other means of incentives can be bundled with the ToT package so that it becomes more promising and attractive. One of the incentives which can be proposed here is SoTL grants for the participants who follow through all levels. After all, this is in line with part of the requirement in the third level for them to carry out research on their own classroom teaching.

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Creating High Impact Internship Programme

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Abstract

Internship programme can be high-impact learning experiences when they are well-designed and well implemented. It became part of the formal experience as an introduction to the students to the real workplace. What distinguishes the internship from other learning methods is the level of supervision and self-learning that allows students to use the knowledge learned at universities to be applied at work and reflect the learning experiences to achieve certain learning outcomes. In this paper, we discuss the characteristics and benefits of internship and how to design an internship programme based on experiences of several universities that conduct internship successfully. Emphasis is also given to constructive alignment for internship implementation and appropriate assessment. We also discuss implementation strategies to ensure that internship is a high impact programme.

Keywords: Internship; practicum; high impact practices; work-based training

Introduction

Most of undergraduate degrees in Malaysian higher institution (university or college) incorporate internship programme (the term "practicum" is also often used) in the curriculum for their students to gain working experience in the industry for a short period. It becomes part of experiential education for a formal introduction to the real workplace. The main aim is to bridge the gap between theory and practice. Internship programme provides students the opportunity to recap their undergraduate experience. Through this programme, students are expected to gain benefit by developing hands-on skills and improving soft skills such as communication, interpersonal, and teamwork skills. Internship is identified as one of the high impact practices in education (Kuh, 2008). The benefits of participating in high-impact practices such as internships is especially promising for historically underserved students who will make up a large fraction of tomorrow's workers and community leaders (Kuh, 2019). However, to gain the optimal impact, the programme needs to be re-designed and monitored.

What distinguishes the internship from other learning methods is the degree of supervision and self-study that allows students to connect academic learning with workplace learning by doing the work and to reflect the learning experiences in order to achieve certain learning outcomes. The student, the higher institution, and the employer must share responsibilities to ensure that they are balance and appropriate to provide sufficient learning to the student (O'Neill, 2010).

In line with graduate employability, all academics programmes are under the pressure to provide students the chance to connect academic learning with the knowledge, skills and approaches needed for work. The students should be equipped with capabilities and personal attributes for life and work in a changing world. In addition, the students need to be given the opportunity to increase their understandings; skills including critical thinking; values and

attributes to take with them into their career (Fung, 2017). Hence, there is a need to design a course that can address the needs of the industries, i.e through internship programme.

Evidence thru Literature Review

Most research in higher education has found that internship participation is highly beneficial for students for their future career. The programme might help students in career path (Muhamad et al., 2009) and provide the opportunity to form networks in the professional arena (Paulins, 2008). The National Association of Colleges and Employers (NACE) Job Outlook 2015 survey found that most of the employers prefer to hire candidates with work experience, and 60 percent of them prefer candidates who have participated in an internship. In addition, Taylora & Hooleyb (2014) suggest by having structured and proper module, internship can provide positive effects on the ability of graduates to secure employment within six months of graduation.

Through internship, students have the opportunity to prepare themselves for their future. Vélez and Giner (2015) systematically reviewed 360 articles and identified that internships enhance the employability of students upon graduation, job and social skills, provides better understanding of career paths, help them to develop realistic expectations, reduce reality shocks, and students who complete internships report higher salaries. Ryan, Toohey and Hughes (1996) also provide evidence that internships are successful in giving students insight of work life and career prospects, developing job skills and on-the-job performance, developing interpersonal and social skills, enhancing employment prospects of graduates (improving attitudes towards supervision, self-confidence, job knowledge, job-seeking skills and practical reasoning) and helping students to integrate well into the work environment.

As a career related active learning, internship can help students to improve themselves for their future. Thus, higher institutions should design the internship programme parallel to the purpose of increasing employability of their students.

Characteristics and Benefits

Internship programme is designed by higher institutions with clear learning objectives and outcomes. Students' workload should be tallied to credit hours earned, normally between six to 12 credit hours. The relationship between the student, faculty member/higher institution and employer should be spelled out clearly. In addition, the student should also receive regular performance appraisals from employer (Craig & Wikle, 2016).

Internship is a promising experiential education programme (Simons et al., 2012), which takes students into the work place, to bridge classroom study and life in the real world. Eyler (2009) provides guideline to create high-quality experiential education programmes as follows:

    i.   Work related clearly to the academic goals of the program;

    ii.   Well-developed assessments that provide evidence of achievement of academic objectives;

    iii.   Important responsibility for the student;

iv. Site and academic supervisors who understand the learning goals and pay close attention to the students to provide continuous monitoring and feedback;

v. Preparing students for both the practical challenges of their placement and for learning from experience;

vi. Continuous well-structured reflection opportunities to help students link experience and learning throughout the course of their placements.

In respect to high impact programme, Kuh (2008) identifies six common elements that make the practices high impact; (1) effortful (2) relationships (3) engagement (4) feedback (5) apply in new situation and (6) reflection. Based on these elements, internship is more likely to provide high impact to students when it as experiential education is organized systematically to achieve certain learning outcomes. The students put their efforts to apply what they have learned earlier in higher institution into work place, engage with new work experiences and build mentoring relationship with supervisors, faculty and peers. The students need to reflect these experiences and receive feedback from supervisors, faculty and peers that helps them to improve themselves. O'Neill (2010) recaps internship should be "a deliberative form of learning" that involves "doing," reflection, and "feedback for improvement"—all in support of "learning goals and objectives."

Table 1
Benefits of Internship

Stakeholders	Benefits
Students	• intellectually stimulating and beneficial for building the skills needed for future employment (Santariano & Rogers, 1979) • boost understanding of issues which are significant to a particular work (Hughes, 1998) • able to apply theoretical knowledge with real working environments and put them into practice (Zopiatis, 2007) • enhance employment opportunities, improve skills and competencies, and provide effects on career exploration (Vélez & Giner, 2015) • enhances student personal, civic, and professional development (Simons et al., 2012).
Employers	• use inexpensive and qualified labour and saving on recruitment costs (Vélez & Giner, 2015) • able to identify, hire, and retain talented students seeking full-time employment after graduation (Santariano & Rogers, 1979).
University/ Higher Institutions	• enhance reputation and visibility to attracts students (Vélez & Giner, 2015). • response of employer can improve curriculum. • effective method for strengthening university-community relationships (Simons et al., 2012).

The learning approach and experience given to students in internship programme enable them to become lifelong learners. The benefits of internships programmes are not only to the students but also to be shared by other stakeholders. Three main stakeholders are identified,

namely students, employers, and higher education institutions. The perception or expectations benefits of an internship vary among them (Craig & Wikle, 2016). Table 1 presents several benefits for each of stakeholders.

The students, the employers, and the higher institutions must share the responsibility to ensure learning is sufficient and able to provide high impact experience to the students. Good relations and mutual understanding between employers and institutions are crucial to create high impact internship programme.

Designing Internship Program

In designing a high impact internship, intended learning outcomes (ILO) should be the underlying principle of where rationale and goals for the internship will be the center for each decision (Kiser & Little, 2015). Accounting programme in Universiti Utara Malaysia for example, identifies six ILO that include technical and soft skills as follows:

a. Able to apply accounting knowledge to practice
b. Able to use appropriate information technology (ICT) applications to facilitate their tasks in the organization
c. Able to work collaboratively in team
d. Able to communicate effectively, both orally and in writing, with different groups of stakeholders
e. Able to demonstrate behavior that is consistent with professional ethics and social responsibility
f. Able to demonstrate a commitment to life-long learning and professional development

Other aspects that should be considered in designing internship programme include placement and placement process; programme structure; curricular content and design; and also assessment (Kiser & Little, 2015)

Placement and placement process

Managing placement is often to be challenging to ensure students get the real work experience in the field and appropriate setting, supervisor, activities, and roles. Various strategies can be used to ensure that students can be placed in an industry that is relevant to the field of study. Accounting Programs in Malaysian universities, for instance, have partnered with the Malaysian Institute of Certified Public Accountants (MICPA) to place a selected number of students in Big-4 audit firms which they also finance these students for taking professional courses.

The proper placement provides opportunities for students to see how learning works in different settings and how it develops a meaningful relationship with another person, a faculty member, student, coworker, or site supervisor. Placement of students in the company with mentors (advisors) as well as peers who share intellectual interests and committed to seeing the students succeed provide opportunities to the students to integrate, synthesize, and apply knowledge as a meaningful learning experience.

Programme Structure

Several things need to be decided for the structure such as part of programme component with or without grade, length, duration and number of credit hours. Need to be reminded that the decision in designing the programme should be based on the intended learning outcome. Some universities design their internship without giving any grading because they believe that experience is more important to the students. Many universities only set pass/fail or satisfactory/unsatisfactory marks as internship scores without involving grading and cumulative grade point average (CGPA). On the other hand, some universities implement grading system. There are universities like Universiti Utara Malaysia (UUM) that give grading to students' internship. This method is perceived to ensure students undergo their internship seriously and committedly.

Length and duration are varying according to fields and programs. Some offer an 8-week internship up to 28 weeks. UUM accounting programme, for example, specifies that students need to undergo internship for six months with 12 credit hours. The total credit hours are in line with credit hours of eight to 12 credit hours set by Malaysian Qualifications Agency (MQA).

Curricular content and design

Besides learning real experience in the working setting, the students are also required to do other learning activities such as readings, assignments/project, site visit, seminar and written reflection/feedback.

The assignment should challenge students to develop new ways of thinking and engagement on practical tasks. Students are demanded to devote considerable time and effort to purposeful tasks [and] require daily decisions that deepen students' investment in the activity as well as their commitment to their internship. The activities carried out during the internship by UUM Accounting students, for example, include undertaking audit work or field audits, calculating the company's total business taxes, or performing the duties of a company secretary depending on the needs of the company.

High-impact practices offer students frequent feedback about their performance. It gives opportunities for immediate formal and informal feedback. Indeed, because students perform in close proximity to supervisors or peers, feedback is almost continuous. E-reflections could be one example where supervisors could give prompt feedback to the students. For example, Industrial Training Systems (ITS-UTM) is a web based application system which is developed to manage the industrial training process in Universiti Teknologi Malaysia (UTM). Users for this system are System Administrator, Industrial Training Committee, Academic and Site Supervisors and Students who undergo Industrial Training.

Assessment

Students are assessed based on several activities such as assignment/project (Oral presentation, project report), journal reflection, supervisor/s evaluation and employer's evaluation. The students' assessment should reflect the learning outcomes of internship. National University of Singapore (NUS) uses four elements in the evaluation of internship such as the statement of learning objectives together with the job/project scope, journal reflection, final report and the intern performance review. In the final report, the student can reflect on his

overall experience and what were really stood out from a learning point of view. Grading will be based on the factors such as the depth of the reflection and level of maturity. NUS also use online system – Simplicity for the students to submit their journals and projects.

The common types of assessments involved in internship programmes are journal reflection, employer and faculty supervisor's evaluation, oral presentation, project report and Industry Supervisor Evaluation. Internship is often considered a capstone course where this course reflects all the technical and soft skills required by each graduate. The expected outcomes acquired by the students covering the three domains are assessed using appropriate measurement tools which are usually provided by the institutions. Table 2 shows example of constructive alignment where the assessment needs to be aligned with the activities and proposed intended learning outcomes.

Table 2
Constructive alignment

Intended Learning Outcome	Activities	Assessment **Using Rubric to assess students' performance on technical and soft skills**
To increase the competency and competitiveness	Continuous mentoring and supervisions Journal reflection	1. Ethics, Values and Professionalism 2. Team Work Skills 3. Entrepreneurial Skills 4. Leadership Skills 5. Lifelong Learning 6. Career awareness (Assess by industry supervisor using Industry Supervisor Evaluation form or journal reflection by the student)
To connect theoretical with application	Assignment/ project Oral Presentation Journal reflection Site visit by academic supervisor	1.Knowledge 2. Practical/ Technical Skills 3. Communication skills 4. Critical Thinking and Problem Solving (Assess by Faculty supervisor) Online system is important to ensure that assessment can be made promptly; formative and summative. Oral presentation can be performed at host company before both supervisors and other parties involved.
Increase interaction and & communication skills	Oral Presentation Writing Report	Communication skills (Assess by academic supervisor and industry supervisor)

Implementation Strategies

To ensure the students gain optimal benefits from attending internship, the strategies of high-quality experiential education programs need to be designed by focusing on the elements that make the practices high impact. Randall (2017) provides example of several high impact strategies to be closely monitored during internship as shown Table 3.

Table 3
Strategy for High-impact areas in Internship

Characteristic of high impact	Importance	Strategy
1. On-boarding	• Helps students feel welcomed and valued. • Helps everyone starts on the same page with clear expectations	• Facilitate structured orientation the 1st 1-2 days • Create first day checklist • Tour the facility • Assign a buddy – not the intern's direct supervisor
2. Learning	• An intentional focus of learning is what makes an internship different than a job. • Interns are learners first, contributors second.	• Ask interns to prepare in writing a few things they want to learn during internship.
3. Engagement	• Internship teaches students about the real world and success requires commitment, focused participation, accountability, etc. • Without full commitment, interns cannot discern what they liked and want to replicate in future experiences.	• Expect accountability for attendances, punctuality and deadlines. • Give interns stretch assignments to challenge them. • Assign projects that are important to the organisation
4. Projects	• Internship should involve meaningful work. • Interns are eager to contribute.	• If possible, modify projects to match learning goals. • Ask what work sample they want to create for future employers.
5. Relationships	• Interns should learn how to interact with others in a work setting. • Exposure to diverse perspectives deepens learning	• Create intern facebook group. • Allow interns to reach out to customers/clients as needed.
6. Exposure	• Seeing different teams and levels of an organisation helps interns better understand the big picture. • Exposure to diverse tasks and tools helps broaden interns' horizons and skill sets.	• Requires interns to present to work team and beyond. • Allow interns to attend meetings about projects related to theirs.
7. Feedback	• Receiving honest feedback is the only way interns can improve. • Learning to receive both positive and constructive feedback in the	• Weekly project debrief meetings. • Formal performance evaluation.

	workplace is critical to interns' future success.	
8. Reflection	• Learning to reflect on performance is critical to success. • Self-reflection helps interns become more self-directed.	• Ask interns questions such as: • What has been challenging? • What could have been done differently in a given situation? • What would be a good next step after internship? • Weekly learning logs and action plans

Source: Randall (2017)

Conclusion

Based on the elements to be covered in internship, we can posit that an internship is more likely to be "high impact" for students when it is intentionally organized as an activity that leads to particular learning outcomes; when students apply what they have learned in courses to work experiences, reflect on these experiences, and receive feedback that helps them to improve; when students build mentoring relationships with supervisors, faculty, and peers; when students are exposed to differences across people and in ways of thinking; and when students are asked to use their experiences to clarify their values, interests, and personal goals—including, in this case, their values, interests, and goals related to careers. Are internships high-impact educational experiences? This is a question individual campuses and departments will need to answer for themselves.

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Issues and Challenges in Implementing Simulation in Teaching International Relations Courses

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Abstract

Active learning has emerged in the recent years as an integral part of teaching international relations courses. Accordingly, the value of simulations in the classroom is well established and significant to enhance student's understanding of the subject material. Scholars and practitioners have used simulations as an active learning tools to model real-world environment. Simulations replicate the real-world situations with the ultimate goal of creating a proactive learning environment. Nevertheless, there is no singularly best way to design and implement simulations to fit learning objectives for a class. Simulations exercises in international relations always hampered with challenges and problems, making it less effective to achieve the desired learning outcomes. This paper seeks to explore issues and challenges in implementing simulations in international relations classroom. It will examine in particular the constraints and problems facing by the instructor during the implementation of simulation and how these issues affect the effectiveness of simulation practices. This study obtains data from textual analysis. The results conclude that despite its significant contribution in international relations discipline, however simulation practices encounter numerous issues during its implementation particularly student's engagement and ability to adapt with the simulation practices.

Keywords: Active learning, foreign policy, international relations, role-play, simulations

Introduction

In recent years, the calls to integrate active learning in the curriculum and to prepare our students with real-world environment have grown ever louder. In line with these demands, the question of how best to teach international relations courses becomes more important. Educating students of international relations with courses such as diplomacy, conflict studies and foreign policy, among others, has grown ever more complicated and requires adjustment in the pedagogy to address the real-world evolution. The evolution of real-world settings requires students to shift from traditional passive learning to active learning techniques. These include proactive student engagement and involvement, such as simulation, role play, discussion or beyond (Shaw et al. 2018).

In this globalization era, teaching international relations to the students is more like connecting them with the real-world environment that is part of their lives. The theories, models and concepts of international relations can be verified and utilised to explain the current world with more practical activities. One of the best practices to materialise this is educational applications of simulations as a teaching tool in international relations classroom. Simulations replicate the real-world situations with the ultimate goal of creating a proactive learning environment, within the controlled context of instructors (Hatipoglu et al. 2013). Simulations

are student-centered learning tools whereby students are developing their analytical skills to solve a task without much intervention and influence from the instructor. The main objective of simulations is to enable students to apply the skills acquired in the classroom into real life settings by integrating theories with practices (Fung 2019). The application of simulations in international relations classroom enable the instructor to stimulate curiosity and develop critical abilities in problem solving and conflict resolutions.

This paper analyses the implementation of simulation exercise in teaching international relations courses. The analysis is twofold. First, this paper explores the application of simulations in the classroom focusing on the integration of theory and practices into real-life settings amongst students. The second section scrutinize on the issues and problems facing by the instructor during the implementation of simulation exercises in the international relations classroom. The effectiveness of simulations relies on the ability of students to adapt to this new learning approach by developing new skills of analytical thinking. It is therefore vital to understand the constraints and limitations during the simulations that affecting students learning experience.

Simulations as a Teaching Tools in International Relations Classroom

Simulations exercise have been widely practiced and used as educational tools by scholars and practitioners of international relations. Some of the subject of international relations are easy and best taught using simulations and role play. By connecting international politics to the 'real' world, simulations combined with traditional lectures and readings make a course more interactive and involving. For instance, most undergraduate courses on foreign policy courses discuss important models and explanations of foreign policy decision making, such as the rational actor, organizational process and governmental politics models (Butcher 2012). It is often difficult for students to fully comprehend how to relate these concepts with the process of decision-making. Students have difficulties to explain the behaviour of states just by describing the models and theories, unless they get involved directly with the whole process. Hence, having students to utilize various models to explain a specific event in foreign policy processes will certainly encourage them to be more analytical. As such, role-playing simulation can be a very effective way to engage students with real-life context, and eventually helping students to understand the application of various models with decision-making processes.

In foreign policy courses, the desired learning outcome is to assure that learners understand how decision makers, including state leaders and bureaucrats formulate key foreign policy decision. It is essential for students to understand that by using the models of foreign policy can help them to evaluate and analyse decision-making process of foreign policy, rather than what leaders 'use' or 'follow' when executing decisions (Butcher 2012). Therefore, one way to help students throughout the learning process is by adopting simulation exercise, which grounded in real-world context and emulates professional settings. Students are required to find a connection between the teaching imparted by the instructors in the class with the real world and social context around them. Through this learning by doing, students will be benefitted enormously as they directly engage with multiplex processes to resolve specific complex issues.

Many scholars discuss the benefits of simulations within the international relations classroom. They question to what extent does actually simulations could improve student performance than using the traditional class discussion approach. As such, some scholars argue

that the use of simulations do not significantly increase student knowledge acquisition and their exam grades (Krain and Lantis 2006). While some question the usefulness of simulations, literature however does provide evidence how simulation exercise may give significant impact towards learning process. Hatipoglu et.al (2013) argue that simulations may help students to understand abstract theories and apply it in their daily lives. In addition, students will be able to increase their ability to incorporate their knowledge and skills to practice in the real-context conflict and issues (Boyer et al. 2006). Simulations also expose students to experience the real-life challenges embedded within diplomacy, including designing specific foreign policy with external entities. Specifically, they provide the students with a glimpse into the real-life diplomatic world and encourage students to think about the conflict at hands with different perspectives.

According to Sears (2018), the low intensity classroom simulation which involves only little time and resources should never be underestimated particularly in the effort to achieve important learning objectives. Low intensity simulation in teaching international relations classroom is very useful to facilitate students' theoretical understanding by incorporating the international relations theories into the design and implementation of the simulation (Sears 2018). Furthermore, the conduct of simulation also contributes in other significant way. Simulation also teach key concepts that are commonly used in international relations studies and perceived compatible and adaptable to be conducted even in large class (Brown 2018). In sum, simulation has proven to help student engage more actively in classroom and simultaneously deepen their understanding on foreign policy decision-making.

The Simulation Scenario

The scenario incorporates various models of foreign policy and specific foreign policy crisis scenario to be resolved. One example in preparing simulation exercise in foreign policy classroom is regarding a simulation of US–China relations in the US Foreign Policy course. The simulation exercise allows students to think and design their own foreign policy based on their understanding on specific conflict, in which later they can apply these various decision-making models in an attempt to explain the actions of their group (Shaw 2018). For the simulation exercise, student learning process takes place before, during and after the simulation. Before the simulation exercise, students will be exposed with key foreign policy actors, various models of decision-making and specific foreign policy issue that need to be resolved. From this process, students learn about specific roles they will undertake, including the roles of President, Minister and so on. During the simulation, students learn how to use their negotiation and bargaining skills with the opponent parties. Students also learn how to formulate foreign policies to resolve the assigned conflict. After the completion of the simulation, students conduct the debriefing and assessment process to evaluate the foreign policy. This process is significant to keep students engaged in the course as they have actively participated in the whole foreign policy-making process.

In preparing the class for the simulation, a specific learning objectives have been identified: (1) to introduce students with major foreign policy actors in the US and China; (2) to familiarise students with the roles of these foreign policy actors; (3) to provide students with the knowledge of a major foreign policy concern for both US and China; (4) to introduce students with the key models used to explain the foreign policy decision making of state leaders and to be able to apply these models to a particular foreign policy decision-making process; (5) to introduce students with various instrument of foreign policy used to explain the behaviour

of states; and (6) to provide a platform for students to critically reflect and assess their own actions within a decision-making environment.

The structure of this simulation was designed in a manner of duplicating international negotiation processes as much as possible. The simulation consists multiple stages where students actively engaged in role-playing. The instructor divides students into several groups consist of five to six students. The advantage of having smaller group is to avoid passive involvement in the group as well as to encourage stimulating and active participation from all members (Fung 2019). During the preparation stage, instructor introduces the key models of foreign policy decision making to be used in the simulation exercise. The purpose of doing this is to familiarise students with models and explanations of foreign policy decision making that may be applied during the negotiation process. In addition, this preparation stage also introduces students with various foreign policy actors such as key members of Department of Defense and Department of State of the United States. Students learn about the role, background and various members of the aforementioned department to fully understand their particular role in foreign policy decision making.

The first stage involves the presentation of particular foreign policy issue to be used in the simulation. Importantly, students are required to identify an issue that would possibly create a tension or crisis situation between US and China, which required foreign policy makers to engage with it. After they identify the issue that can cause a conflict, students are assigned with specific individual role of foreign policy makers to be simulated. The following roles are assigned including President, National Security Advisor, Secretary of State, and Secretary of Defense, among others. In a case study of US-China relations, if the students decided to simulate on the economic issue, one of the group members can be assigned as a Secretary of Commerce, a representative who deals directly with the issue that is being simulated.

Once students have been assigned their individual roles for the simulation, students will be asked to prepare a policy paper regarding their specific issues that have been selected prior the conduct of simulation. The point of preparing the policy paper is to provide information about their position on the issue at hand. The policy paper will be distributed to other members to enable them to learn more about foreign policy decision makers and roles played by every group member in decision-making process. During the simulation, students present their strategy for negotiation with the other party. The negotiation may take place with five minutes opening speech and serves as an important function to prompt other negotiators to consider what to be done in the forthcoming negotiations. Students simulate their role as the decision makers and alternately rotate their turn to present their respective policy and position depending on the roles they have been assigned for. The simulation process may take at least two days before they conclude the session.

The final stage is debriefing and assessment stage after the completion of the simulation. This stage is particularly crucial for students to evaluate their negotiation activities. The class reconvenes to debrief, in which instructor will play a role as a facilitator during this process. At this point, instructor elicits student discussion on topics such as the relevance of the proposal delivered during the presentation of policy paper, the outcomes and how does the negotiations experience reflect real-world events. In addition, students may also reflect on whether their simulation experience successfully provide solution for the conflicts and the implications for decision-making process. To facilitate the debriefing, instructor can adopt several ways such as asking students to write a reflection about the whole process of simulation. Alternatively, instructor can ask students to answer short questions on whether they have achieved the goal of the simulation and what can be improved in the future.

This simulation project enriches the instruction of international relations and certainly an extremely valuable tools in teaching the course. The simulation exercise provides an

alternative platform for students to engage in international relations courses away from the traditional lecture and class discussion. Students experience the real-world events by negotiating a resolution for specific conflict or crisis. The simulation allows students to experience the decision-making process at hand and provides opportunities for students to approach learning in a variety of ways.

Figure 1. Simulation activities

Figure 2. Debriefing and assessment stage

Issues and Challenges in Simulation Project

Simulation exercise has greatly impacted students of international relations course. Students have increased their understanding on the concepts and theories of foreign policy decision-making and how to apply these explanations to specific conflict or crises (Sears 2018). Nevertheless, there are also several issues and challenges in conducting simulations in international relations courses that may impede the knowledge acquisition from the simulation itself. Simulations rest on the assumptions that students are able to utilise the skills acquired in the classroom and apply in the new learning settings. Getting students engaged and participate

actively in the simulation has become the main challenges in this exercise. Furthermore, the ability to adapt with the new analytical skills in the simulations and students poor learning have also affecting the students' learning experience and impacting the students' overall performances in the classroom.

Therefore, these issues encountered during the simulation would require further attention in order to enhance the effectiveness of the exercise in the classroom. One of the biggest challenges in implementing simulation in international relation courses is the application of theory into practice. For instance, the simulation usually conducted in the middle of the course after the introduction of few topic of theories. Hence, students are most familiar with the theories, though some may venture into other critical perspectives during the learning process. With that in mind, students are expected to be able to think critically and apply the theories to explain the specific events of conflict or crisis. Nevertheless, students were found lacking in their articulations when applying and using the theories. This is likely due to limited time to fully understand the theories and limited knowledge to apply it with the simulated events or context. By contrast, it is possible for students to understand and better apply the theories had the simulation conducted at the end of the course, rather than the middle.

In addition, further attention is required to assure that the simulation exercise is accessible to all students. This is a big challenge for the instructor to get all students to participate and truly engaged in the simulation exercise. Student's performance varies from one another; therefore, their confidence skills may also vary. Some students are outstanding than their peers, meanwhile the poor learners may isolate themselves from the good learners because they are more reserved and lack of confidence. This will increase the opportunity of 'free riders' among the poor learner, meanwhile only good learner dominates the simulation process. Certain students may not be willing to participate or may not exhibit the skills that maybe necessary for the execution of the role-playing activity. They are reluctant to share their ideas and contribute less to the group because of the feeling of inhibition and fears of intelligibility. The students do not have the confidence to share their ideas because they are afraid that the other group members and the instructor will judge them. Students might experience speaking anxiety and fear of negative evaluation in which students are fear of making mistakes as they are worried that their friends will laugh at them and receive negative appraisals from their peers if they make mistake in translating their ideas.

Another challenge faced during the implementation of simulation in the classroom is to conduct an effective role-playing simulation in larger classes. The earlier section of this paper has discussed the ideal context of role play simulation which involves small number of students. Nevertheless, in larger classes, role playing cannot be done effectively because not all of the students have the opportunity to participate. For most role-playing scenario, the ideal required number of participants is only four to five students in a situation, so the remaining students just have to watch the simulation. This will cause them to become disinterested and stop paying attention because they feel like they do not have any responsibilities or role in the assigned task.

Incorporating simulation exercise in the active semester is also another challenges faced by the instructor to implement simulation in the classroom. There is limited class time to implement simulation exercise with the students during the semester because instructor also required to complete the course syllabus. Ideally, simulation should take place at the end of the course and lasts for at least three weeks. However, three weeks for simulation is taking too much time from the whole teaching weeks. Instructor will not have sufficient time to complete the teaching syllabus if they spend an exhaustive time on the simulation. As a result, simulation can only be done in less than two weeks without sufficient preparation with very little time. Therefore, it is essential to organize role-playing activities with ample time available to make

sure that students are engaged in a meaningful way, and time for reflection to follow without being rushed out of the class because of time constraints.

Simulation requires great teamwork skills from all members, though the role play activities will be played on specific given role. Therefore, instructors might want to consider ways of increasing the likelihood of strong student participation. The instructor might offer a participation grade based on the performance in their given role. In addition, instructor could inform students that during the debriefing process, the questions will be asked from the perspective of any of the roles, not just the specific role they were assigned. Consequently, students will share the collective responsibilities and participate actively with all group members.

Conclusion

The use of simulations in the international relations classroom is not new, the discipline has experienced renewed interest in role-playing simulations as innovative teaching tools over the past 50 years to model real-world environment. Simulations and role-playing contribute greatly in teaching and learning process of international relations courses. Simulations usually include structured interactions and negotiation among students over specific events, and as a result are often very useful in teaching about policy making, decision-making processes and negotiation and bargaining. This exercise enhances educational experience and promote critical thinking and analytical skills for students. Simulation is significant in a way that it incorporates theories and model to be applied into practices in real-life context. With that, tedious atmosphere in classroom can be transformed into an exciting and engaging one as students simulate the situation that they always have in their real-life situations.

Indeed, simulations are challenging in their planning, preparation and organization. Instructors often faced challenges with time constraints and poor students' participation during the implementation of simulations in international relations classroom. These challenges require further attention and a great deal of commitment from students and instructors alike. Most importantly, reflection and discussion after the simulation are crucial components to the success of a simulation. Students need to be given the opportunity to discuss their thoughts, reflections, and even feelings during the simulation. This is to provide opportunity for students to learn their mistakes during the simulation, and simultaneously improve themselves in the future. Equally, interactions with instructors and feedback during the simulation play an important part in making the simulation an instructive experience.

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Alternative Assessments in Universiti Putra Malaysia: Academics' Understanding, Readiness and Views

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Abstract

The primary aim of the study is to explore the academics' understanding of, readiness towards and views about alternative assessments. A total of 169 academics from Universiti Putra Malaysia (UPM) participated in an online survey. Findings from the survey revealed that UPM academics possess a good understanding of alternative assessments regardless of age, gender and academic rank and are willing to assess their students using alternative methods. Despite this, they still believe in the benefits of traditional assessment methods such as pen and paper examinations. In addition, qualitative responses indicate that the academics are concerned that implementing alternative assessment can be curtailed by professional body requirements and subject matter limitations. Given that academics in UPM are already inclined towards alternative assessments, it is indicative that the transition towards a more holistic and meaningful assessment practice will be seamless to produce future ready graduates.

Keywords: Academics, Alternative Assessments, Understanding, Readiness & Views

Introduction

The advent of the Fourth Industrial Revolution (IR 4.0) has brought great challenges to higher education. The IR 4.0 era is shaped by artificial intelligence and digitisation which will inadvertently transform the workplace from task based characteristics to human centred characteristics (Xing & Marwala, 2017). Higher education institutions will, therefore, need to embrace IR 4.0 as a way forward to transform into one of the top countries in the world in terms of economic development, citizen well-being and innovation.

Indeed, higher learning institutions (HLIs) in Malaysia are expected to produce graduates who are able to survive in the real world and thrive in yet to be created jobs. Graduates must have the ability to adapt to new environments and take on new opportunities that arise. In response to the aforesaid expectation, the higher education curricula must instill in students the 4Cs (communication, collaboration, critical thinking and creativity) where curriculum developers shall engage with the relevant industries. HLIs are also responsible for preparing future ready students in unpredictable and uncertain environments given that they

are currently prepared for jobs that have not even existed. Students must be prepared to adapt quickly in the real world where the traditional career models will soon be extinct. The time has, therefore, come to transform the way academics teach and assess their students in response to the IR 4.0 era. Given the aforesaid scenario, academics are expected to be creative and innovative in teaching, learning and assessment which in turn impact student learning outcomes in a meaningful way. In other words, student learning outcomes should be assessed more holistically.

Libman (2010) asserts that classroom assessments matters as they drive student pedagogy and student learning. The educational reforms in Malaysia have emphasised on the need to go beyond traditional assessment methods. Within the context of this change, HLIs in Malaysia will have to move away from the traditional way of assessing student outcomes to implementing alternative assessment strategies. This transition is timely and pertinent given that alternative assessments are designed to measure learning tasks that trigger critical thinking skills instead of regurgitating knowledge provided to them by others (Cummings, Maddux, & Richmond, 2008). Alternative assessments are designed in such a way that they foster powerful, productive learning for students (Libman, 2010). According to Maclellan (2004), "alternative assessment implies that there needs to be new formats for gathering information about students' achievements, that there have to be new processes through which such information is synthesised (in order to determine/diagnose achievement) and that the formats and processes should seek to serve the welfare of each student" (p. 3). Examples of alternative assessments that can encourage active participation of students in the learning environment include mind maps, journals, audio and video recordings (Roberts & Kellough, 1996), assignments (Craddock & Mathias, 2009), portfolio review (Carper, 2012), portfolio, individual and collaborative student projects (Letina, 2015).

It is, therefore, urgent that the current assessment practices in all programmes offered at Universiti Putra Malaysia (UPM) be evaluated and revised to be aligned with the changes brought about by the IR4.0 to HLIs. To meet the aforesaid demands, the UPM Alternative Assessment Task Force was formed in April 2018 to realise the transformation of assessing student learning outcomes through alternative assessments given that conventional methods of assessing students have been the norm in UPM. On top of that, many courses offered in UPM have mandatory written final examinations. Given the current assessment scenario at UPM, it is, therefore, pertinent to explore the academics' receptiveness towards alternative assessment before the transformation be implemented.

Objective of the study

The objective of the study was to explore the academics' understanding, readiness and views about alternative assessments in their teaching and learning. Three research questions were developed as follows:

1. What is the extent of academics' understanding of alternative assessments?
2. What is the extent of academics' readiness towards alternative assessments?
3. What are the academics' views about implementing alternative assessments in their teaching-learning?

Methodology

This quantitative-descriptive survey research was conducted among UPM academics.
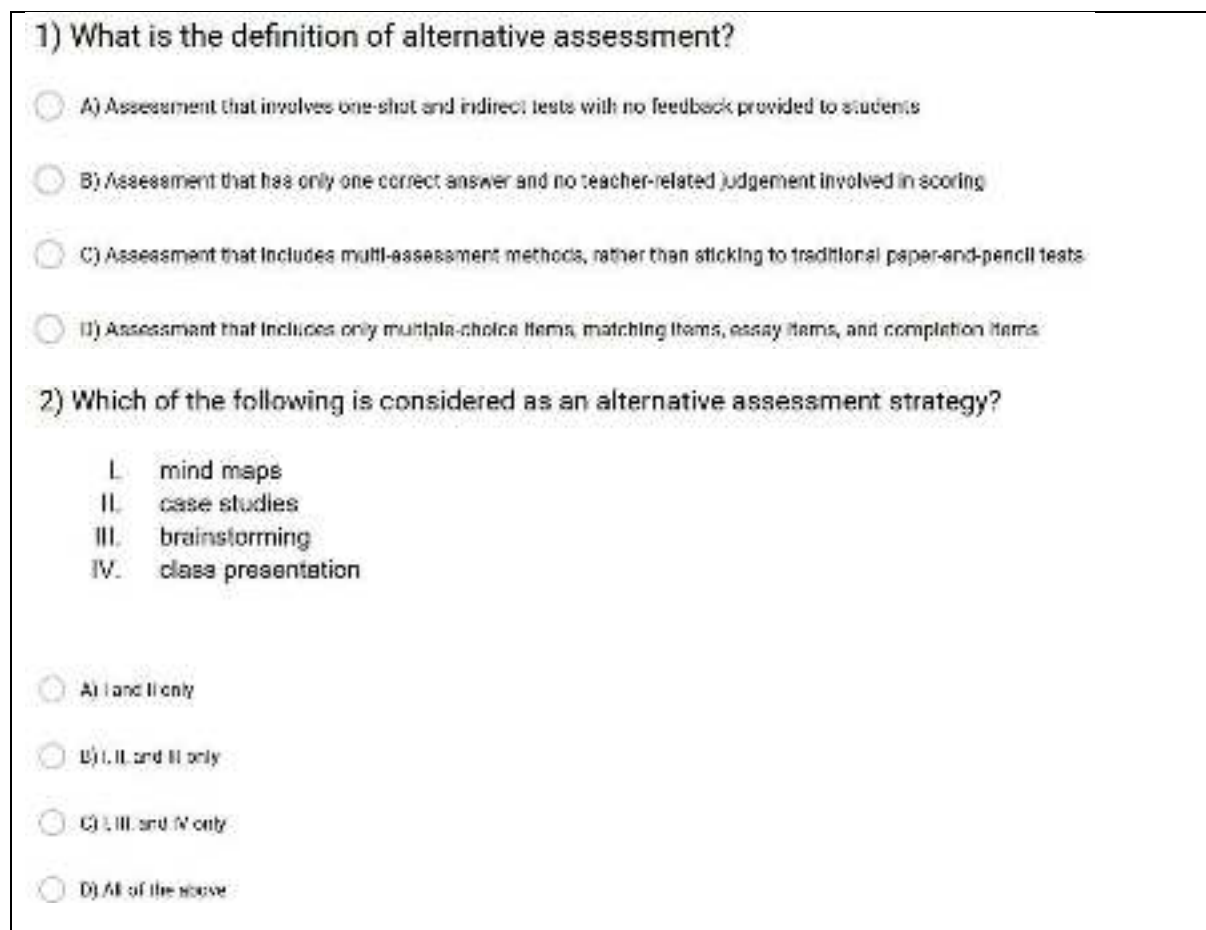
Data were collected online for a month in September 2018. A total of 169 academics responded voluntarily to the online survey. Given that each item was not made mandatory, the respondents had the option of not answering all items. For this reason, the number of participants responding to each item in the survey varied and is indicated in the corresponding figures.

Participants

The majority of the participants were females (67.1%) as compared to males (32.9%). Their age ranged from 27 to 70 years old. The participants comprised 10.3% lecturers, 61.8% senior lecturers, 18.2% associate professor, 6.1% professors and 3.6% language instructors.

Instrumentation

Since we found no standardised instrument that would suit our needs, we developed our own online survey form. Two multiple choice items were developed to gauge the participants' understanding about alternative assessments (Figure 1). Four items measured the participants' readiness towards alternative assessments as shown in Figure 2. The participants were also invited to respond to an open ended question of their thoughts about alternative assessments.

1) What is the definition of alternative assessment?

A) Assessment that involves one-shot and indirect tests with no feedback provided to students

B) Assessment that has only one correct answer and no teacher-related judgement involved in scoring

C) Assessment that includes multi-assessment methods, rather than sticking to traditional paper-and-pencil tests

D) Assessment that includes only multiple-choice items, matching items, essay items, and completion items

2) Which of the following is considered as an alternative assessment strategy?

I. mind maps
II. case studies
III. brainstorming
IV. class presentation

A) I and II only

B) I, II and III only

C) I, III and IV only

D) All of the above

Figure 1. Understanding of alternative assessments

3) Will you implement alternative assessment strategies in your course (choose one)?

☐ Yes

☐ No (Go straight to Question 6)

☐ I am not sure

☐ I have already implemented it

4) When will you apply alternative assessment strategies in your course (choose one)?

☐ Week 5–6 in place of Test 1

☐ Week 9-12 in place of Test 2

☐ Final exam week

☐ Throughout the semester

5) What percentage of alternative assessment would you allocate for your course?

☐ 0% - 20%

☐ 21% - 40%

☐ 41% - 60%

☐ 61% - 80%

☐ 81% - 100%

6) Will you attend any training sessions on alternative assessment?

☐ Yes, definitely

☐ Yes, but it depends on who the instructor is

☐ No

☐ I have attended before

Figure 2. Readiness towards alternative assessments

Results

The results of the study were based purely on the quantitative data obtained through the online survey and the qualitative responses from an open ended question posed to the participants.

Understanding of Alternative Assessments

The majority of the participants possess a good understanding of alternative assessments. A total of 96.4% and 83.2% of the participants scored correctly respectively for both the two multiple choice questions. This means that the majority of the academics are aware of the alternative assessment definition and it is a concept that is not new to them.

Readiness towards Alternative Assessments

Figure 3 shows that the majority of participants (60.4%) are willing to implement alternative assessment techniques for their courses that they teach. A good percentage of participants (38.5%) indicated that they have already implemented alternative assessments for their teaching. Only a small percentage of participants indicated that they were unsure (4.7%) while 1.2% said that they will not be using alternative assessment.

n=169
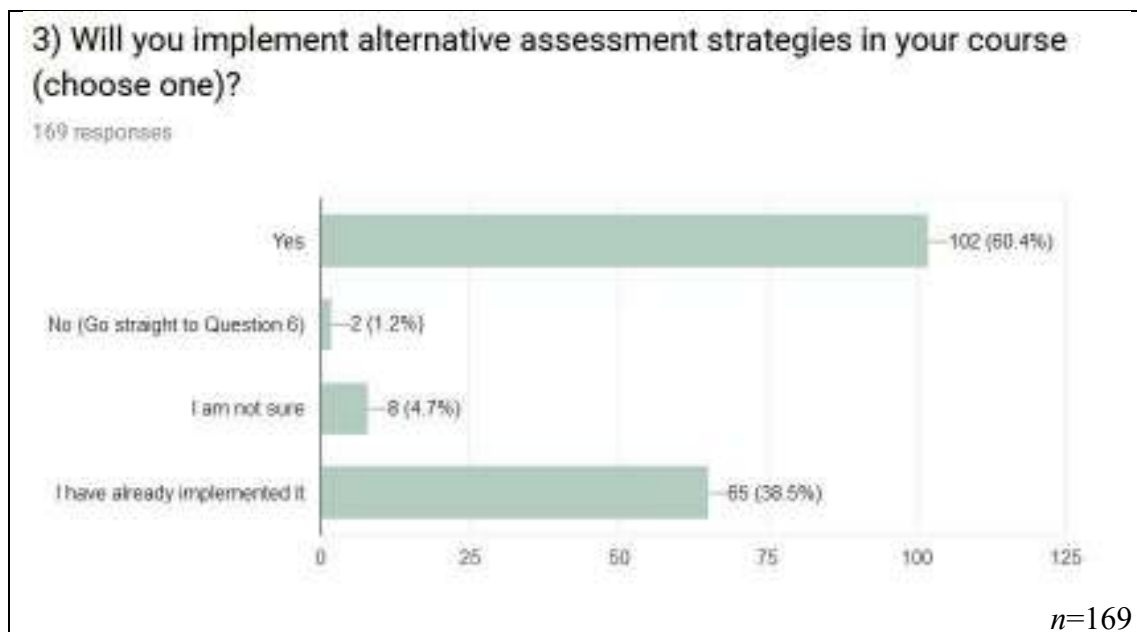
Figure 3. Readiness towards alternative assessment implementation

Figure 4 shows that many of the participants indicated that they will assess their students using alternative methods throughout the semester (80.6%), while the rest stated that they will implement at week 9 to 12 in place of test 2 (17%), week 5 to 6 in place of test 1 (7.3%) and final exam week (1.2%). The results suggest that academics do not prefer to assess their students through the conventional method such as test only. They also want to assess their students continuously and not be restricted to specific times to conduct assessments.

n=165
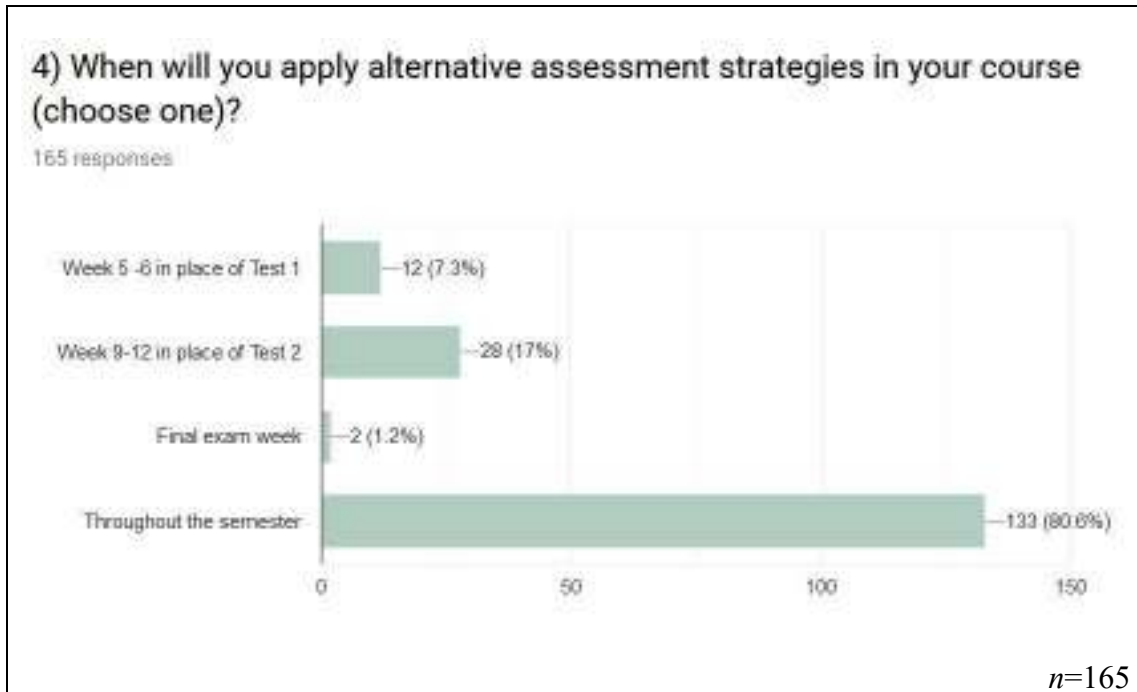
Figure 4. Preferred time to implement alternative assessments

The results shown in Figure 5 suggest that the respondents are more inclined to allocate a smaller percentage for alternative assessments for their respective course that they teach. An almost equal percentage of participants indicated that they would allocate 0-20% (39.2%) and 21-40% (38%) for alternative assessments. It appears that academics in UPM still believe in the benefits of traditional assessment methods such as pen and paper based examinations.

n=166
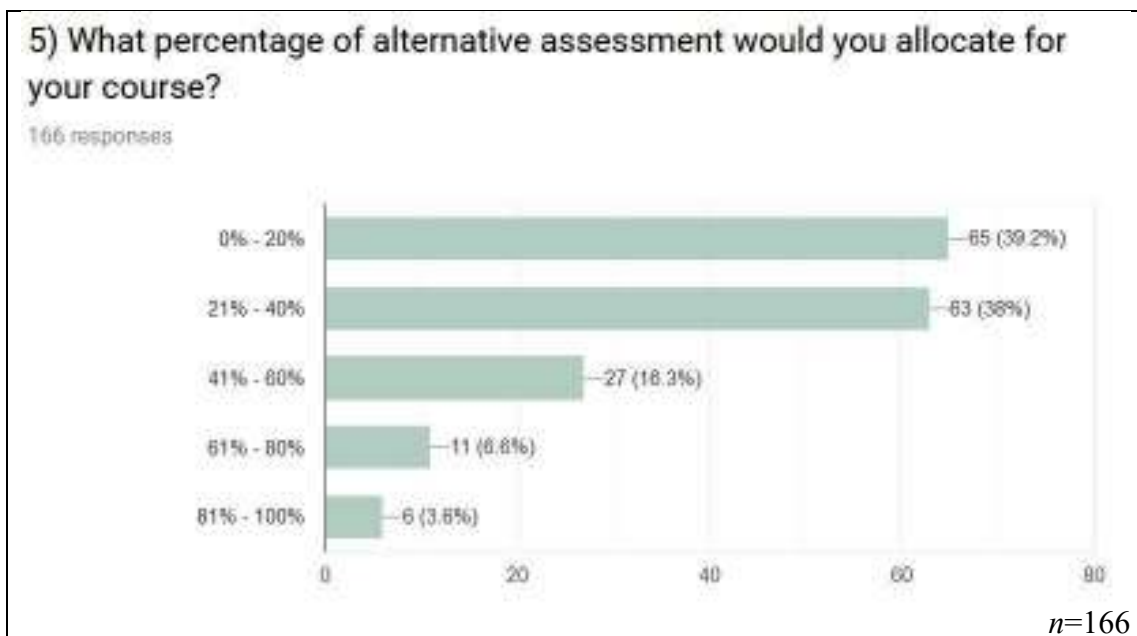
Figure 5. Weightage for alternative assessments

When asked if they are willing to attend any continuous professional development courses on alternative assessments, a resounding 62.1% of the participants responded yes while

27.2% indicated that their decision to attend any training would depend on who the instructor is (Figure 6). The results also showed that 8.9% of the participants have already attended some kind of training on alternative assessments. The result is encouraging as it suggests that academics in UPM are ready to embrace alternative assessments as a means to assess their students.
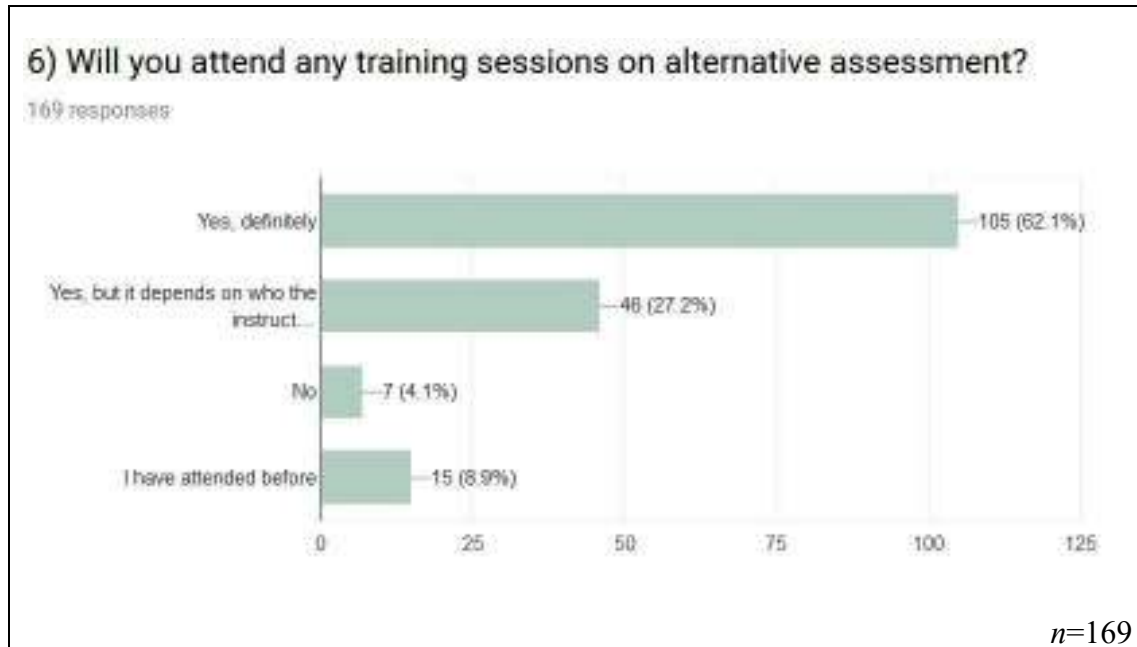
Figure 6. Willingness to attend alternative assessment CPD

Views about Alternative Assessments

Several themes emerged from the analysis of the qualitative responses. The participants mentioned that they are receptive towards using alternative assessments in their course. They use technology to enhance their alternative assessment methods in the classroom. For example, one participant said that:

> *it's good to have the alternative assessment especially when it involves the use of technology and internet. One of good way to assess the lesson learnt by the students is to convert the lesson in games (gamification) and evaluate the acceptance and understanding from the score.* (Participant 1)

Although alternative assessments received positive reception from the academics, several of them lamented that they are not able to implement alternative assessments freely when the programmes of study are regulated by professional bodies that require students to be assessed mostly through written examinations. In addition, subject matter is seen as a hindrance to the implementation of alternative assessments as indicated by two academics:

> *I teach maths which doesn't work very well for alternative assessments.* (Participant 3)
> *Some alternative assessment methods are good to address the PO attainment especially those in psychomotor and affective domains but the main dilemma is that these assessments do not represent the level of student's achievement in terms of the content of the course. So does passing a course, for instance Mathematics, should include their ability to do oral presentation or work in groups but they cannot really work with the mathematical formulas or knowledge?*

> *Hence, I always limit alternative assessments on psychomotor and affective POs to only a small fraction of course marks and unfortunately, this limits the use of such assessments in my class.* (Participant 4)

The academics felt that they needed to put more effort in their teaching when using alternative assessment methods. Some were also unsure if they were implementing the alternative assessment methods correctly as the notion of alternative assessment is still new to them. The two following comments reflected the aforesaid views:

> *Alternative assessments take extra time and effort to create and to grade. Most of the time, I'm using Rubric. Several skills can be tested in one alternative assessment such as technical, analytical and communication skills.* (Participant 5)

> *Still new in this type of assessment, unsure of its impact to students' professional development.* (Participant 8)

The academics still want to implement both traditional and alternative assessments in their courses and consider the former to be important as seen from the following comment:

> *It should not be the MAJOR form of assessment for a given course* (Participant 9)

Findings

Evidence suggests that the majority of academics in UPM are already familiar with alternative assessments although there are still a few who are new to this notion. They have a good understanding of alternative assessment methods regardless of age, gender and academic rank. They made effort to enhance their knowledge in alternative assessments by attending professional development courses offered in campus. It is heartening that there are also academics who are already using alternative assessment methods to assess their students' performance. In addition, there is variation in the range of percentage that they would prefer to allocate for alternative assessments. This means that academics wants freedom to determine the weightage of the course assessment according to their students' learning ability. Despite the positive reception towards alternative assessments, academics still believe that traditional assessments are still relevant for assessments in their courses. Many see the benefit of using alternative assessment methods but at the same time, there are concerns that the implementation of such assessment methods can be curtailed by professional body requirements and subject matter limitations.

Conclusion

As UPM embarks on its journey to transform the academic landscape for teaching-learning, academics will need to embrace alternative assessments as a vital component of their teaching practices. Given that academics in UPM are already inclined towards using alternative assessments for teaching-learning, the transition from traditional assessment methods that is currently in practice will be seamless towards a more holistic and meaningful assessment to produce future ready graduates.

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A Preliminary Study on CSBake Bakery Apps for Autistic Students

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Abstract

Autism is a type of learning disability which related to deviant growth of neurological system in an individual. This condition could be diagnosed as early as two years old and is a lifelong journey for the affected individuals. Most of young adults with autism would face difficulties in term of being an independent individual once they graduated school. The focus of this study is to provide a solution for young adults with autism by aiming at baking skill as a main attention. It is hoped that with baking skill, those young adults with autism could have a higher chance of being independent individuals. Align with the purpose of this study, bakery subject is included in the curriculum for the special education unit as one of the vocational skills focused subjects. However, there are some difficulties faced by autistic students in learning the subject. CSBake is a mobile apps which developed to assist the autistic high school students and special education teachers in order to ease the teaching and learning process of bakery subject. CSBake developed by using ADDIE as the research development model with the target user of special education teachers and autistic high school students. A preliminary study has been conducted at the National Autism Society of Malaysia (NASOM) Melaka with the total of ten participants; five special needs teachers and five autistic students. The testing conducted quantitatively along with direct observation of the participants. The results of testing show that overall system of CSBake is easy to use for both autistic students and special education teachers, provide better visualization about the whole baking process for autistic students, and easy instructions as a guide for autistic students to follow. However, some suggestions are given by the special education teachers in order to improve the effectiveness of CSBake.

Keywords: CSBake, Autistic Students, Mobile App

Introduction

Autism is a neurodevelopmental condition which characterised by way of the difficulties involving to social conversation and interactions (American Psychiatric Association, 2013). It is also conceptualized as a behavioural syndrome of more than one neurological injury associated with a large range of medical conditions.

Characteristics typically associated with Autism such as difficulties in learning new skills (spoken directions seem harder to be understood) and working independently (tasks completion without persuading), could make individuals with Autism harder and difficult to participate in the educational and workplace training activities needed to obtain employment (Babb, Gormley, McNaughton, & Light, 2018).

Students with Autism will most regularly require assistive technology such as software program or software that would assists with reading, language, organisation abilities and

processing statistics (Cortiella & Horowitz, 2014). Assistive technology is a technology in a presence of products, systems, and equipment which foremost focal point is to enhance working, learning, and daily living for character with disabilities (Assistive Technology Industry Association, 2019).

In Malaysia, early intervention has been given and put on a focus during the school year. However, activities which involved individuals with autistic is decreased, leave them facing difficulties in their future life (Chung, 2019). The issue could be reduced by determining subjects and activities which can be useful for those with autism. Implementation of adding vocational skill subject into the curriculum for individual with learning disabilities including autism, brings a good impact by equipped the students with skills that can be used in the future.

Vocational skill subject could be hard to learn for individual with autism since it is consist of theoretical and practical learning process. To overcome the issue faced by autistic students, right intervention in the classroom could ease the teaching and learning process both for students and teachers. Mobile intervention is one of the technological approach which can be implemented into the teaching and learning process. Therefore in this study, a mobile app prototype called CSBake is developed as one of the effort to overcome the issue.

CSBake

CSBake is a mobile apps developed for high school students with autistic. The contents of CSBake are focused on baking skill subject which is baking a sausage bun. It provides the details steps and instructions for baking the sausage bun including the ingredients and tools needed. CSBake is developed as an assistive tool in teaching and learning process for autistic students.

Platform chosen for CSBake is mobile Android system. CSBake takes advantage of mobile device touchscreen interface which provides easy to use and straightforward features. Mobile device offers the easy access and flexibility where further research of advanced mobile device could be applied in any area of computer based intervention for children with Autism (Vlachou & Drigas, 2017).

Why Baking Subject?

Schools in Malaysia are following the given curriculum by the ministry of education, this includes the subjects with vocational skills focused for special needs student. Six main areas of expertise for Special Integration Education Program are to be chosen by each school. Based on Isa and Kadir (2014), a study which conducted on special education teachers and instructors proves that Cooking / Preparation / Food Catering is the most deemed and chosen subject.

The Importance of CSBake

CSBake categorised as one of assistive technology tool which helps the teaching and learning process in baking subject. Baking subject as vocational skill focused subject, includes both theory and practical activities. Students with Autism commonly faced hardship in following instructions due to difficulties in communication. CSBake provides written instructions, images, and videos. This would help both students and teachers in the process of

learning in baking subject.

Methodology

The prototype will be tested to the autistic students in secondary schools with special education unit which taking bakery subject. Future work of this prototype will focus on analysing the effectiveness of the CSBake as an assistive tool for Autistic students in secondary school.

Methodology Used in Developing CSBake

CSBake development implemented methodology of ADDIE model. Consists of five phases: Analysis, Design, Development, Implementation, and Evaluation; CSBake considered as the alpha version of the prototype.

The instructional design strategy used for CSBake is based on Gagne's Nine Events (Gagne et. al, 2005). Gagne's Nine Events provides series of systematic instructions focused on condition of learning in order to get the effective teaching and learning process.

Methodology Used in Preliminary Study

The preliminary study in this study used questionnaires as the instrument, focused on the perception of special education teachers and instructors. Direct observation is being used to observe the Autistic students during the testing. Both students and teachers are involved in the testing, engaged with the CSBake prototype.

Results and Discussion

CSBake has been used as a tool to gather the preliminary data for this study. The questionnaires used Likert Scale from 1 to 5; 1 = Very Poor, 2 = Poor, 3 = Fair, 4 = Good, 5 = Excellent. There are total 4 teachers as the participants in this study along with 5 Autistic students.

There are three main evaluations of CSBake based on the teachers' perspective. Table 1 shows the creativity evaluation details and result. The user satisfactory on the overall creativity evaluation is fair. There are some suggestions given by the teachers regarding the interface of CSBake such as the colour usage which preferably lighter colour and clean look. The images used for ingredients and utensils need to be exactly same as in real life, no cartoon nor factitious product so that the students could relate it easily with the real-life product. It would ease the learning process for the Autistic students. The buttons used are intuitive and easy to notice and relate to the function itself. Since most of the Autistic students are tend to be exposed on gadget, there were no significant problem with the interface of CSBake.

Table 1
Creativity Evaluation

Particulars	Rating Scale	f	%
Easy to read texts	1	-	-
	2	-	-
	3	2	50
	4	1	25
	5	1	25
Attractive and suitable graphics	1	-	-
	2	2	50
	3	2	50
	4	-	-
	5	-	-
Attractive and suitable color	1	-	-
	2	1	25
	3	1	25
	4	1	25
	5	1	25
User friendly and attractive screen design	1	-	-
	2	1	25
	3	-	-
	4	2	50
	5	1	25
Suitable display placement	1	-	-
	2	1	25
	3	2	50
	4	-	-
	5	1	25
Icons and buttons are appropriate and easy to remember	1	-	-
	2	-	-
	3	2	50
	4	1	25
	5	1	25

Creativity Evaluation Rating	1	2	3	4	5
User Satisfactory (%)	-	20.83	37.5	20.83	20.83

The content evaluation shows in Table 2, focused on how the content of CSBake could be easily used and understood by both teachers and Autistic students. User satisfactory percentage shows that the CSBake contents are good. Suggestions are given by teachers such as quiz content which preferably evaluate separately by each module.

Table 2
Content Evaluation

Particulars	Rating Scale	f	%
Easy to understand and use	1	-	-
	2	1	25
	3	1	25
	4	1	25
	5	1	25
User friendly contents	1	-	-
	2	-	-
	3	1	25
	4	2	50
	5	1	25
Increase users' interest in learning to bake	1	1	25
	2	-	-
	3	1	25
	4	-	-
	5	2	50
The delivery method is easy to understand	1	-	-
	2	1	25
	3	1	25
	4	2	50
	5	-	-
"Ingredients" module helps user to understand the ingredients	1	-	-
	2	2	50
	3	1	25
	4	1	25
	5	-	-
"Utensil" module helps user to understand the utensils	1	-	-
	2	-	-
	3	1	25
	4	3	75
	5	-	-
"Recipe" module helps user to understand how to make sausage bun	1	-	-
	2	-	-
	3	3	75
	4	1	25
	5	-	-
"Quiz" module helps to understand the users' comprehension	1	-	-
	2	-	-
	3	1	25
	4	3	75
	5	-	-

Content Evaluation Rating	1	2	3	4	5
User Satisfactory (%)	3.125	12.5	31.25	40.625	12.5

Table 3 focused on instruction evaluation of CSBake. The user satisfactory of overall evaluation is good. Suggestions given are emphasizing on the language and written instructions. The language used for CSBake is English, however some of the Autistic students are on moderate level of English. Therefore, suggestion on providing bilingual option for CSBake would be more helpful for the students. The written instructions used in CSBake are considered to be simple, suggestion to make it shorter would be better in order to be more effective for the Autistic students.

Table 3
Instruction Evaluation

Particulars	Rating Scale	f	%
Help to guide users	1	-	-
	2	-	-
	3	-	-
	4	3	75
	5	1	25
Easy to follow	1	-	-
	2	-	-
	3	-	-
	4	3	75
	5	1	25
Clear and easy to understand	1	-	-
	2	-	-
	3	1	25
	4	2	50
	5	1	25
Language used is clear and easy to understand	1	-	-
	2	-	-
	3	1	25
	4	3	75
	5	-	-
Suitable instructions placement	1	-	-
	2	-	-
	3	1	25
	4	2	50
	5	1	25

Instruction Evaluation Rating	1	2	3	4	5
User Satisfactory (%)	-	-	15	65	20

The other suggestion given is regarding the videos used. Autistic students tend to prefer the instructional videos, it is fascinating for them to watch movements and easier for them to grasp the information or instruction given. Audio instruction could be another option to choose for certain Autistic students since there are some of them who tend to be more on auditory learning than visually reading texts.

Observation on Autistic Students

CSBake are being tested on the total of 5 Autistic students with the range age of 13 to 15 years old. Each student has the chance to run the CSBake prototype accompanied by the teacher. Most students were excited to run the apps, fascinating look like a game for them. There are some long instructions which caused them bored and tired. The quiz module questions are quite straightforward – guess the correct picture of each item – catch their attention. Overall observation, there is no significant issue where cause the Autistic student could not use CSBake.

Conclusion

CSBake is a mobile prototype application which considered as assistive technology, focused on baking subject. Main purpose of CSBake is to help teaching and learning process for both special education teachers and Autistic students. The preliminary result as presented above, focused on the practicality and usefulness of CSBake. The overall system of CSBake is rated good and acceptable for Autistic students. However, there are some suggestions given by the teachers including language used, colour used for the interface, written instruction could be improved by shorten the sentence (straightforward command words), and more videos to help the understanding of the instructions along with the audio instructions as the other option to choose. For future study, the improvements will be done on CSBake based on the suggestions by the participants.

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Alternative Assessment Implementation in Education Professional Courses for Trainee Teachers in Universiti Pendidikan Sultan Idris

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Abstract

Education Programmes are important to educate students to face the challenges in the future. Assessment on these programmes are crucial to ensure their outcomes in shaping the students. This study aimed to identify the alternative assessment implementation in eight Education Foundation component courses for three consecutive semesters of all Bachelor of Education Programmes in Universiti Pendidikan Sultan Idris. This case study involved all courses offered in three semesters, Semester 1 Session 2018/2019, Semester 2 Session 2018/2019 and Semester 1 Session 2019/2020. There were 20 alternative assessment types implemented by these eight courses in three semesters. These alternative assessments were designed to measure the cognitive and affective domains. This study showed that alternative assessments were implemented to enhance the cognitive skills, values, responsibilities, ethics and professionalism among the future teachers aligned with Future Ready Curriculum Guideline for Malaysia Higher Education.

Keywords: Alternative assessment, Education Programme, trainee teachers, UPSI, Future Ready Curriculum, Education Programme

Introduction

The massive implementation of Outcome-Based Education (OBE) curriculum in Higher Education Institution in Malaysia has started after the Malaysian Qualification Agency Act 2007 (Act 679) was enacted. The backbone of OBE is the constructive alignment where it is crucial to align the learning outcomes with the teaching and learning activities and the assessment. In OBE the assessment must measure the learning outcome, thus, the alternative assessment is seen appropriate to be implemented and conducted in delivering the academic programmes and courses.

The current need in curriculum is designing the future ready curriculum. Curriculum design is crucial in creating a comprehensive and holistic teaching and learning framework for an academic programme. The curriculum mapping synchronize the fulfilment of an academic programme to OBE according to Code of Practice for Programme Accreditation (COPPA, 2017) published by Malaysian Qualification Agency (MQA) and the needs of Future Ready Curriculum (Ministry of Education, 2018).

In Universiti Pendidikan Sultan Idris (UPSI) or Sultan Idris University of Education the implementation of OBE has started in 2010 after the curriculum reviewed process. Being an education university, about 70% of the academic programmes in UPSI are the Education Programmes. All the Education Programmes offered in Malaysia must comply with the

Education Programme Standard issued by the MQA. One of the components in the Education Programme Standard is the Education Foundation. In UPSI the Education Foundation is offered by a department called Department of Education Foundation. The courses of the Education Foundation are offered to more than 40 academic programmes.

Future Ready Curriculum

The Task Force for Malaysian Public Universities Academic Programme Transformation has published the Future Ready Curriculum Framework (Ministry of Education, 2018). The framework is fluid and organic to develop adaptive graduates towards future needs in parallel with the 21st century challenges. The framework listed three main elements which are Fluid and Organic Curriculum Structure, Transformative Teaching and Learning Structure and Alternative Assessment.

An academic programme that fulfil one of the element or sub-element is considered as an academic programme that has an element of Future Ready Curriculum. The framework can be used by a public university in reviewing existing academic programme or designing a new academic programme.

Alternative Assessment

Assessment act as the appraisal or judgment (Shaw, 2015) and assessment is also a method used to improve the quality of education because it can enhance life-long learning skills and promote performance in various educational contexts (Nasri, Roslan, Sekuan, Bakar, & Puteh, 2010).

Alternative assessment is defined as a form of holistic assessment focussing on the know-how aspect and is not only based on the knowledge acquiring achievement and not assessing the students on the examination aspect only (Ministry of Education, 2018). Among the example of alternative assessment is authentic assessment, performance, personality, holistic, contemporary, real time, challenge based, profile and others.

A common method advocated to improve student achievement is the use of formative assessments, both to improve the pedagogical practices of teachers and to provide specific instructional support for lower performing students (Dunn and Mulvenon, 2009). In fact, the formative assessment methods of assessing students take into account variation in students' needs, interests and learning styles; and they attempt to integrate assessment and learning activities. In the integral process of learning and instruction only high quality assessment can facilitate high-quality learning (Chan Yuen Fook and Gurnam Kaur Sidhu, 2010).

Constructive Alignment

The constructive alignment serves as the theoretical framework of this study. According to Biggs (2003), constructive alignment is aligning all components in the teaching system, the curriculum and its intended learning outcomes, the teaching methods used and the assessment tasks as illustrated in Figure 1.
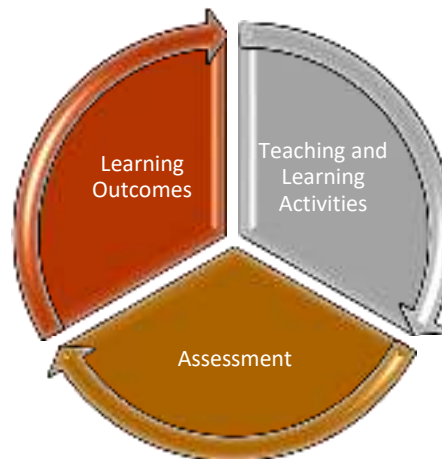
Figure 1. The constructive alignment concept (Biggs, 2003)

The Future Ready Curriculum is crucial in shaping future graduates to develop future-proofed graduates. However, the Future Ready Curriculum was not initially design in the Education Foundation courses. Since the courses of the Education Foundation are offered to more than 40 academic programmes, the mapping of course learning outcomes of the courses are very important in shaping the future graduates. Besides, the assessment of the learning outcomes is crucial in OBE to ensure the constructive alignment implementation. Thus, this study discusses the alternative assessment implementation in Education Foundation courses in UPSI to identify the planning and implementation of alternative assessment in preparing future-proofed graduates. This study aims to identify the alternative assessment implementation in eight Education Foundation component courses in the UPSI Education Programmes.

Methodology

This study applied survey method to achieve the research's objectives. This survey was conducted to eight courses of the Education Foundation component or also called as Education Professional courses in UPSI which equals to 29 credits from the overall credits. The eight courses are Inclusive Education, Attitude Development, Teaching Practice Reflection Seminar, Learning Management, Education Philosophy & Policy, Student Learning & Development and Teaching, Technology & Assessment I & II. This 29 credits of Education Professional component complies with the Education Programme Standard by MQA which carries the percentage of 17 to 25% of overall courses in the Education Programme. The eight courses are offered to the Education Programmes students from their First Semester to the Seventh Semester. There are more than 2000 students registered for each courses every time it is offered. This study involved all courses offered in three consecutive semesters, Semester 1 Session 2018/2019, Semester 2 Session 2018/2019 and Semester 1 Session 2019/2020. All the courses offered are using the previous programme structure and do not embed the MQF version 2 changes. This study is limited to the input provided in MySIS (the UPSI Student Information System).

The constructive alignment of all eight courses were obtained from MySIS. The system provides the mapping of teaching and learning activities and assessment to each course learning outcomes (CLO). Besides the constructive alignment, Malaysian Qualification Framework (MQF) Domains, the weightage of each CLO, distribution percentage and the Student Learning Time (SLT) are also obtained from MySIS. The MQF domains can mainly divided into

cognitive, psychomotor and affective domains or generic skills. The reporting of Constructive Alignment is shown in Figure 2.

Figure 2. The format of constructive alignment

Result and Discussion

MQF Domains

The course learning outcomes are mapped to programme learning outcomes which are aligned with the MQF Domains. Table 1 shows the mapping of the course learning outcomes (CLO) of the Education Foundation courses to the MQF domains.

Table 1
Mapping of CLOs to the MQF domains

COURSES	D1	D2	D3	D4	D5	D6	D7	D8
Inclusive Education	/		/					
Attitude Development	/			/				
Learning Management	/							/
Education Philosophy & Policy	/		/			/		
Student Learning & Development	/					/		
Teaching, Technology & Assessment I	/						/	
Teaching, Technology & Assessment II	/			/			/	
Teaching Practice Reflection Seminar	/		/					

Legend : D1 – Knowledge & Understanding, D2 – Practical Skills, D3 – Social Skills & Responsibilities, D4 – Values, Attitudes & Professionalism, D5 – Communication, Leadership & Team Skills, D6 – Problem Solving & Scientific Skills, D7 – Information Management & Lifelong Learning Skills, D8 – Managerial & Entrepreneurial Skills

Overall, the eight courses were mapped to cognitive and affective learning domains only. However the psychomotor learning domain was mapped in other major courses. All eight

courses are mapped to cognitive learning domain. Six out of eight MQF domains (version 1.0) were mapped within the eight Education Foundation courses (Table 1). Only two domains, Practical Skills and Communication, Leadership and Team Skills were not mapped among the eight courses. Nevertheless, these domains are mapped in other major courses. This will ensure the development of holistic, balance and entrepreneurial skill graduates (Shift 1, Malaysian Education Blueprint (Higher Education) (2015-2025) was aligned.

Alternative Assessment

There are a total of 20 alternative assessments implemented in assessing the eight courses. The alternative assessments are as listed in Table 2.

Table 2
Alternative assessments implemented in Education Foundation courses

COURSES	Type of Alternative Assessment
Inclusive Education	Report presentation, Poster presentation
Attitude Development	Self-reflection, Outreach report, Experiential learning report
Learning Management	Online forum, Project report, Presentation, Portfolio
Education Philosophy & Policy	Module assessment, Online forum
Student Learning & Development	Presentation
Teaching, Technology & Assessment I	Article review, School assessment, Test specification table, Instructional media kit, Daily teaching plan
Teaching, Technology & Assessment II	Daily teaching plan, Action research report, Microteaching, Self-reflection
Teaching Practice Reflection Seminar	Self-reflection, Forum, Forum Report, Action research report

All eight courses has at least two alternative assessments. According to the Guideline of Future Ready Curriculum the sub elements of alternative assessment are authentic assessment, performance, personality, holistic, contemporary, real time, challenge based and profile. Among the alternative assessment sub elements, authentic assessment, holistic, contemporary and profile are implemented in the Education Foundation courses. The maximum weightage recorded for an alternative assessment was 60%. Besides the alternative assessment, the final examination is the most popular assessment conducted to measure the cognitive learning domains.

The 20 alternative assessment types implemented in the Education Foundation courses show a good indicator in measuring the development of future teachers. According to Anderson (1998) alternative assessment allows teachers to teach more flexibly and creatively. Alternative assessment does not only focus on the learning outcome, but also on the learning process. There is a need for educators to practice the authentic alternative approach because it has been proven beneficial in determining strengths and weaknesses of students (Owings & Follo, 1992);

increasing students' interest and enthusiasm (Maslovaty & Kuzi, 2002); giving chance to students to assess themselves; guiding the process of learning by reflecting students' development throughout the process (Wiggins, 1993); and allowing assessment to be implemented throughout the learning process.

There are several suggestions for future research. The study could be expanded to identify the alternative assessment implemented in the whole Education programme. Besides that, the student learning time (SLT) in each courses could be investigated. This study suggests that the frequency of final examination could be reduced and other sub-elements of alternative assessment such personalise, performance, real time and challenge-based assessment can be explored.

Conclusion

There were 20 alternative assessment types implemented in Education Foundation courses. The cognitive and affective learning domains were planned, implemented and measured in shaping future teachers align with Malaysian Education Blueprint (Higher Education) (2015-2025). Even though these courses were not initially design according to Future Ready Curriculum, these findings confirmed that the Education Foundation Courses offered in UPSI are aligned with the Future Ready Curriculum particularly in alternative assessment in developing future-proofed graduates or future teachers. Further studies could be conducted in observing the alternative assessment implementations in several academic programmes and comparisons on different teacher education programmes in developing future-proofed graduates.

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Sentiment Analysis in User Generated Content for Course Evaluation

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Abstract

The spread of social networks allows sharing opinions on different aspects of life and daily millions of messages appear on the web. This textual information can be a rich source of data for opinion mining and sentiment analysis. Student evaluations comprises of many information mainly in text format. This text information originates from comments and reviews of their learning experiences. In this research works the agreement or disagreement statements that deal with positive, neutral and negative feelings in comments or reviews were identified and compared. This sentiment analysis application can help lecturers/academicians to identify student sentiment related to their teaching and learning experiences obtained from electronic course evaluation system (eCEVAS). A dashboard system was developed known as SentiMiner that harnessing the powerful tools of data mining, data visualization and data analytics to assist in summarizing, visualizing, tracking and identifying sentiment data related to teaching and learning experiences in the university. SentiMiner integrating Tableau software for dashboard development and R software for text classification model.

Keywords: Sentiment analysis, student evaluation, course evaluation, data mining

Introduction

Nowadays, the internet has been used increasingly and has changed people's attitude in the way they express their opinions. For example, customers post on the review of products and services using Internet forums, discussion groups, and blogs which are collectively called user-generated content (Liu, 2006; Leung and Chan, 2008). In recent years, many researchers used opinion mining to extract interesting knowledge from these user-generated contents. Opinion mining is one of subtopic of data mining research aiming to obtain useful knowledge from text written in natural language by human (Song and Yao, 2010). This technique is very popular in real-life applications such as business-intelligence, financial modelling and public surveys (Pang and Lee, 2008). In this paper, we propose a text classification model to extract knowledge from students' opinions to improve teaching quality in higher education. In any university, quality in teaching is very important as they trust that students are university's customers and that university should be responsible to satisfy their customers' needs. Therefore, to improve teaching quality, one way is to reflect on students' opinions by conducting online student evaluations. However, regardless of the size of a university, student evaluations produced a large quantity of data making the analysis time consuming. To overcome these limitations, we propose to use data mining to because of the nature of its which is built for huge data, it is easy to work with an enormous quantity of data generated by online student evaluation.

Data mining methods have been used to classify an opinion as positive or negative for all posts in all courses. To test our work, we collected data from students who expressed their views in electronic course evaluation system (eCEVAS) where the students are compulsory to fill in the online evaluation form for all courses that they take. The rest of the paper is structured as follows: section two discusses related work, section three contains opinion classification, section four describes the conducted experiments, section five gives the results of experiments and section six concludes the paper.

Related Works

In publications, several related works had mentioned the idea of using opinion mining in education. Lin et. al. (2010), discussed the idea of Affective Computing where they defined the development of Artificial Intelligence that can recognize, interpret, and process human behaviour". In their work, the opportunities and challenges of using opinion mining in E-learning have been described. Song et. al. (2007), have used user's opinion to develop and evaluate E-learning systems by extracting the opinions from the Web pages on which users are discussing and evaluating the services. Then, they used automatic sentiment analysis to identify the sentiment of opinions. Thomas and Galambos (2004), investigated how students' characteristics and experiences affect their satisfaction on faculty preparedness, social integration, campus services and campus facilities. They used regression and decision tree analysis with the CHAID algorithm to analyze student opinion dataset.

Research Framework

We divided the research activities into four phases as shown in Figure 1: (1) the data capture and storage extraction process, (2) the data pre-processing stage, (3) the sentiment/text classification (opinion classification and extraction) and (4) the data visualization, which involves the design and development of the dashboard.
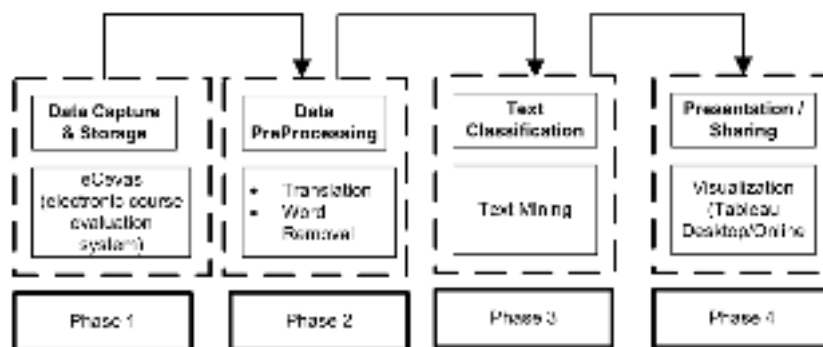
Figure 1. Research Framework

Initially we collected data for our experiments using 16122 records/comments posts in e-CEVAS dedicated to student evaluate courses from 17 schools at University Utara Malaysia. Formally, given a set of user-generated content review R by students containing opinions about a course, opinion classification aims to classify each document r ∈ R to determine whether the review is positive, negative or neutral. Then, the records are categorized into five groups based on the online questionnaire which are content syllabus, course assessment, course delivery,

general comments and time. Table 1 gives some details about the extracted data.

Table 1
Details of the dataset

Item	Value
No of records	16122
Category	Content syllabus, Course assessment, Course delivery, General & Time
School	IBS, PB, SAPSP, SBM, SCIMPA, SEFB, SEML, SLCP, SMMTC, SoC, SoG, SoIS, SoL, SQS, STHEM, STML, TISSA_UUM
Credit Hour	3, 4, & 6
Level	1, 2, 3, 4, 5 & 6
Group Size	GR, LG & SG

Due to the lack of publicly available Malay sentiment resources and the limited amount of Malay text classification research, all Malay student review were first translated into English prior to the classification activity. Some repeated letters have been removed from the dataset (that happens in discussion when the student wants to insist on some words). After that, the sentences are tokenized and stop words removed. We also removed some terms with a low frequency of occurrence.

In phase sentiment/text classification, a seed set representative of the two adjective categories positive and negative has been provided. Then, we calculate its positive or negative orientation by computing the difference between the number of positive and negative adjectives. We count the number of positive adjectives, then the number of negative adjectives, and we simply compute the difference. If the result is positive (greater to given threshold), the student review will be classified in the positive class. The same process is done for negative. Otherwise, the student review is classified as neutral. Decision tree classifier with R language are used to perform the classification where the previous documents as training set and user generated contents as testing set. Decision tree have been chosen as classifiers because it is widely used due to its simplicity and computational efficiency.

Result and Finding

In order to visualize the results of the analysis performed in the previous phase, we designed a dashboard using the Tableau application to display the sentiment analysis results. The dashboard gives the overall sentiments of the student review (positive, neutral, and negative) for five different category which are content syllabus, course assessment, course delivery, general comment and time. The dashboard can display the details of student evaluation about the course based on school, credit hour, level and class size. Figures 2-3 present the visualization system for the results we obtained from the previous phase.
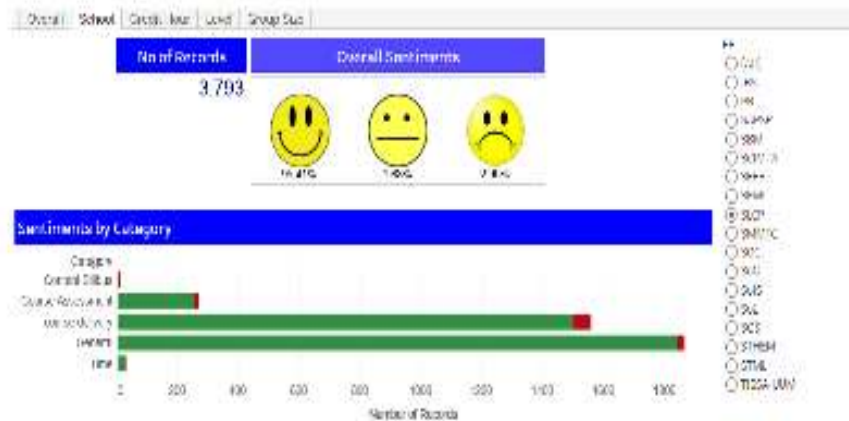
Figure 2. Sentiment analysis result

Figure 2 shows the total number of data being analyzed based on school that being selected is displayed in the upper left corner. It is shows that 95.41% of all students' feedbacks from School of Languages, Civilisation & Philosophy (SLCP) are positive feedback, 1.63% are negative feedback and the rest are neural. It is followed by the overall sentiments for the different category presented using clustered bar chart. We presented a detail report to display all the posts with their positive or negative sentiments based on category chosen in Figure 3.

Figure 3. Detail reporting on student opinion

Conclusion

The aim of this work is to present the usefulness of discovering knowledge from user generated content to improve course performance. Our goal is to supplement student evaluation of courses, not to replace the traditional way of course evaluation. We used opinion mining by classifying student posts for courses where we used decision tree methods. Then, to make the analysis results readable and understandable by the stakeholder, we visualized the results in the form of a dashboard. We think this is a promising way of improving course quality. However, two drawbacks should be taken into consideration when using opinion mining methods in this case. First, if the student knew that his/her posts will be used for evaluation, then he/she will behave and no additional knowledge can be found. Second, some students, or even teachers may put spam comment to bias the evaluation. However, for latter problem methods of spam detection, such as work of (Lim et. al., 2010) can be used in future work. Also, comparing

courses for each lecturer or semester could be useful for course evaluations.

Acknowledgement

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Human Machine Interaction: Application of Rasch Model in Measures Learning Ability of Handling CNC Milling Machine

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Abstract

Human-Machine Interaction (HMI) can be described as an interaction and communication between human users and a machine, a dynamic technical system and it is the methodology for evaluation of interface techniques for user. This paper presents the application of Rasch Model to measure learning ability during handling CNC Milling machine. An observation by quantitative method was being used to identify learning abilities with scoring marks, YES=1 and NO=0 by 31 students from Community College in Manufacturing Technology Program. The observation consists of 31 items which constructed by interview with CNC milling technical expert and referred to the Rubric of CNC Milling Machining course assessment. The items were categorized into cognitive, psychomotor and affective learning domains that need to be achieved by the students at the end of machining session course. Rasch Model precisely measured the performance of each student during the observation session, allowing the students' performance for each attribute to be determined. The analysis found 14 items that can be identified as difficultness or obstacles for students' ability in handling the CNC milling machine. In addition, the difficulties or obstacles ranks in handling CNC Milling machine according to the learning domain are affective and psychomotor respectively. This result can be used as an item to be improvised in teaching and training approach for better understanding in handling CNC Milling machine for beginners such virtual learning, simulation and etc.

Keywords: Rasch Model, CNC Milling, Observation, Abilities

Introduction

Manufacturing evolution provided more efficient techniques to extend the humans capabilities and cost reduction in various areas. From the Neolithic Revolution to the Digital Revolution, passing through Renaissance and the Industrial Revolution, men invented new tools or systems to achieve the best quality in products making. Currently, Industry 4.0 has been a great deal in the past years as it is known to be the latest revolution in the industrial field. It was being proposed and introduced by Germany to realize the era of digitalization,

informatization, customization, and greenazation of manufacturing reviewed by Zhou et al (2016). Due to the revolution era, current machine tools were developed by Czerniak et al (2017) to reduce human error by aiding with advanced technology controller, simulator with complex functions for ergonomic requirements. The methodology for evaluation of user interface techniques, defined as human-machine interaction (HMI) which focused on the communication, cooperation and interaction between humans and machines. Dong S, (2004) defined that the more machines used in manufacturing, HMI has changed from the adaption of humans to machines gradually to the adaption of machines to humans. The advanced technology in machines tools involved computers, automations, coding and etc. Many machining processes will continue to require immediate human input for years to come. Therefore, human skilled is still needed even an advanced technology and robotics took the place for fast and smart manufactured.

TVET Education

This industrial revolution had impacted on other fields besides manufacturing, which align to workforce recruitment, information and communication technology (ICT), business, education, and etc. The impact of Industry 4.0 on workforce recruitment is expected to be significant since the requirements of the skill needs will be changed. The industry will demand higher qualification candidates to work in this new era of industrial 4.0. The Higher Education provider will approach new method of teaching and learning as well for training for the students to be graduated and competent holder for the industry in the future, (Baygin et al .,2016). As part of the Higher Education Institution, Community College under the Department of Polytechnic and Community College, Ministry of Education had introduced skilled based education for school leavers before they entered the workforce by implementing Technical Education and Vocational Training (TVET). TVET will be the main driver or as game changer in the government's effort to produce highly talented local talent, (malaymail, 2019). Raihan and Shamim (2013) have reviewed that the role of TVET institution continuously changing throughout the emergence of technology. Therefore, Community College took the role, geared up workforce to accomplish job duty for competency in specified field such as handling numbers of machines used in the manufacturing field.

Handling CNC machine is very difficult because it requires skilled user and knowledge in programming, 3-D model design and understanding machine language. Zhang (2010) determined that an important aspect of human–machine interaction is the methodology for evaluation of user interface techniques. The used of metrics beyond precision and recall include, (1) time required to learn the system (2) time required to achieve goals on benchmark tasks (3) error rates and (4) retention of the way to use the interface over time. The new teaching method need to be implement in order to familiarized the user in handling advanced computerized machine. The Augmented reality approach is one of the possible techniques which need to be embedded in learning method to enhance the learning process. Chardonnet et al (2017) developed a prototype system using AR to improve working condition and better handling of CNC machine by displaying the operating conditions and a 3D represented of the cutting tool motion. Ragni et al (2018) developed ARTool Zero supports the operators in programming touching probe trajectories, generating and simulating on-the-fly the part-program that guides the probe in the identification of a geometrical feature. The framework and architecture need to be developed in order to construct user friendly interfaces aided human difficulties. For this reason, the learning ability and learning obstacle of handling CNC milling

machine need to be identified and then embedded into developed an interactive application of CNC Milling machine learning. Henceforth, the objectives of this case study are:

1. To validate the items constructed for learning ability measurement instrument

2. To identify learning obstacles during handling CNC Milling Machine

3. To rank the difficultness by levels of learning domains for virtual application design architecture.

Rasch Model

The Rasch model is one of the comprehensive tools which can be used to determine the learning abilities and it is widely used in many areas. Rasch measurement model is a solution to the issue of validity as Rasch measurement model provides useful statistics and offers a tremendous opportunity to probe the validity, (Bond and Fox, 2007). According to Saifudin et al (2010), Rasch Measurement Model is an alternative measurement method that focused by constructed instruments for measurement rather than correcting the data to fit the measurement model with errors. Unlike other analyzing method, Rasch Model is more reliable and repeatable measurement instrument was produced rather than established a 'best fit line', (Abd Aziz et al., 2008). Osman et al (2013) used Rasch Model to identify student ability during Industrial Training with employer perceptions as the measuring tools to determine the student's performance. By using Rasch Model, results from the observations with scores were converted to a logit scale for obtaining unidimensionality on a linear interval scale for a better precision in measuring learning ability for each attribute. Rasch analysis enabled identification of the difficulty of each question and level performance of nursing students could be determined, (Jacob et al., 2019). Kimberly and Winterstein (2008) analysed items with Rasch measurement model and determined the reliability and validity in the instrument in social science research and healthcare as well as Muhamad Hanafi et al (2014) had measured for competency assessment implementation in education area.

Methodology

In this study, learning ability for beginners in handling CNC Milling machine was measured through observations with constructed items by two Community Colleges (CC) in Northern Region that run Manufacturing Technology program, which are Community Colleges (CC) in Kepala Batas, Pulau Pinang and Taiping, Perak. Based on the observations, the score items were analyzed using Rasch Measurement Model (Winsteps). A set of items containing 31 attributes, shown in Table 1, was used to observe students from 2nd semester. The items were constructed from interviewed with two technical experts in CNC Milling machine and referred to the Rubric of CNC Milling Machining course assessment. The evaluation for each item was carried out using score of 1=YES and 0=NO. Total students from 2nd semester of CC Kepala Batas and CC Taiping are 19 and 12 respectively. From this study analysis, the output obtained can be used to validate the constructed items of the observation and identify the obstacles in handling CNC Milling machine for beginners. Each items were categorized into C: cognitive, P: psychomotor and A: affective learning domains. Then, it was evaluated and tabulated in Excel format for further analysis in the Rasch software Winsteps. The raw scores

were transformed to logit values and the data outputs obtained from the analysis were further analysed and discussed in this paper.

Table 1
Attributes measured during machining

Question No.	Attributes	Question No.	Attributes
C01	Able to define components size based on length, width and thickness	P11	Key in tool height for tool setting
C02	Able to explain the symbols indicated from drawing	P12	Able to move tool by axis
C03	Able to define type of machine needed from the drawing	P13	Able to set spindle speed
C04	Able to list tools needed	P14	Able to set feed rate
C05	Could identify control panel buttons functions	P15	Able to identify command on screen display for set up tool length offset
C06	Could identify commands on screen according to machining flow	P16	Could measure tool height
P01	Able to list machining process involved accordingly. Ex: profiling, drilling, pocketing	P17	Able to identify G code and M Code
P02	Able to demonstrate all components function in CNC milling machine	P18	Able to touch workpiece at z axis
P03	Could install tool and select tool from magazine	P19	Key in tool height according to tool setting command
P04	Able to open and close fixture and install workpiece base on axis	A01	Able to identify problem occur during simulation and machining
P05	Able to define code and coordinates for machining	A02	Able to know and understand suitable machining method according to provided profile
P06	Able to define suitable cycle programming	A03	Capable to use all equipment, skillful and efficient without assist
P07	Able to build programming in sequent	A04	Awareness in Workshop Safety (Complete attire)
P08	Could identify command on screen for DATUM setting at workpiece	A05	Housekeeping after machining
P09	Able to move workpiece table and tools by axis	A06	All dimensions in tolerance and good finishing
P10	Able to touch on side of workpiece by axis		

Results and Discussion

The observation items were constructed by interview with two technical experts in CNC Milling Machine. The items act as a measurement instruments to identify the obstacles upon the ability of beginners handling CNC Milling machine. Once an instrument has been developed, the quality of the instrument items should be validated for reliability. In Rasch Measurement model, the quality of item is based on reliability and the separation of item and person or individual, (Richardson, 2008). Figure 1 indicated the summary statistics for person and items and the values acceptable are all between 0.8 to 0.98, (Bond and Fox, 2007). Item reliability and separation index obtained by Rasch Model analysis using winsteps and values indicated for person reliability is 0.88 and item reliability is 0.90. These values are strongly acceptable and the separation values indicated for 2.70 ~ 2 where 2 different levels of

observation in person statistic which are Yes and No. The item separation as well indicated 2.98 ~ 2 where the value shows a differentiation of difficultness between items.

```
Calculating Fit Statistics
>==================================<
Standardized Residuals N(0,1)       Mean: -.05 S.D.: 1.15
Time for estimation: 0:0:0.399
EVALUATION ON STUDENT ABILITY IN CNC MACHINING FOR BEGINNERS


-------------------------------------------------------------------------------
     | Person      31          INPUT  31 MEASURED        INFIT    OUTFIT        |
     |           TOTAL               COUNT    MEASURE REALSE   IMNSQ    ZSTD   OMNSQ    ZSTD|
     | MEAN      16.2               31.0        .49    .58      .97   -.3    1.32     .1|
     | S.D.       6.6                .0        1.71    .11      .36   1.4    1.51    1.1|
     | REAL RMSE         .59 TRUE SD   1.61  SEPARATION 2.70  Person RELIABILITY    .88|


     |                                                                                  |
     | Item         31 INPUT  31 MEASURED        INFIT    OUTFIT        |
     |           TOTAL               COUNT    MEASURE REALSE   IMNSQ    ZSTD   OMNSQ    ZSTD|
     | MEAN      16.2               31.0        .43    .71      .96   -.2    1.32     .1|
     | S.D.       8.6                .0        2.64    .45      .29   1.2    1.38    1.4|
     | REAL RMSE         .84 TRUE SD   2.50  SEPARATION 2.97  Item   RELIABILITY    .90|
```

Figure 1. Summary Statistic

```
EVALUATION ON STUDENT ABILITY IN CNC       ZOU500WS.TXT  Jul  4 20:32 2019
INPUT: 31 Person      31 Item  REPORTED: 31 Person  31 Item  2 CATS  WINSTEPS 3.72.3
-------------------------------------------------------------------------------
Person: REAL SEP.: 2.70      REL.: .88 ... Item: REAL SEP.: 2.97  REL.: .90

Item STATISTICS:              ENTRY ORDER
-------------------------------------------------------------------------------


     |ENTRY    TOTAL  TOTAL       MODEL| INFIT  |  OUTFIT   |PT-MEASURE |EXACT MATCH|      |
     |NUMBER   SCORE  COUNT  MEASURES.E. |MNSQ   ZSTD|MNSQ  ZSTD|CORR.  EXP.| OBS%  EXP%|Item |
     |------------------------------------+----------+----------+ ----------+---------- +------ |
     |    1      30     31    -4.09  1.06|1.10   .4| .47   .0|  .21  .24| 96.8  96.7| C01 |
     |    2      29     31    -3.27   .79| .97   .1|4.19  1.8|  .18  .32| 93.5  93.4| C02 |
     |    3      31     31    -5.39  1.84|    MINIMUM MEASURE |  .00  .00|100.0 100.0| C03 |
     |    4      24     31    -1.39   .52|1.44  1.5|2.99  1.9|  .25  .53| 77.4  82.3| C04 |
     |    5      23     31    -1.13   .50|1.65  2.2|5.97  3.8|  .07  .55| 77.4  81.3| C05 |
     |    6      21     31     -.66   .48|1.38  1.5|3.77  3.3|  .28  .58| 77.4  79.7| C06 |
     |    7      14     31     .82    .46|1.49  2.0|1.65  1.4|  .37  .60| 71.0  77.0| P01 |
     |    8      25     31    -1.66   .54| .91  -.2| .54  -.3|  .56  .50| 83.9  83.9| P02 |
     |    9      20     31     -.43   .47|1.23  1.0|1.39   .9|  .48  .59| 71.0  79.0| P03 |
     |   10      25     31    -1.66   .54|1.27  1.0|2.73  1.6|  .32  .50| 77.4  83.9| P04 |
     |   11      26     31    -1.97   .57| .98   .1| .55  -.1  |  .50  .47| 83.9  86.1| P05 |
     |   12      11     31    1.45    .47|1.18   .8|1.66  1.2|  .45  .57| 77.4  79.0| P06 |
     |   13      24     31    -1.39   .52| .85  -.5| .51  -.5|  .61  .53| 83.9  82.3| P07 |
     |   14      19     31     -.22   .46| .64  -1.7| .47 -1.3|  .76  .60| 87.1  78.4| P08 |
     |   15      17     31     .20    .46| .61  -1.9| .45 -1.6|  .78  .61| 90.3  77.8| P09 |
     |   16      15     31     .61    .45| .74  -1.2| .53 -1.3|  .74  .61| 77.4  77.1| P10 |
     |   17      17     31     .20    .46| .96  -.1| .90  -.1|  .63  .61| 77.4  77.8| P11 |
     |   18      18     31     -.01   .46| .55  -2.3| .40 -1.7  |  .80  .60| 93.5  78.1| P12 |
     |   19       7     31    2.38    .51| .98   .0| .89   .2|  .50  .49| 80.6  81.3| P13 |
     |   20       5     31    2.94    .55| .76  -.8| .38  -.4|  .55  .43| 87.1  84.5| P14 |
     |   21      12     31    1.24    .46| .75  -1.1| .60  -.8|  .70  .59| 80.6  78.3| P15 |
     |   22      18     31     -.01   .46| .64  -1.7| .46 -1.5|  .77  .60| 87.1  78.1| P16 |
     |   23      17     31     .20    .46|1.02   .1|1.00   .1|  .60  .61| 77.4  77.8| P17 |
     |   24      14     31     .82    .46| .75  -1.1| .62 -1.0|  .72  .60| 83.9  77.0| P18 |
     |   25      13     31    1.03    .46| .64  -1.7| .54 -1.1|  .75  .59| 90.3  77.5| P19 |
     |   26       0     31    6.23  1.84|    MAXIMUM MEASURE|  .00  .00|100.0 100.0| A01 |
     |   27       0     31    6.23  1.84|    MAXIMUM MEASURE|  .00  .00|100.0 100.0| A02 |
     |   28       0     31    6.23  1.84|    MAXIMUM MEASURE|  .00  .00|100.0 100.0| A03 |
     |   29      12     31    1.24    .46| .94  -.2|1.17   .5|  .58  .59| 87.1  78.3| A04 |
     |   30       7     31    2.38    .51| .89  -.4| .59  -.3|  .56  .49| 87.1  81.3| A05 |
     |   31       7     31    2.38    .51| .61  -1.7| .36  -.7|  .67  .49| 93.5  81.3| A06 |
     |------------------------------------+----------+----------+ ----------+---------- +------ |
     | MEAN     16.2   31.0    .43    .69| .96  -.2|1.32   .1|           | 83.4  81.1|      |
     | S.D.      8.6    .0    2.64    .46| .29   1.2|1.38  1.4|           |  6.8   4.7|      |
```

Figure 2. Item Measure

The construct validity items of the observation can be determined based on the Item Measure Analysis, as Figure 2. The Item Measure lists details of measurement logit for each item that can be used to identify any misfit data by referring to three control parameters which are Point Measure Correlation (PMC), in ranged $0.4<x<0.85$, Outfit and Infit Mean Square (MNSQ) in ranged $0.5<y<1.5$ and z standard value (ZSTD) in ranged of $-2<z<2$, (Osman et al., 2013). For item C03, the item is very easy and every student has achieved it but for item C05, it was out of range and this item could consider as an obstacle for student in their ability of memorising and understanding due to multifunction buttons as Figure 3a and 3b for the students to memorize.
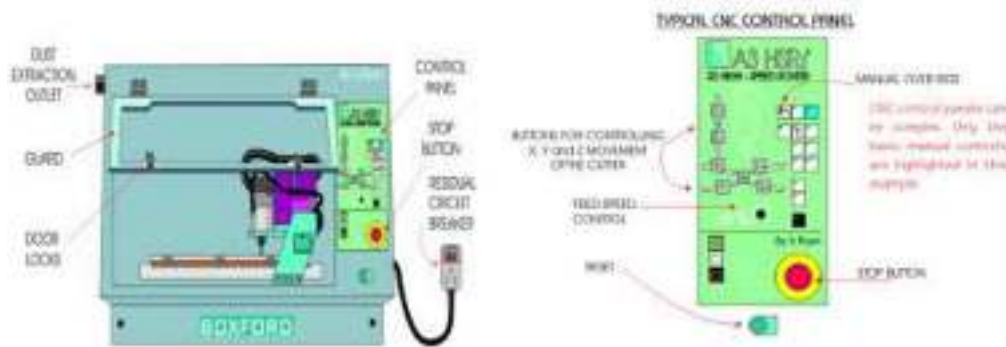
Figure 3a. Overview of CNC Milling (Boxford)   *Figure 3b*. Control Panel

As the result from item C05, item P12 will consider as well an obstacle due to the relation of pressing button at control panel for 3 axis movements. Therefore, once these obstacles occurred, for item A01, A02 and A03, students as beginners to handle the CNC Milling machine felt unsecured and unaware of any problem during handling the machine. As Figure 4, person and items could be compared to see more obstacles during handling the CNC Milling machine.

Results obtained by Person-Item Distribution Map (PIDM) in Figure 4, on the right side of the PIDM shows the 'Item' spread, which refers to the 31 attributes of observation items conducted, where at the left side refer to the 'Person' spread with level of scoring marks, refers to the students of CC 2nd semester students. There are 31 items and 31 persons measured through this analysis in which item and person are plotted on the same logit scale. By comparing with conventional histogram tabulation, the PIDM allows the item and the person to be mapped together and gives overview and better understanding by comparing the exact scoring marks and items that were difficult to achieve during the observation. As Figure 4, the easiest item could be C03, which measure the ability to define type of machine needed from the drawing given base on knowledge while the most difficult items to achieve will be A01, A02 and A03 which are in affective domain where the user as beginner not able in identifying, understanding, react and aware of any problem occurred during learning process. Items above value of Mean$_{item}$, considered to be items that the beginners difficult to achieve during handling the CNC Milling machine. Items for affective learning domains score the higher percentage compare to psychomotor and cognitive. Table 2 listed all items which can conclude as an obstacle by ranks during handling CNC Milling machine.

```
Figure 4: EVALUATION ON STUDENT ABILITY IN CNC M ZOU500WS.TXTB Jul 4 20:32 2019
      INPUT: 31 Person    31 Item REPORTED: 31 Person 31 Item  2 CATS  WINSTEPS 3.72.3
      -------------------------------------------------------------------
                         Person - MAP - Item
                          <more>|<rare>
            4              +  A01   A02        A03
                          T|
                           |
                  S25FT    |
                           |T
                           |
            3              +  P14
           S18MK S30MT     |
   S01FK S12FK  S22MT S26MT |
                           |  A05   A06        P13
                  S20MT S  |
            2              +
                  S23MT    |
                          |S
                  S31MT    |  P06
                           |
                           |  A04      P15
            1  S04MK S09MK +  P19
      S06MK S13FK S16MK    |  P01      P18
            S15MK          |  P10
                          M|
           S14MK S17MK     |
                           |  P09   P11                              P17
            0      S03FK +M  P12   P16
                           |  P08
           S05MK S11FK     |
           S19MK           |  P03
           S29MT           |  C06
                           |
           -1      S08MK +
                  S28MT S|  C05
                           |  C04   P07
      S02FK S07MK S21MT    |
                          |S  P02   P04
                  S10MK    |
           -2              +  P05
                           |
                           |
                  S24MT    |
                           |
                           |
           -3      S27MT T+
                           |
                          |T  C02
                           |
                           |
                           |
           -4              +
                           |  C01
                           |
                           |
                           |
                           |
           -5              +  C03
                                                      <less>|<frequ>
```

Figure 4. Person-Item Distribution Map

From Table 2, each attribute could be defined as obstacles during learning and understanding of handling CNC Milling machine. The affective learning domain involves feelings, emotions and attitude. This domain includes the manner in which dealing with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes. Therefore, the obstacle in affective domain contributed by the psychomotor learning is the relationship between cognitive functions and physical movement. Physical movements relate to the visualization of users to understand all the equipped facilities on machine such as

computers, control panels and machine tools. As results from this study, the ability of learning and understanding could be improvised by overcome the obstacles using medium that could reduce human error such as interactive learning with virtual and augmented application, simulation and etc.

Table 2
Attributes measured as an obstacle in handling CNC Milling machine

No.	Question No.	Attributes
1.	A01	Able to identify problem occur during simulation and machining
2.	A02	Able to know and understand suitable machining method according to provided profile
3.	A03	Capable to use all equipment , skilful and efficient without assist
4.	P14	Able to set feed rate
5.	A05	Housekeeping after machining
6.	A06	All dimensions in tolerance and good finishing
7.	P13	Able to set spindle speed
8.	P06	Able to define suitable cycle programming
9.	A04	Awareness in Workshop Safety (Complete attire)
10.	P15	Able to identify command on screen display for set up tool length offset
11.	P19	Key in tool height according to tool setting command
12.	P01	Able to list machining process involved accordingly. Ex: profiling, drilling pocketing
13.	P18	Able to touch workpiece at z axis
14.	P10	Able to touch on side of workpiece by axis

Conclusion

Ability is talent, skill, or proficiency in a particular area of human or person to do things with passion and confidence in self. In implementing smart manufacturing, human-machine interaction (HMI) is a key technology which primarily focuses on the issues of communication, interaction, and cooperation between humans and machines. By understanding the obstacles occurred during handling the CNC Milling machine for beginners without any industrial or technical knowledge and background, method of approaching could be enhanced by introduce any visual equipment or tools with cyber physical integration and with findings, an augmented application could be developed to gives more understanding of machine handling in real time. Currently, AR is in the exposure level and beginning phase of research and development at

different higher education and training provider. The growth of virtual technology and application pushes organization to be more competitive, innovative and creative to endeavours their best quality performance and gain the most trustable and support from the customer.

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Teaching Factory in Aviation MRO 4.0 Education Framework

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Abstract

Teaching factory has been promoted as a model that integrates classroom learning to the actual industrial environment experience. Among the benefits of this approach are the accelerated learning and the enablement of two-way feedback between university and industry. In the aviation industry, Maintenance repair and overhaul (MRO) is currently undergoing a transformation due to the rise of industry 4.0 technology capabilities such as IoT, 3D printing, virtual reality and cloud services. These new technologies are expected to create a disruptive effect to the aviation MRO practical approach. At Malaysian Institute of Aviation Technology (MIAT), an effort is being made to tackle the situation by creating a new MRO teaching platform that will provide students with exposure to the affected new technologies by introducing Teaching Factory approach with the support of technology laboratories which is the basis of our case study. We name it MRO 4.0 Teaching Factory Framework. The developed model utilized the MRO facility at MIAT hangar with commercial aircraft operation. The teaching framework includes the learning management module that integrates the syllabus with the task card library and manual so that students can experience the real MRO activities. The platform introduces the development of IoT electronics lab that will expose student to IoT technology that can be applied at Hangar and MRO facility, 3D printing Laboratory with full functional commercial 3D printer, Aircraft simulator laboratory, MRO technology laboratory and the Classroom Teaching Factory laboratory. All these laboratories and the MRO operation at the hangar are back to back accessible by the Teaching Factory classroom with knowledge repository logging by the hangar. The final model of the Teaching Factory MRO education framework has demonstrated the technical feasibility of the Industry-Academic collaboration in promoting accelerated education with research and innovation features. Although this paper focuses on the aviation MRO, the teaching factory framework can also be adapted in other technology-based fields by replicating and modifying the basic framework.

Keywords: Teaching Factory, Aviation Maintenance, Repair and Overhaul (MRO), Internet of Things (IoT), Industry 4.0, 3D Printing, Open Source, Cloud-based application

Introduction

It is always a wish of university curriculum design to prepare a graduate that will suit the need of the related industry (Yusof N, 2019). On the other hand, the current trend of fast moving business cycle does not allow much time for additional training for the student after being hired. In recent years, there have been numerous feedback from industries stating that graduates are not immediately ready for the job (Tudy, Randy & Jesu, Cor, 2017). While there have been many attempts to bridge the curriculum gap to fit the industry's needs, the problem seems to remain unsolved, at least in Malaysia particularly. One of the major reason behind

this predicament is the disruptive technologies that has evolved most of businesses' operation and the way it is being transacted. Another possible reason is the lack of visibility for students in understanding the skills needed for their future job (Salleh, Sulaiman, Mohamad, & Sern, 2015). Here, we will be bringing up a similar predicament faced by aviation MRO education by Malaysian Institute of Aviation Technology (MIAT). Within the MRO industry, it is known that the future MRO operations will be transformed by the technology that will be adopted by the aircraft manufacturer. As MIAT's charter is to produce graduates to serve the MRO industry, it is a challenge in the curriculum design that can prepare the student for future MRO practices that will embrace new disruptive technology which possibly will obsolete the existing training. To address this challenge, UniKL, MIAT has chosen to adapt the Teaching Factory (TF) approach as a method to bridge the university and the aviation industry. With this approach, MIAT offers MRO industry player to operate within MIAT's hangar. Figure 1 shows MIAT hangar in Subang that houses numerous MRO service providers to support its adaptation of Teaching Factory approach.

Figure 1. UniKL - MIAT Subang Hangar

What is needed now is a teaching and learning platform model that can integrate Teaching Factory into the Learning Management Model. We also need to incorporate the learning of the emerging technologies into the learning platform. Although there is numerous research coverage on the topic of Teaching Factory, we have yet to see a teaching and learning platform for MRO industry that will prepare students in future MRO practices. In this paper, we will be discussing on the proposed model by MIAT that is expected to create an aviation MRO education platform, which will enable teaching factory classroom environment as well as direct exposure for students to the new affecting technologies.

Background Study

Teaching factory (TF) is a promising approach that combines both classroom learning with actual industrial environment experience (Mavrikios, Georgoulias, and Chryssolouris, 2019). Although the origin of TF involves medical sciences, the application of the concept can be used throughout many industries as TF provides accelerated learning and enables two-way feedback between university and the industry (Mavrikios, Georgoulias, and Chryssolouris, 2018) as shown in Figure 2. The ultimate goal in adapting teaching factory is no longer just teaching the knowledge that is in the book, but a more hands on perspective for the students which includes soft skills understanding, working in teams and the ability to communicate

between each other (Chryssolouris, Mavrikios, and Rentzos, 2016). These skills are not only important in the education environment but have a real impact when the students graduate and enter the workforce (Mourtzis, Vlachou, Dimitrakopoulos, and Zogopoulos, 2018). The evolution of combining both environment is further encouraged by the introduction of Industry 4.0 revolution (IR 4.0) and its capabilities such as Internet of Things (IOT), 3D printing, virtual reality and cloud services (Centea, Singh, and Elbestawi, 2014).

The TF concept brings about the ability to merge the classroom and actual industrial environment together. The benefits of implementing a teaching factory concept can be considered advantageous compared to a normal educational setting (Rentzos, Doukas, Mavrikios, Mourtzis & Chryssolouris 2014; Mourtzis, Boli, Dimitrakopoulos, Zygomalas & Koutoupes 2018; Rentzos, Mavrikios & Chryssolouris 2015). Some of the common benefits of adapting a teaching factory concept are:

1. Providing real-life working scenarios together with the necessary technical skill set required by the industry;
2. Promotes entrepreneurial mindset among students and teachers alike;
3. Provide a platform to encourage confident, knowledgeable students through the process;
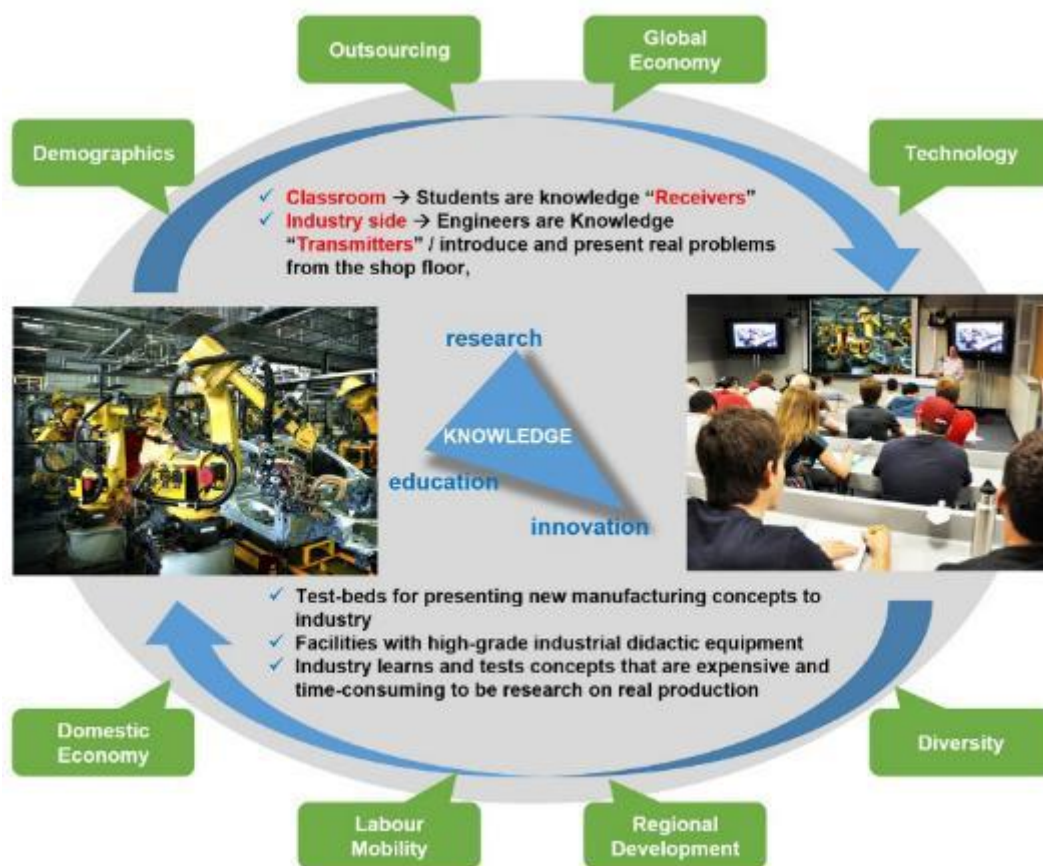4. Encourage and closing the gap between academia and industry.

Figure 2. Teaching Factory Concept. Reprinted from The Teaching Factory: A Manufacturing Education Paradigm, G. Chryssolourisa, D. Mavrikiosa and L. Rentzosa, 2016.

Aircraft Maintenance, Repair & Overhaul Training

International aircraft operation is governed by the rule of law, since the first flight, a number of conventions, regulations, legislation, orders, agreement have been enforced within the countries to ensure that flights are operated in a safe and orderly manner. Achievement of safety and regularity in air transportation operations requires that all countries accept and implement a common standard of aircraft operations with regards to training, licensing, certification, etc. for international operations. International Civil Aviation Organization (ICAO), in accordance with Article 37 of the Convention on International Civil Aviation, develops and adopt Standards and recommended Practices (SARPs) as a minimum requirement for aircraft operation. The successful application of regulations concerning the safety of aircraft operation can only be achieved by well-planned and well-maintained initial and recurrent training programmes for all persons involved in aircraft operations. According to Annex 6-Operation of Aircraft, Part I-International Commercial Air Transport- Aeroplanes and Part III-International Operation-Helicopters, Section 2 requires that an operator may only operates aeroplanes which have been maintained and released to service by an approved maintenance organization (AMO) or under an equivalent system acceptable to the State of Registry (where the aircraft was registered).

MRO personnel, irrespective of educational background, must undergo a very comprehensive technical training that provide the necessary knowledge, skills and attitudes for assuming responsibility over the maintenance of aircraft. The training requires the imparting of manual and intellectual skills, sound knowledge of theoretical, and a comprehensive understanding of the aircraft or system upon which they will have to work. The main areas of focus for typical aircraft systems include airframes, engines, instruments, radio, electrical, electronics, autopilots, etc. The training can be divided and delivered in phases as shown in Table 1.

In practice it will be advantageous to combine Phase I and Phase II so that the practical aspect can be linked directly to the theory and performed as such, perhaps on the same day or the same week so that the trainees can have a better understanding of the topics. There are also potential economic and equipment utilization benefits for the training center to combine these two phases. On the other hand, there are disadvantages in combining Phase II and Phase III. For example, it can be costly to rectify errors of skills on a real airworthy aircraft or its components as compared to relatively low raw material cost associated with an error made on a bench exercise.

Training of MRO personnel will have to follow strict regulations as stipulated by the aviation authorities of each country, for example, Federal Aviation Administration (FAA) of the United States, European Aviation Safety Agency (EASA) of Europe, Civil Aviation Authority of Malaysia (CAAM), just to name a few. These include (a) Part 145– Maintenance Organisation Approval, (b) Part 66 – Aircraft Maintenance Certifying Personnel and (c) Part 147 – Training Organisation Requirements. Unlike universities and college graduates, those undergoing training for MRO environment must undergo programme of training as mentioned above in order to be qualified and licensed appropriately by the authorities. Practically the courses are to be split between the training organization and industry, at locations where students/trainees are able to adequately cover the syllabus and training programme. For knowledge and skills domains, the execution of courses can be fairly implemented at the training organization whilst the experience domain must be done in industry on "operating" aircraft. The implementation of courses can be very challenging particularly to have students/trainees placement at airlines or MRO companies, for example, to accomplish training requirements. If the teaching and learning coupled with industry exposure can be implemented

at the same location, hence, "Teaching Factory" shall be of ideal setting to meet the objectives of training. However, with the present technological changes sweeping through across all industries, known as Industrial Revolution 4.0 such as Cloud Computing for instance, there is huge potential of ICT technology implementation to close the gap between aircraft legacy technology with the new generation aircraft (Jalil, Bakar, Khir & Fauzi, 2017). The bottom line has always been the question of technology familiarization hence training needs analysis. Aircraft systems we used to understand which clearly isolate the systems and/or components can be "integrated", making ICT based platform an ideal training solutions. Adapting Teaching Factory in academic environment can be challenging due to the fact that every elements of industry needs to be included and works as if in industry environment as shown in Figure 3. The processes of every element in the MRO system must be replicated or adapted to demonstrate to the students for teaching and learning purposes.

Table 1
Organization of Training Programme

Phase	Domain	Description	Venue	Duration
I	Knowledge	Consists of basic training, its completion ensures a trainee has the necessary background in term of knowledge to proceed to Phase II of the training. The training specifications defined basic principles corresponding to the knowledge common to all the tasks as aircraft maintenance personnel.	Training Organization	2400 hours
II	Skills	Consists of general maintenance practices, practical skills and attitude training in order to master essential skills before proceeding to work on airworthy aircraft or components.	Training Organization/ Industry	
III	Experience	Consists of applied practical on-the-job training (simulated or actual tasks under supervision) and job oriented aircraft maintenance experience.	Industry	2 years (min.)
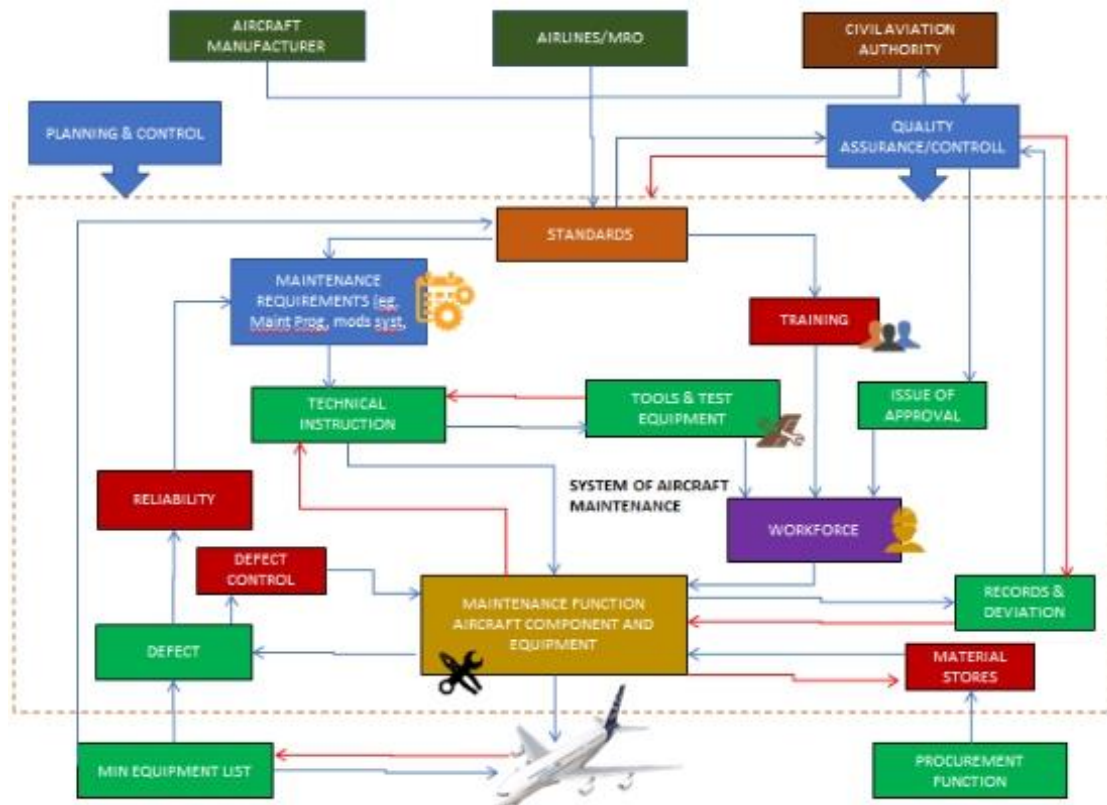
Figure 3. MRO System architecture.

Aviation MRO Education Platform

The Aviation MRO 4.0 Framework consists of three (3) major components which are The Next Gen MRO Systems, Hangar / Workshop Management System and MRO Teaching Factory System as shown in Figure 4. Each major component is then interconnected by utilizing the labs focused on its own field of specialization.
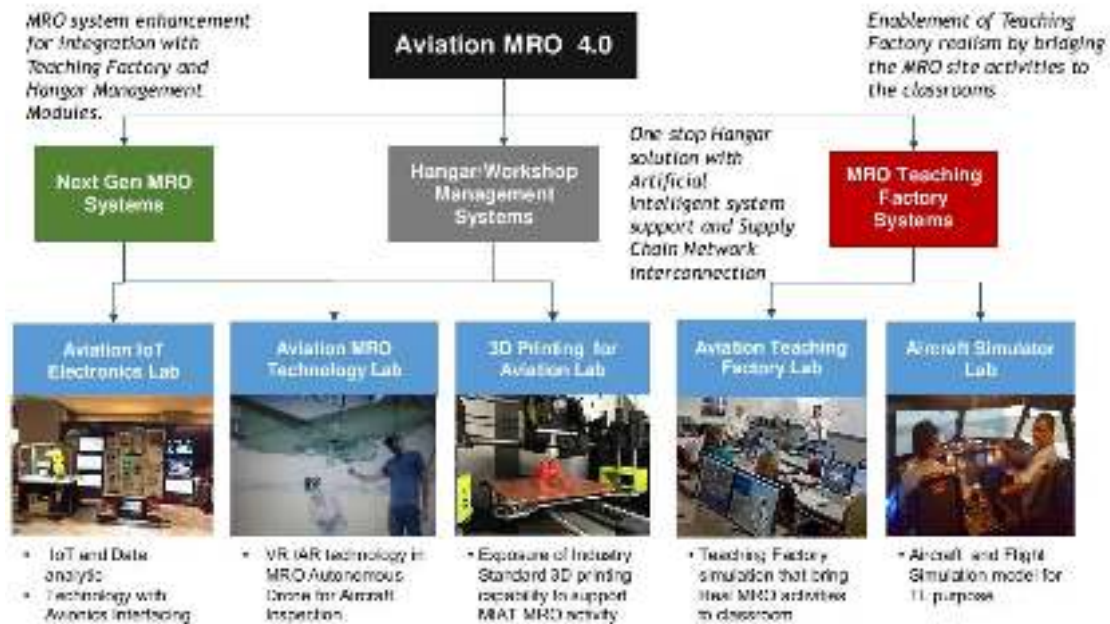
Figure 4. Aviation MRO Education Framework

Aviation MRO Education Framework Components

The management systems described in the framework includes Next-Gen MRO System, Hangar/Workshop Management System and MRO Teaching Factory System. Each system is integrated with each other, which enables users to plan, manage and control all aspects of MRO business which incorporates the ability to capture, record and display the information and knowledge for classroom teaching and learning. Due to the system's modular design, the system has the capability to be linked to other modules and will be implemented in phases. For the scope of this paper, we are only interested in the MRO Teaching Factory component. The technical aspect of the other components will not be elaborated as this paper is an education oriented focusing on teaching and learning model.

Proposed Aviation MRO Teaching Factory LMS

The MRO Teaching Factory Systems compiles all of the systems' data described previously in a repository. This repository is opened to the faculty as means of training and certification as a form of human capital development for the university students for future MRO technology development and skills. The MRO Teaching Factory System combines all of the aspects in the Next Gen MRO System and the Hangar Workshop Management System into the classroom environment as displayed in Figure 5.
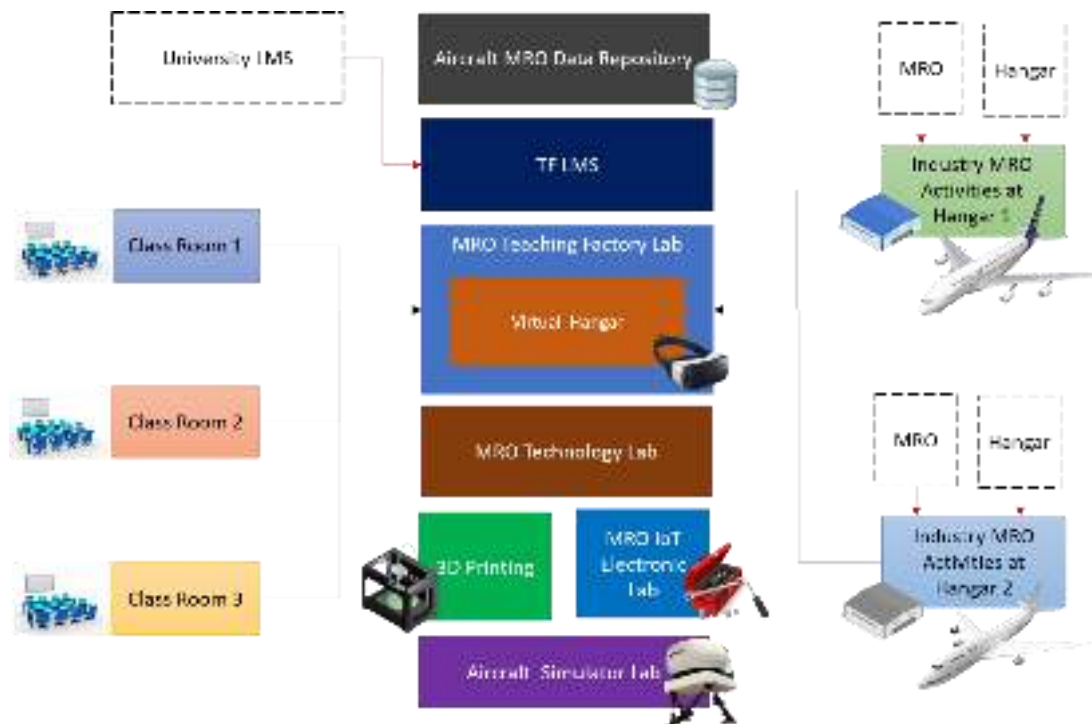
Figure 5. Overall Aviation MRO Teaching Factory Concept.

Expected Classroom Environment Realization

Figure 6 depicts the Teaching Factory classroom environment that enables two way learning bridging the actual classroom lesson with the actual hangar maintenance activities. Classrooms lessons associated with particular subject can be linked virtually to the hangar, as if the students are in the hangar itself, accessing multitude of maintenance data, tools information, aircraft simulation and many more. This is achieved by the integration of the Next Gen MRO System and Hangar Management System data into the MRO Teaching Factory Lab. This is further elaborated with Figure 6 whereby students in the classroom is able to learn about specific topics while referring to recorded or live streaming inspection job performed in the hangar. On the other hand, licensed aircraft engineers will be able to utilize the Teaching Factory LMS as a point of reference such as looking up the aircraft maintenance manual as well as textbook reference.

The Teaching Factory LMS is able to do this by having an engine which intelligently maps the MRO Taskcards in the Next-Gen MRO Platform to the related topics in the Teaching Factory LMS. This is shown in Figure 7 whereby each Taskcard activity is linked with the reference manual and its related topics in the syllabus. The topic in the syllabus can also be linked to the related chapter in the textbook or additional reference book. The accessibility of the information is assisted by the Teaching Factory LMS routing table, mapping each topic with the related documents such as maintenance manual, checklist references and textbooks (Jalil, Dzulkafli, 2017). All of this information (reference, textbooks, assignments, notes) are mapped in the LMS system repository shown in Figure 9. The system also enables two ways interaction in which, new findings or knowledge found in the hangar can be recorded into the knowledge repository system in the MRO system. Since we have made the MRO system integrated with the LMS, the knowledge recorded will also be available to the classroom learning.
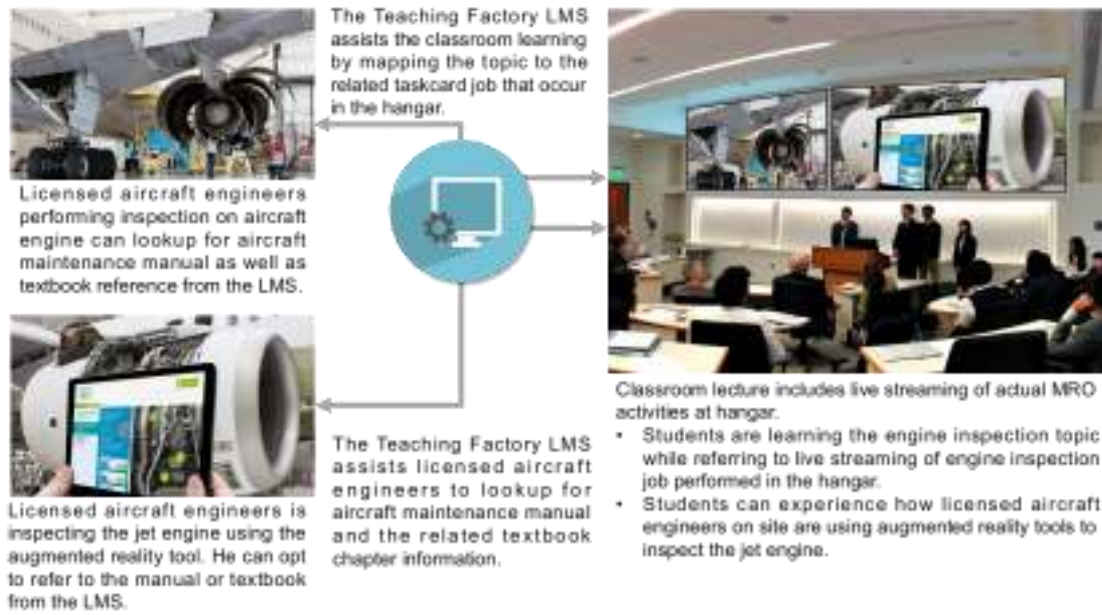
Figure 6. MRO Teaching Factory Integrated Classroom concept
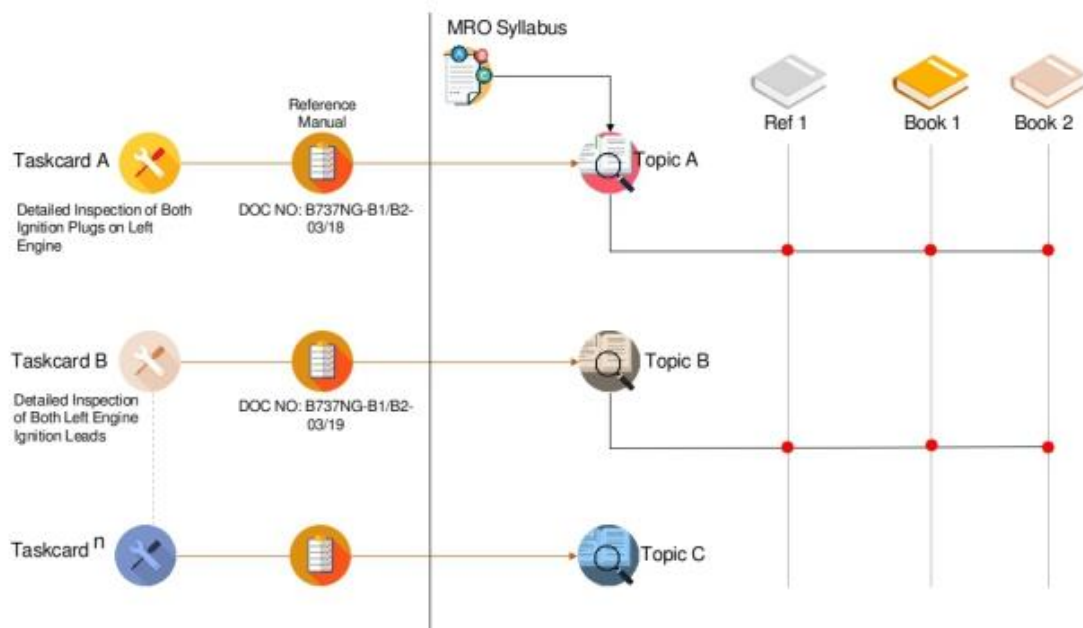
Figure 7. MRO Taskcard to Course Mapping in Teaching Factory LMS.

Figure 8 further elaborates the LMS model by describing the teaching and learning material used in the classrooms that can be mapped to the actual on-site MRO works. Specific operation MRO work can be mapped to a syllabus that can be broken down into topics. The topic will have its information with learning outcome and its supporting materials can be documents, notes, presentations, assignments, text notes and video files.
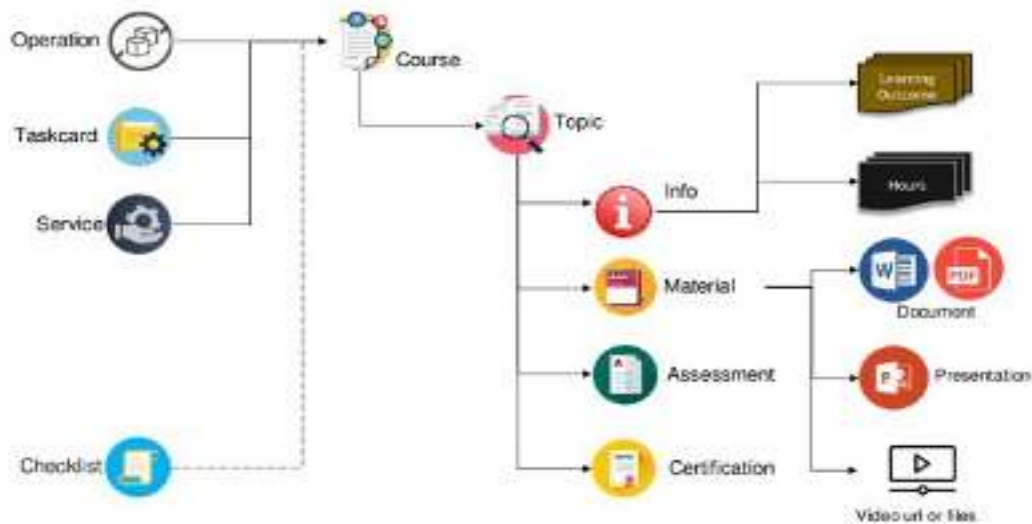
Figure 8. Material Handling in Teaching Factory LMS.

MRO Knowledge Repository

The final component of our model incorporates the ability to capture, record, and display the information and knowledge acquired through the work and the different types of aircraft being worked on into a central database system as shown in Figure 8. The repository is opened to everyone as means of training and certification as a form of human capital development for the resident MRO service providers as well as the students. The feature enables the research component of the Teaching Factory, in which the problem or information logged from the hangar can be made known to the classroom. The academician can in turn create a research on the subject which can lead to the innovation of processes that is practical for MRO services. This solution also fulfill the Teaching Factory concept of promoting industry and academic collaboration through education, research and innovation.
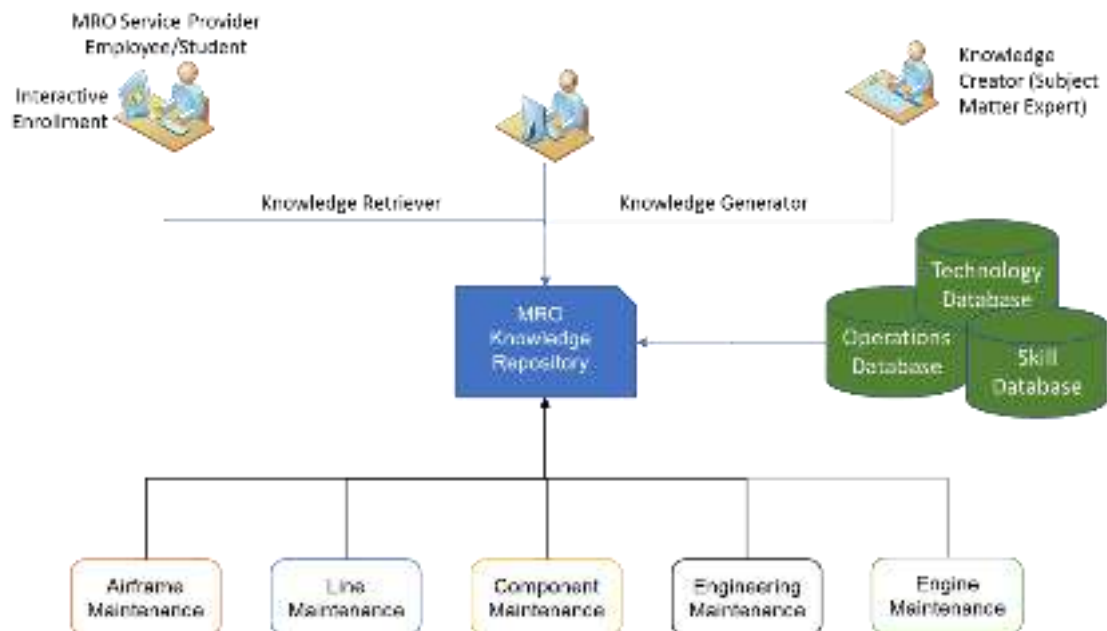
Figure 9. MRO Teaching Factory Knowledge Repository

Summary

In summary, based on the proposed model of the Teaching Factory LMS its integration with the Next-Gen MRO system, the adaptation of Teaching Factory into the Aviation MRO Framework model is found to be technically feasible to be implemented. The model is also well supported by the integration with the future technology labs thus making it a mechanism for early exposure of students to future technology which can be embedded into the future MRO system. The exposure supports the objective of preparing students for the future incoming MRO practices that will be revolutionized by the aircraft manufacturer. The model also enables two ways interaction between the academic classroom and the industry MRO practices which is the key idea of teaching factory. By having the access to the field activity for each classroom topic, we expect accelerated learning capability with the implemented model. The hangar knowledge repository feature with LMS integration is also expected to promote the Teaching Factory concept of Industry-Academic collaboration for education, research and innovation. From practical aspect, the mapping process of the topics to the MRO field activities can be a challenging task if not taken seriously. However, the process can be done easily if the proper human resources are allocated rightfully.

Although this paper specifically presents the case study of aviation MRO teaching environment, the presented model could easily be adapted into teaching and learning of other fields specifically skill and technology oriented industry. The enablement of teaching factory classroom with relevant technology laboratories can be replicated with a modified model. As this paper's scope is limiting to the Teaching Factory Lab component, future paper presenting other technical components such as Aviation Electronic Lab, Flight Simulation Lab and 3D Printing lab may complete the detailed model specification of the aviation MRO teaching factory platform. Future research may also incorporate software factory concept such as specified procedure automation templates to further enhance the model routing automation.

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A Conceptual Article on TVET Programmes Evaluation in Fulfilling Industrial Needs in Malaysia

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Abstract

This concept paper focuses on evaluating TVET programmes in fulfilling the industrial needs in Malaysia by analytically reviewing previous literatures. TVET is generally known to supply aptly skilled workers for industrial requirements particularly in developing and middle-income countries such as Malaysia. Despairingly, there are shreds of evidence that demonstrate the paucities in TVET programmes in delivering the goal. The consequence is detrimental and urgent actions are crucial in addressing this issue. The literature review brings attention to TVET reforms and the importance of industrial intervention in TVET policy-making and decision-making. Theories of evaluation in education are also discussed while programme evaluation indicators are deliberated as well. Consequently, this research suggests the use of Context-Input-Process-Product (CIPP) model in evaluating TVET programmes and subsequently ascertains its potential in mitigating the lacuna between the supply and demand issue of TVET and the industry. The model was chosen due to its exhaustive and systematic dimensions in identifying the needs of the industry, the strategies and resources requirement, feedbacks assessments and the outcomes of the programmes. Methods for future research in which questionnaire based on CIPP constructs and the targeted respondents are also proposed. The findings presented a conceptual framework that can be applied in the programme evaluation process. This paper also suggests that the stakeholders, particularly the industry, should be given more authorisations in shaping TVET programmes.

Keywords: TVET Programmes, Industry, CIPP, Programme Evaluation

Introduction

This paper aims to discuss on Technical and Vocational Education and Training (TVET) programme evaluation role in fulfilling industrial needs in Malaysia. Evaluation is vital in investigating the effectiveness of a programme while at the same time suggests ways of improvements based on the information acquired (Metz, 2007). Creswell, (2012) argues that strong educational evaluation research needs to have a 'declarative sentence' or hard evidence that can trigger the policymakers and decision-makers to undertake measures. This is supported by Zhang et al., (2011) who indicate on the dearth of reliable evaluation model in educational institutions hinders appropriate reporting hence, a strong argument based on in-situ empirical evidence is crucial.

Most importantly, as stated by Royse et al., (2016), despite being possibly the most valuable type of research contribution, programme evaluation in education is under-researched and under-published. Drawing the focus to programme evaluation in TVET, this area of study is still untapped and the studies conducted on TVET by academicians are extremely low (Wheelahan & Moodie, 2016). Hence, this study will add a small contribution into the body of knowledge in this particular research area both in empirical and methodological stimuluses.

Problem Statement

The missing link between TVET programmes at higher institutions and industrial needs is a very critical issue predominantly in middle income and developing countries including Malaysia (Adiviso, 2011). To illustrate, a study by Abd Hair, Izzurazlia, Mohd Yusof, Zaimah and Novel, (2013) on college community graduates, reported that 46% of urban employers gave modest evaluation on the quality of the graduates in terms of problem solving, decision-making and thinking skills; work planning, innovativeness as well as English proficiency. 36% of the employers rated job scope incompatibility and only 18% agree that the graduates are compatible with the job scope given.

This could imply that the graduates are still considered as incompetent and lack of necessary skills, reflected from the quality of curriculum they received. It could also signify that despite the 96.7% employment rate upon graduation (Policy Coordination Division, 2018), the graduates failed to pursue their career in the field of study. Therefore, there is a pressing need to assess the suitability of the jobs with the field of study to ensure the relevance of the programme with the current labour trend. Yunos, et al., (2017) concur that there is an urgency to evaluate the TVET programmes and the need for the industry to be more involved in formulating TVET. In fact, the lack of intervention is the main conundrum that is obstructing the development of TVET (Cheong & Lee, 2016). Therefore, it is crucial at this moment to address this problem.

Purpose and Research Questions

The purpose of this concept paper is to examine the potential of effective programme evaluation in mitigating the gap between TVET programmes and industrial needs. Specifically, this paper intends to examine the research questions formulated below:
   a) What are the needs of the industry?
   b) How effective is the programme in accomplishing the needs?
   c) What improvements are necessary for the programme?
   d) How successful has the programme in fulfilling the needs of the industry?

This descriptive study is significant in providing an outline for programme evaluation studies, particularly in TVET areas.

TVET Reforms and the Importance of Industrial Intervention

Researchers worldwide have suggested conceptual frameworks pertaining to TVET in the effort to better understand its trend. Majumdar, (2011), for instance, suggests key approaches that TVET needs to respond to, which include access for all, generic skills for

lifelong learning, a partnership between the public and private community, sustainable development, quality assurance, ICT integration, accreditation and certification as well as lifelong learning. In addition to that, since TVET is largely supply-driven, the author emphasises on demand-driven and modular employability skills (MES) together with entrepreneurial development into his argument.

Alternatively, Puckett, Davidson, and Lee, (2012) from The Boston Consulting Group (BCG) has conducted a significant global educational research and highlighted the Four Key Success Factors to a successful TVET system:

    a) The presence of a coordinated ecosystem in which all stakeholders, including a central agency with clear oversight of the TVET ecosystem, actively cooperate;

    b) Performance-based government funding and support;

    c) Parity between general academic education (GAE) and TVET and a straightforward means for students to transition between the two tracks;

    d) Sustained, collaborative efforts from the industry.

The authors conclude that an improved TVET system will enhance public perception thus escalate employability and demand for TVET graduates, which in turn increase TVET enrolment. The ripple effect continues with the growth in investment due to the steady supply of highly skilled talent group resulting in positive ROI for the employers and high salary for the employees.

In opposition, Tse, Esposito, and Chatzimarkakis, (2013) remark that obsolete employment, skill mismatch, rigid workforce as well as culture and belief supersede the issues of skill shortfall. The authors consider the idea of education as the fundamental instrument of employment is no longer relevant as the advent of technologies creates incremental approaches towards development by creating new professions that were not available before, hence the skills that graduates acquired from education are no longer needed in the world of work by the time they graduated. Therefore, the focus should be pivoted to a more robust policy, smart partnership, and persistent competitiveness through innovation and productivity.

Another framework by The World Bank initiates a new diagnostic tool which is designed to document and assesses policy and other factors that affect the educational system which consists of three functional dimensions as follows:

    a) Strategic Framework, which refers to the praxis of advocacy, partnership, and coordination in relation to the objective of aligning workforce development in critical areas to priorities for national development;

    b) System Oversight, which refers to the arrangements governing funding, quality assurance and learning pathways that shape the incentives and information signals affecting the choices of individuals, employers, training providers and other stakeholders; and

    c) Service Delivery, which refers to the diversity, organisation and management of training provision, both state and non-state, that deliver results on the ground by enabling individuals to acquire market- and job-relevant skills.

While exploring the trends of TVET, the authors illustrate the need for TVET institutions to evaluate themselves in delivering their goals, but in a rather skeletal account. A more comprehensive structure is crucial to guide TVET providers to dynamically evaluate their programmes. Notwithstanding, the authors are delivering the same voice that is the exigency to identify and address the needs of stakeholders particularly the industry to holistically transform the TVET programmes. Hence, a most appropriate programme evaluation tool that empowers the industry viewpoint in the decision-making must be identified.

Evaluating the TVET Programmes

Scholars have developed numerous evaluation models in education, but some are more predominant than the others. The comparison among six types of evaluation models from prominent theorists including Tyler's, Stake's, Roger's, Scriven's, and Kirkpatrick's Model as well as Stufflebeam's CIPP model are described below.

Tyler's Objectives-Based Model

Tyler's approach was introduced by Ralph W. Tyler in 1942 and is more towards objectives-based evaluation and overlooks on the process of evaluation and outcome. The model main purpose is merely to measure advancement of the students towards the objectives of a programme hence, is not suitable to expansively evaluate a programme.

Stake's Responsive Model

Robert E. Stake's Responsive Model places the emphasis on description and judgment of information from stakeholders (Stake, 1967) but not on the input. Stake suggests that evaluation report requires three sets of data. The first data is the antecedent data that describe current learning and teaching condition while transaction data transient during the process of education. The final data is the outcome data that describe the programme based on stakeholders' judgment hence the responsive model. The model obviously disregards causes or input such as available resources that need to be included in the evaluation process for an all-encompassing decision.

Kaufman's Need Assessment Model

Roger A. Kaufman presents the Need Assessment Model in 1975 that aims to identify the gap between current performance and desired outcome (English & Kaufman, 1975), but not on the entire process of evaluation. The need assessment is just part of planning procedures that is used to 'define valid curriculum, instructional and management objectives' (English & Kaufman, 1975).

Scriven's Goal-free Evaluation Model

Michael Scriven's 1973 Goal-free Evaluation Model focuses on the unintended effects of evaluation rather than the objectives, thus making it unreliable for decision-makers (Glatthorn, et al., 2012). Scriven divided evaluation into formative evaluation that occurs during the progression of the programme and summative evaluation that conclude the evaluation. A programme is deemed successful once the effects are responsive to the needs of identified stakeholders.

Kirkpatrick's Four-Level Model

Kirkpatrick's Four-Level Model was introduced by Donald Kirkpatrick in 1959 and has been revised in 1975 and 1993 when his best-known work "Evaluating Training Programs" was published. The model entails four-level evaluations that start with reactions towards the programme followed by learning evaluation where the extent of students' advancement in skills, knowledge or attitude is assessed. Next, transfer evaluation measures the use of the

newly acquired skills, knowledge or behaviour in the students' daily environment and finally, results evaluation measures the success of the programme. However, the newer version of the model, known as The New World Kirkpatrick Model (NWKM) is very much similar to CIPP model by Stufflebeam, albeit the obvious difference in its focus (Gandomkar, 2018). NWKM is conducted to measure the programme outcomes while CIPP was developed to improve the programme.

Stufflebeam's CIPP Model

CIPP model was developed by Stufflebeam in 1971 with the emphasis on decision-making while allowing multiple procedures for data gathering and feedback from stakeholders (Rathy, 2007). It encompasses formative and summative evaluation from all aspects of its evaluation components viz. Context-Input-Process-Product (hence CIPP) thus making it the most comprehensive evaluation model. Yet, Glatthorn et al., (2012) assume that is complicated as well as costly. Equally, Hakan and Seval, (2011) indicates that the model is time and resources consuming.

Table 1
Predominant Educational Evaluation Models

Types of Model	Advantages	Disadvantages
Tyler's Objective-based Model	Straightforward to apply	Neglect the process evaluation, intended outcome and students
Stake's Responsive Model	Emphasise on description and judgment of information from stakeholders	Neglect input
Kaufmann's Need Assessment Model	Identify the gap between current performance and desired outcome	Neglect processes
Scriven's Goal-Free Model	Acknowledges unintended outcomes, and learners' perceptions and can be made without the need to know about the objectives	May leave important questions unanswered
Kirkpatrick's Four-Level Model	Measures effectiveness of a programme through reactions, learning, knowledge/ skills/ behaviour transfer and results	Is not designed to improve a programme
Stufflebeam's CIPP Model	Useful for large scope programmes, allow stakeholders' participation, multiple procedures for data gathering	Difficult and expensive to maintain

In general, the more prominent evaluation models can be summarised as shown above. Other than these models, evaluation models such as Eisner's Connoisseurship Model by Elliot Eisner in 1979 that focuses on qualitative appreciation and Bradley's Effectiveness Model that draws out 10 indicators of measurement, which was derived from previous research frameworks are also used in programme evaluation (Glatthorn et al., 2012).

Nevertheless, Mohamed Najib, (2016) argues that evaluation in the educational setting is ambiguous due to the vagueness of the definition of quality itself and how to achieve it and is highly subjected to external as well as internal biases. The author posits that internal bias such as self-review might lead to the fabrication of evidence and frail due to the absence of third party calibration. On the other hand, external bias may happen due to the ingrained perception of the evaluator thus influencing the result.

Moreover, Mohd Najib claims that the current practices of evaluation by external parties such as International Organisation for Standardisation (ISO), Total Quality Management (TQM) only evaluate the input and process and not the outcome. Thus, this indicates a strong need to explore the most appropriate programme evaluation framework that can be used exhaustively in evaluating TVET programmes in fulfilling industrial needs.

CIPP Evaluation Model Rationalisation

Based on the comparison among programme evaluation models earlier, I decided to choose CIPP as the most appropriate tool to use in this study. The fact that CIPP offers a holistic and systematic evaluation that is designed to improve than merely to prove the programme effectiveness is the main reason why it is chosen. More than that, CIPP takes into account the needs of the stakeholders into the decision-making process in which, its privation has been identified as the main culprit that hinders TVET programmes from fulfilling industrial needs. Also, the model recommends manifold interventions from observers and informants while also allowing information excavation by exploring the abundance of data gathering resources to provide an independent review based on feedback from stakeholders and external parties (Rathy, 2007). In general, the CIPP integrates both summative and formative evaluations that are essential in programme evaluation.

Numerous authors have applied CIPP in their studies such as Derya and Bulent, (2016); Tokmak, et al., (2013); Mohamad Fadzil and Abdul Jaleel, (2013) as well as Bachenheimer, (2011) and most would agree that CIPP is the best tool for evaluation that suit every purpose except for a few opinions such as Raizen and Rossi, (1981), Glatthorn, et al., (2012) as well as Hakan and Seval, (2011a) who argue that the model is too complicated, costly and time-consuming. All the same, authors who are interested in the model agree that CIPP is an influential tool for evaluation and to assess the quality of education. It has been used in a wide range of research interests to evaluate programmes, projects, products and institutions among others.

Nonetheless, can CIPP be employed in evaluating TVET programmes to meet the industrial needs in Malaysia? A more comprehensive construct is needed to guide TVET providers to dynamically evaluate their programmes. Thus, the following section combed through indicators that are essential for the TVET programme evaluation.

Programme Evaluation Indicators

Horng et al., (2009) suggest six quality standards for programme evaluation which include strategic planning, curriculum and instruction, resources, faculty, student achievements and administrative management. These standards are further refined into 12 dimensions that encompass aspects such as vision, mission, aims and objectives; self-improvement; curriculum; teaching and learning; resources and management; spaces; teachers' quality; teachers' performance; students' and graduates' performance; alumni feedback; administrative

leadership; student management. Separately, Mohamed Najib, (2016) recommends a slightly different construct that includes organisation and resources; support staff; facilities and equipment; students and services; tutorial and lecture system; teaching and learning; curriculum as well as quality control.

Further, Finch and Crunkilton, (1979) delineate parameters that can be used in evaluating a programme. For context evaluation, the authors suggest evaluators identify the need for the programme; the population that the programme serves; the resources that are available; the content included in the curriculum as well as goals and objectives of the programme. For input evaluation, the authors outline the materials and teaching approaches that might be most useful in a particular educational setting and are acceptable to instructors and students. On the other hand, during process evaluation, the authors postulate that the quality of instructional and support personnel; costs and benefits associated with operating the programme, the extent of students satisfaction and identifying programme deficiency are essential information to acquire. Lastly, in product evaluation, the authors suggest finding out the mobility of former students, employers view on the performance of former students and how adequate is the curriculum in preparing the students for job entry.

Methodology

This concept paper only exploits the literature review as the source of data. A Google search was conducted by using terms such as "programme evaluation", "TVET programmes", "CIPP" and the returns presented massive amounts of journals, articles and theses. Due to the multidisciplinary nature of the TVET programmes, the search needs to be refined to find studies that delve into a specific programme. Eventually, two related works are identified that is most useful in influencing the methodology of this study. First, Wong, (2002) who conducted a study on assessing the effectiveness of the Higher Diploma in Computer Studies programme offered by the City University of Hong Kong and secondly Horng, et al., (2009) who developed an instrument that is designed to evaluate the quality of undergraduate hospitality, tourism and leisure programmes. Both are applying CIPP framework into their studies and provide clear indicators and instrumentation that can be replicated into future research.

Data Collections and Analysis for Future Research

Respondents. Chapleo and Simms, (2010) research findings show that students including graduates are the main stakeholders in education followed by industry and academic staff. As such, the samples should include these respondents for the survey.

Instrumentation. Future research will employ descriptive methods and the CIPP survey used in this study is derived from previous works of literatures to provide an outline of what should be probed to convey the questions that could further assist in explaining the research intent. For easy comprehension and to avoid distort interpretation, the questionnaire should be bilingual, that is in English and Malay. The questionnaire will be divided into Part A that requires demographic information and Part B contains questions related to the specific programme of study. 6-point Likert scale will be used where the response ranging from *6* for *Strongly Agree, 5* for *Agree, 4 f*or *Quite Agree, 3* for *Somewhat Disagree, 2* for *Disagree* to *1* for *Strongly Disagree*. The survey items will be developed into 4 different questionnaires that represent the major groups according to the target units of analysis. Suggestions to improve the

programme based on their knowledge and experience in teaching the subjects in the programme are sought through an open-ended question.

Results

The focal point of this paper was to examine the use of programme evaluation in mitigating the lacuna between TVET programmes and industrial needs. Based on the review on programme evaluation indicators, below matrix are designed to get the results that could be possibly attaining the purpose of the study.

Table 2
The Matrix between CIPP, Research Questions and Sub-Constructs

Evaluation	Research Questions	Sub-Constructs
Context	What are the needs of the industry?	i. curriculum content ii. goals and objectives iii. industry population to serve
Input	How effective is the programme in accomplishing the needs?	i. teaching materials ii. facilities iii. programme schedules
Process	What improvements are necessary for the programme?	i. the quality of lecturers ii. costs and benefits iii. students satisfaction
Product	How successful has the programme in fulfilling the needs of the industry?	i. graduates' feedbacks ii. employment rate within the field of study iii. employers' perspectives on graduates

Context Evaluation

During context evaluation, the needs and problems of the industry are identified and the conformation with the objectives of the TVET programme is ascertained. This can be achieved by evaluating the curriculum content, goals and objectives of the programme as well as recognising the industry population to serve. Students, graduates and the lecturers can provide the empirical data for this stage of evaluation.

Input Evaluation

From this evaluation, strategies and system ability can be identified and plans can be formulated and communicated better. This can be attained by evaluating the teaching materials, facilities and programme schedules to ensure compliance with the industrial needs. Students, graduates and the lecturers can provide the empirical data for this stage of evaluation.

Process Evaluation

In process evaluation, the quality of lecturers, costs and benefits of conducting the programme and student's satisfaction of the programme are assessed. Students, graduates and the lecturers can provide the empirical data for this stage of evaluation.

Product Evaluation

This stage of evaluation revolves around graduates' feedback on the programme, employment rate within the field of study and also employers' perspectives on graduates. This is to ensure the outright success of the programme. Besides that, the number of entrepreneurs created from the programme could be recorded as well, as this could indicate the potential of the programme in producing job creators, which is also part of TVET main objectives. The number of students continuing their studies into a higher level of education could also be the indicator of the programme success. For this purpose, apart from responses from students, graduates and the lecturers, employers' feedbacks from the industry are sought as well.

Discussion

There is absolutely no one size fits all frameworks that could address all issues and challenges in TVET, yet what has been suggested in this study could be the guideline for TVET to improve the quality and effectiveness of its programmes in the effort to fulfil industrial needs. CIPP is a holistic and most comprehensive evaluation model that can be employed to measure the effectiveness of TVET programmes since it encompasses four stages of evaluation starting from the Context, Input, Process as well as Product.

Most programme activities are in practice but the exhaustive implementation status is still in question thus, a holistic programme evaluation must be carried out. There is no doubt that the link between TVET programmes and the industries must be sturdy and deeply embedded since each is inextricably related to each other to thrive and the relationship must be sustained. The industry needs highly skilled and apt workers to sustain as well as subject matter expertise from the lecturers and TVET institution clearly needs the industry for feedbacks on latest requirements so it can be included in the curriculum.

By providing a clear link, this relationship can be further enhanced and consequently benefit both intended and unintended audience. Consequently, a new 'dynamic, organic, fluid and agile' curriculum can be accomplished. For a smooth progression, smart partnership through guild or union is recommended. This practice has been successful in developed countries such as Singapore, Finland and Germany.

Resources such as facilities, funding and subject matter experts must be assessed as well. For enforcement purposes, observations or visits from industries to TVET institutions can be initiated. Following that, a systematic dual training system must be included in the curriculum structure to ensure its commitment. At the same time, the curriculums are required to be periodically reviewed by both institution and industry while the accountability needs by both parties are assessed.

In fact, programme evaluation is fundamental for successful public policies (Patrinos, 2005). Patrinos posits that a positive evaluation may lead to a positive return on investments by the government, while a negative evaluation might give a hint for programme discontinuation instead of continuously allocating budget for its extension. Hence, if it is

proven that a programme fails to deliver the right manpower for the right industry, a phase-out is deemed necessary. Therefore, it is suggested that CIPP to be tested by future researchers in evaluating the effectiveness of TVET programmes while liberating stakeholders' roles including the industry itself in the process.

Limitations

Limitations are based on the inability to control certain circumstances in the research design and for this study, few limitations are observed. Firstly, since respondents will be selected from the programme being evaluated, it is assumed that the respondents would be able to relate their experience and the questionnaire is a powerful tool to exude this information. While the questionnaire is the main instrument in the data analysis, it is also anticipated that the respondents' opinions can be measured while being open and sincere in responding to the survey.

Future Recommendations

This article pivots its focus on the relationship between TVET programmes and the industry, yet the importance of other stakeholders must not be ignored. Future studies should focus on other stakeholders such as administrators, parents and policymakers that considerably possess the same amount of prominence in shaping the TVET in Malaysia. Programmes and projects can be evaluated as well by using the CIPP as the framework provides a comprehensive evaluation that can ground the decision-making process.

<div align="center">

Conclusion

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The extent of significance between TVET programmes and the industrial needs can never be underestimated, specifically in keeping the curriculum current to supply aptly skilled manpower. Unfortunately, there is a gap that hampers the effort thus, this study analyses the possibility of programme evaluation through the usage of CIPP model in moderating this issue. TVET is rampant in Malaysia due to its human capital contribution in realising the nation's aspiration to be a high income country. Like any other developing countries, skills related employment is vital in ensuring a smooth transition. Thus, as the skills providers, TVET institutions have to know where it stands now so it can improve in its future direction. Thus, this study emancipates the role of industry as one of the major stakeholders in TVET in its decision-making policy while employing the suggested evaluation model to ensure the effectiveness of TVET programmes.

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Managing Media Technology Students Project via Sintok Media

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Abstract

Over the pass decade, the social media have become popular platform for global social interaction. Although their purposes are mainly for leisure communication, studies indicated that these platforms are also actively used as information sources for academic. The evolution of social media has attracted many studies which mainly focused on social networking or marketing purposes. Conversely, little attention has been given to uplift social media as platforms for information management in higher education institutions. So far, only few studies are interested to discuss how higher education stakeholders are able to organize, process and deliver academic course related contents via social media platforms. As a result, these precious platforms are being under utilized although it has capabilities to boost the academic field further ahead. Therefore, in this paper, we discussed our experience on occupying social media platforms to deliberate journalism and broadcasting projects for media technology students to be assessed by peers and respective lecturers. We established a social media channel called Sintok Media as a platform for students to share their content online. Later, we observed the acceptance for these contents using mechanisms such as number of views, comments as well as analyzing in-depth details about the visitors via Google Analytics. The Sintok Media not only enable us to manage students' projects effectively but it also permits us to generate income via advertisement especially from local entrepreneur who wanted to make their product visible to student. Additionally, our observation found that the number of Sintok Media visitors has increased gradually each year which gives positive signed that it has successfully meet it purposes to manage students' projects.

Keywords: Social media, Information Management, Media Assessment, Higher Education, Media Technology Students

Introduction

The Internet technology has substantially change the educational experience. What are seem impossible decades ago has now been materialized in classroom. New learning environments are kept on being introduced into classroom to help students and teachers. Teaching materials are made to be highly interactive and provide users with the ability to integrate different media within their content creation (Williams, Crittenden, Keo, & Mccarty, 2012). As a result, complex algorithm and method such as found in chemistry, engineering as well as medical can be visualized via animation so that it assists students to understand and master the methods.

Currently, innovations in teaching and learning offer alternate mechanisms to engage students with a variety of learning styles and help them succeed. There are varieties of learning styles such as blended learning, problem-based learning and outcome based education are adapted in classroom to offers new experience to students hence boosting their interest to

conquer the knowledge. With the new learning styles, students are inspired by motivating them to have a lot of discussion via role play, problem-based projects and negotiation in classroom using the latest learning technology to solve problems. Similarly, teachers are encourage to produce digital composition for their teaching materials as these materials often produces multimodal, nonlinear, and interactive content offering new relationships with wider audiences and ways of communicating that transcend the qualities of written text (Smith & Smith, 2017). The combination between the new learning style and the teaching materials will tighten the engagement in classroom and offers a flexible way of learning which suits the new lifestyle of young generation.

The emergence of social media as the result from Internet advancement over the pass decades has contributed significantly to the filed of education as the technology change the method of communication between individuals and organizations throughout the world (Nicolaou, Matsiola, & Kalliris, 2019; Schmitt, Sims-Giddens, & Booth, 2012). By incorporating the social media into the curriculum, we can uplift the excitement in learning as well as managing information in a way that can be recorded, researched, and creative group project work. Social media are normally identified as websites or online applications that allow users to take benefit from different features of social media such as communicating, sharing, collaborating and publishing (Irfan, Rasli, Sami, & Liaquat, 2018). Nowadays, social media are being occupied in many areas which include marketing, broadcasting, engineering an even in medical. In the context of academic, the social media platforms are also frequently seen as a very useful source to disseminate information. It is no doubt that there are wide promising opportunities offered by social media to the academic world however there are still little attention has been given to uplift social media as platforms for information management in higher education institutions. The debate on how higher education stakeholders are able to organize, process and deliver academic course related contents via social media platforms are still open for discussion. While discussions about the challenges, critical success factors as well as the failure in applying social media platform to manage information in an academic setting are not being detailed up for future researchers. As a result, some academic management at the higher education institution are still doubted to rely on social media a tool for managing academic information.

In order to highlight that social media platform are important tool for effective information management in academic in higher education institution, in this paper we discussed our experience on occupying social media to deliberate journalism and broadcasting projects for media technology students to be assessed by peers and respective lecturers. We created a social media platform called Sintok Media so that students can share their content online. For monitoring purposes, we used mechanisms such as number of views, comments as well as analyzing in-depth details about the visitors via Google Analytics. To make in-depth discussion regarding our experience in the matter we outline this paper into the following parts. Section two will discuss the social media in detailed. Section three will discuss on how social media platform can be occupied by students who are enrolled in media technology. Section four will discuss on Sintok media channel followed by Sintok media content management discussion in section five. Finally, we conclude our discussion in Section six.

Social Media

Up to this moment, many people has defined social media based on their perspective, therefore we can get variety variation of social media definition on the Internet. Above all, the social media terms can be divided into two parts term i.e. "social" and "media." The "social"

part refers to the activities carried out among people, whereas "media" refers to the internet-enabled tools and technologies used to carry out such activities (Ngai, Moon, Lam, Chin, & Tao, 2015). Hence, social media is a platform that enable people to conduct activities such as creating, publishing and sharing their interest using social media application which executed on the Internet. By using social media, a chef can share his recipes with people who are interested to try new dish. A photographer will share the correct way to adjust the lens based on the light condition in a studio. Even a doctor can assist patient on home remedies to certain symptom before they can better treatment in hospital. Similarly, a lecturer can conduct a live lecture session with his students even though he is out stationed. Therefore, we can foresee social media as a network of people who are interrelated using the social media application (Wang & Chen, 2011). Social media provides variety of new sources of online information created by people about products, brands, services, personalities, and issues that allow the exchange of user generated content (Neier & Zayer, 2015). Nowadays, as long as there is Internet penetration, everybody can poke into social media application and share their content with other people throughout the world.

Types of Social Media

There are many types of social media application since the introduction of this communication platform years ago. Starting from ordinary website, the evolution of social media application has changed rapidly to blog, microblog, and content sharing until virtual world. Almost every business field used social media for multi-purposes such as product branding, customer relationships, motivation, governance communication and collaborative activities (Irfan et al., 2018; Neier & Zayer, 2015; Ngai et al., 2015; Thomas & Thomas, 2007). In education, social media applications are used to promote curriculum development, educational instruction and pedagogical roles.

Based on our review from the past articles (Irfan et al., 2018, we found out that there are at least seven types of popular social media application that available today. Table 1 list seven types of social media application that can be found on the Internet nowadays.

Table 1
Type of popular social media application

Types	Function	Social media application
Blog and microblogs	Social discussion or informative content that published via website and application	Twitter
Social network	Structured interconnected network to connect users	Facebook, LinkedIn
Media sharing	Shared individual's videos and photos to the public or selected groups of people	Youtube, Flicker
Social benchmarking	A social vote based platform to aggregate, rate, or discuss issues which are posted into the Internet	Digg, Reddit
Review sites	A directory which allow crowd –source review among social media users	Yelp
Forums	Social discussion regarding specific or general topic of interest among users who has the same attention	Stack Overflow

| Virtual worlds | A virtual environment where users created role-play identity so that they can interact with other virtual people | Second Life |

The roles of Social Media

The existence of social media has changed the way people communicate at the moment as the platform offers huge opportunities to allow people connected together. For example, in the global social media environment, one can share information and knowledge online, join virtual communities, and arbitrarily "friend" or "de-friend" a person (Ngai et al., 2015). People are getting 'linked' together all over the place and there are almost no barriers that hinder people to communicate.

Based on out reviewed, we found out that at least five roles offered by social media to the Internet users at the moment. First, social media tighten the engagement among people. By using social media application, 'friends' are linked to persons and are able to see his or her information and updates (Schmitt et al., 2012) whenever the friend log in into the social media application. 'Friends' also are allowed to write comment, send message, make video call and conduct live events between each other. This situation engages both parties in the virtual world to a new level hence tighten the relationship between friends.

Second, the social media application assists the interactions of people through different social media platforms. At the moment, The social media application includes a wide range of tools and technologies that allow people to read, extract, and generate universal text, image, audio, and video content (Irfan et al., 2018). Therefore, one can post anything that he likes into the platform and later, friends are allowed to interact with the content him by variety type of interaction such as feedback and voice call. Third, the social media promotes people to share their information and knowledge online so that others can access them everywhere. This information is varied which may exist in the form of plain text, pictures, videos as well as web links. Everybody will be kept up to date information as the information are so easy to be shared in the social media. Nowadays, we can reduce the dependency to get current news from the news portal because even ordinary people can share his own thought related on certain issues in the social media. As a result, from the information sharing habits, there are many virtual communities were established among social media users. There are many virtual communities available in the social media ranging from leisure activities to serious topics, youngsters to adult, male and female, old to the current condition as well as free to charge-per-entry. These virtual communities discussed wide range of issues about almost anything that can occurred in the globe. Finally, social media are also very important to the educators for students. By using social media, at least four unique advantages that the education institution gained which include the dimensions of relevance, speed, cost and personalization (Irfan et al., 2018). Almost all education contents such as syllabus, teaching notes and reference are available on social media nowadays. Hence, this condition has makes education to be relevance to everybody as they can access the content faster once it is available online. There will be less dependency on having a face to face session between teachers and students, therefore it reduces the cost to build the concreate classroom. Moreover, by using social media, one can personalized what course that he likes to enrol since there are so many courses available on the social media.

Managing Information in Education via Social Media

The emergence of technology that relates to social media has changed the way people looks at education. Traditionally, classrooms are conducted based on face-to-face teaching where teachers will give his lecture while the students listened and later, interact with teacher via words communication. Afterward, the technology comes in where the face-to-face lecture style is improved by occupying limited technological add-ons using slides. When the technology evolved, the "blended learning" approach are introduced in classroom where the method is much more modern that mix traditional methods with cutting-edge information technology. Now, a more powerful model linking "blended learning" and so-called learning communities, i.e. forms of group-based technology facilitated learning is introduced to students (Thomas & Thomas, 2007). With the intervention of social media application in the blended learning environment, cutting-edge methods in managing educational information are made available everywhere.

Students are among the most active users who used social media application. A study done in Johnson & Wales University involving 48 graduates found that forty-five percent of the sample admitted that they spent 6-8 hours per day to check a social media site, 23% spent more than 8 hours, 20% spent 2-4 hours and only 12% spent less than 2 hours (Wang & Chen, 2011). By fully utilizing social media in universities, many benefits can be gained either to the students as well as to lecturers. For example, social media application provides greater student engagement to the subject, increased students interest to the teaching topics and make the student are taking more control and responsibility on their education (Blankenship, 2010). Additionally, through social media, students can create professional profile for their future career, expanding technological abilities, and enhancing their ability to professionally and clearly communicate despite barriers of time and distance (Schmitt et al., 2012). Social media offers mechanisms for collaboration, networking, and learning not previously available to faculty or students.

Meanwhile for lecturers who find it hard to engage students in an open discussion and expression of ideas in and out of the classroom should look to social media as a potential educational tool. The social media allow lecturers to communicate with their students using varieties of ways in order to encourage students to generate new ideas, discussions and facilitates online conversation. For instance, a study done by Hattingh (2017), there are three types of learning methods that a lecturer can introduced using YouTube which are learning-by-watching, peer-to-peer learning and digital learning. Lecturers can use YouTube to support his teaching materials and asked students to learning additional content while watching YouTube video. Since YouTube allows users to write comments for each shared video, students can write questions in the comments column so that other users can reply. These situations promote peer-to-peer learning using social media application in universities. Lecturers also can ensure that his lecture is always available although he cannot attend the actual class in the faculty. Through social media application like YouTube, he can prepare the lecture content prior to class by producing video that relates to the syllabus. Afterward, he just needs to share the video in YouTube so that it can be watched by students. With digital learning, these students can learn more and better while watching the video material, handle more than one screen simultaneously, prefer interactivity; therefore, the problem of one-way teaching that makes them less interested, solved (Nicolaou et al., 2019)

Sintok Media

The social media not only offers new ways to get people connected, but it also allows people to manage their content by sharing media content online. Furthermore, the social media also gives the opportunities to users to make business based on advertisement, promotion and product branding. Hence, in this section, we are going to share our experience managing our student projects using social media application as well as generate incomes based on product advertisement from the local entrepreneur.

Before we discussed this section further, lets us introduced our faculty to readers. Our faculty is located in Northern Malaysia who specialized in multimedia technology and communication studies. Most of the project that we assigned to our students are related to media where students have to produce content such as news, audio, video as well as documentary. Before the social media popularity, students need to publish their media projects using paper-based channel like newspaper or DVD. When the social media hits the Internet world, we found that it is very difficult to sustain our way of publishing the media content, hence, we change the publication mode to the social media. By using the application in social media such as YouTube, Instagram and Facebook, we found out that these applications help students to attract people to read or watch their content and at the same time the application also prepare a very flexible platform for us to monitor the students' projects.

Therefore, in 2015, we established a social media platform for our students named Sintok Media. 'Sintok' is referring to a tree specie that can be found a lot in our campus. Hence, Sintok Media is a platform created to allow students from our faculty to publish their media project online and additionally we are also targeting the platform to run like a media company so that students gained experience as a media entrepreneur while they are still campus. The Sintok Media starts with an estimated capital of RM20, 000 which includes tools and equipment like camera, lens, stabilizer, clip mic and tripod. At the beginning, all Sintok Media events are organized in the faculty however, once the students show interest in the platform, we started to asked them to produce media content outside our faculty so that it attract outsiders to engage with the platform. At the moment, besides conducting media publication online, Sintok Media also offers small entrepreneurs to expand their market via advertisement. Although the subscription fees does not produce profits as high as other media platform but at least it turn up to be a motivation factors for our students to publish their work. Since the establishment, the Sintok Media were embodied by three components namely Sintok News, Sintok TV and Sintok Radio.

Sintok News

The Sintok New can be considered as the pioneer channel for Sintok Media platform as it is a news website that disseminate information regarding our campus as well as other related news. For this channel, students are required to produce news according to their preference and later, publish the news in Sintok News. Figure 1 illustrated processes to publish news in Sintok News.
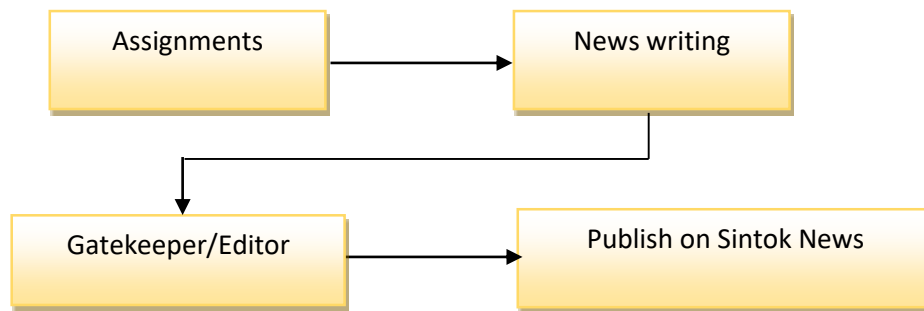
Figure 1. Process to publish news in Sintok News.

In order to publish news in Sintok Media, students need to collect related assignments that are assigned by the fellow lecturers. Based on these assignments, they need to find the content for the news either inside the campus or outside. Then, when they collect details of the content, they will write the news according to the format stated in the assignment. The gatekeeper or editor, which can be one of the students or the lecturer himself will review the news and asked students to make amendments where possible. Once all the processes finished, students are required to upload the new into the Sintok News channel. Figure 2 shows the front page of Sintok News.

Figure 2. The Sintok News front page.

Apart from publishing the news online, we also encourage students to attract local entrepreneurs to advertise their product in Sintok News. For this matter, we also provide subscription fee handouts to entrepreneurs in order for them to advertise their product in Sintok Media.

Sintok TV

The second channel established under the Sintok Media platform is Sintok TV. It is mainly created to handle multimedia news which are in the form of video. Sintok TV is an IPTV that functioned as media platform for online articles, bulletins, documentaries and

advertisement components. Inside Sintok TV, students can publish media content such as interviews with the personalities, press conferences and with social responsibility segments coverage. The process to publish media content in Sintok TV is almost similar as the way to publish news in Sintok Media. At the moment, Sintok TV use YouTube as the main social media application to publish videos. Figure 3 show a screenshot of a students covering news that relates to the campus event in YouTube.

Figure 3. Sintok TV screenshot in Youtube

Sintok Radio

The third component that formed the Sintok Media platform is Sintok Radio. The radio channel is a platform that we created mainly to train student to be a radio DJ as it is one of the requirement for media technology student. In the Sintok Radio studio, students need to become a radio entertainer where they need to interact with callers, play music and read news. The radio also offers podcast; a digital audio files which a user can download in order to listen. The radio station is used to deliberate advertisement and lectures all over UUM community to get recent news and update on selected event.

Managing Sintok Media content via social media platform

In order to manage the media content that available in the Sintok Media, we used Google Analytics to analyze the visitor data as well as sustaining the performance in boosting up the content. Google Analytics is a tools that categorized visitors data into users and sessions by random ID that associated with the user's browser cookies (Vecchione, Brown, Allen, &

Baschnagel, 2016). Basically, every user that lands on a website will be listed as a visitor and the data will be kept as future reference and recommendation. Currently, most website are using Google Analytics data to monitor the visitors traffics because the tool is practical and easy to use. By using Google Analytics, the web administrator can screen visitors' information such as number of views, bounce rate and session duration. The data collected by Google Analytics could be the proof that leads to how the website need to be improved. Figure 4 shows the Google Analytics snapshot for Sintok Media.
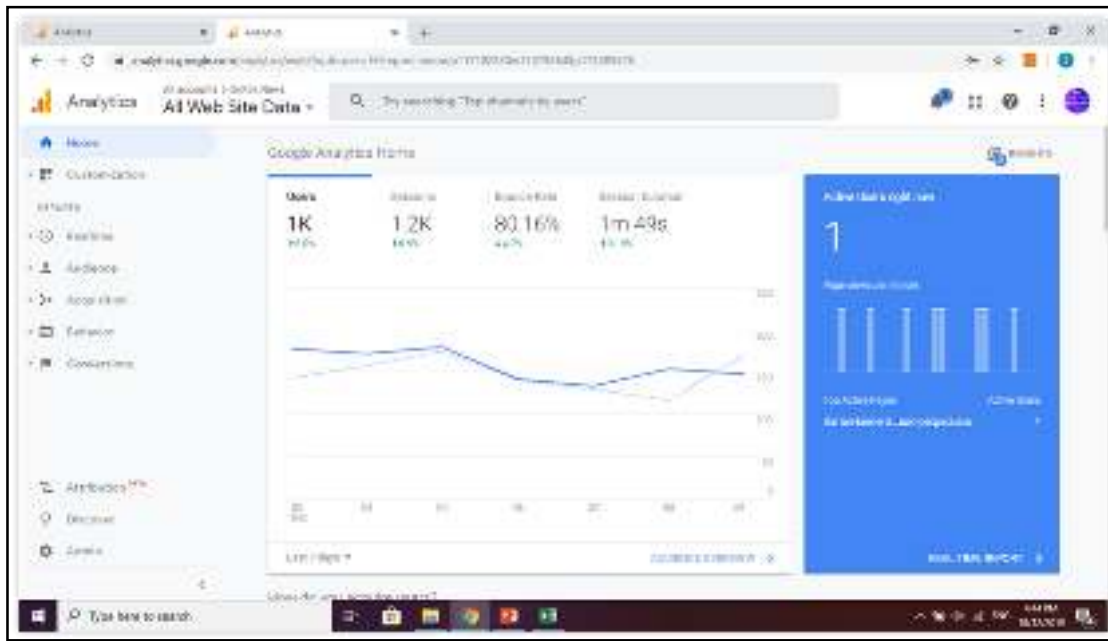
Figure 4. Google Analytics snapshot for Sintok Media.

The Google Analytics helps us a lot as we are able to track the performance of news articles as well as videos that the students shared in the Sintok Media. By observing the data, it assists us in assigning marks to the students as the higher' views' the articles or video get then the higher masks that students will get. However most importantly, the Google Analytics data is something that the local entrepreneur wants to request before they pay the subscription fees in order to advertise their product in Sintok Media.

Conclusion

In this article, we shared our experience applying social media application to manage our media technology students' project. We started the discussion with social media topics then we present how social media can be used in education and finally the explanation on our Sintok Media platform which contains three channels namely Sintok News, Sintok TV and Sintok Radio. The social media applications have been widely used in almost every aspect for managing educational institution. Therefore, occupying social media to manage the education information is crucial for every institution. Hence, out initiative to use social media to manage the student projects can be considered as are the right step and so important to ensure that our curriculum is aligned with the current technology. Apart from making it easy to manage the student's projects, we also are gaining advantages with the media sharing as it allows us to generated money based on the advertisement in Sintok Media. At the moment, a lot of graduates

are facing challenges to get jobs that are related with their studies. Therefore, our approach to expose students on how to generate money with social media application at least can help them to be independent before they can be appointed as a worker. Hence, the establishment of Sintok Media not only helps us in managing the student's projects but it also prepared students with the current edge technology so that they are well prepared after they finished their studies in university.

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An Investigation on the Implementation of Technical and Vocational Education and Training in Malaysia

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Abstract

This paper is interested to investigate the current scenario of TVET in Malaysia with objectives (1) to compare the TVET programmes offered in the public and private agencies, (2) to examine the level of knowledge about the TVET among the university's community and (3) to investigate the issue of gender equality in term of enrolment in TVET programmes and employability of their graduates. The study used the primary and secondary data and have been analysed by using statistical descriptive and parametric methods. The finding from descriptive analysis revealed that, the number of programmes offered by the public sector are more than the programmes offered by the private sector and this sector focus more on manufacturing and construction. Meanwhile, finding from the parametric method reveals that there is gender equality in TVET programmes. From the study we can conclude that there are several issues need to be tackled by the government of Malaysia. First, synchronisation in the management of the TVET programmes between public and private agencies are required to ensure a very good management especially in terms of monetary policy and number and types of programme offered. Second, this study has also discovered that the community in Malaysia is still unaware about the TVET programmes.

Keywords: Technical Vocational Education and Training, TVET, gender equality, t-test method, parametric method, descriptive analysis

Introduction

Malaysia is embarking towards the era of IR 4.0 and to make the journey possible is by preparing its youth with knowledge and skills that are required by the stakeholders of IR 4.0. The preparation hopefully be able to drive Malaysia' human capital as an engine for economic growth. One of the ways to groom this talent is by having a Technical Vocational Education and Training programme (later known as TVET) in Malaysia education system. An example of the country who takes TVET as the main pillar in its educational system is Germany (MOHE, 2017). The TVET in Germany is designed with objectives to provide the employees with human capital who has broad range of technical knowledge and skills and to ensure that students in Germany are supported with formal education and able to succeed without dismissing any student who is performing poorly (Ugwoke, Ezeji, Edeh & Etonyeaku, 2016). In Malaysia, Germany has been a role model for TVET and with the guidance from Germany, there are series of initiative and improvement have been done to empower the TVET in Malaysia (Rasul, Hilmi, Ashari, Azman, Amnah, & Rauf. 2015). The empowerment of TVET has been taken seriously where it has been discussed in the Tenth Malaysian Plan of 2010-2015 (PM Department, 2010) for future direction of TVET in Malaysia.

Nonetheless, there are several challenges and drawbacks in the current implementation of the TVET in Malaysia. Firstly, the TVET had always become the last option for underperformed students with low academic qualification. Should not the TVET becomes the popular academic programme to be selected by excellent students, in par with the other academic programmes too, since the TVET graduates have been promised with good job, lucrative salary and bright future? (News Straits Time, 2019). Secondly, the government has an issue to control the quality of the TVET graduates due to poor administration, lack effective coordination and monitoring system within the overall system with too many stakeholders (Thesundaily, 2019). In fact, the programmes offered in TVET are teach at 405 public skill training institutes and 584 private skills training institutes (MOHE, 2017) where each organisation has different academic set up and monitoring system. On top of that, the TVET is also administered by seven different Ministries in Malaysia (Thesundaily, 2019). Furthermore, there is also no single oversight body to provide overview of TVET landscape as a whole (Alias, 2019 and Ismail & Hassan, 2013). Thirdly, it is a fact that the percentage of female students worldwide in vocational programmes are only 44 percent and female have the highest rate in unemployment (UNEVOC, 2016). This fact has raised a question to the researchers of this study; is there any gender discrimination in the TVET programmes offered in Malaysia? Due to the three aforementioned challenges, this study is interested to investigate the current scenario of the TVET in Malaysia, in terms of its implementation and the perception of the community in one of the universities in Malaysia towards this programme with objectives (1) to compare the TVET programmes offered in the public and private agencies, (2) to examine the level of knowledge about the TVET among the university's community and (3) to investigate the issue of gender equality in term of enrolment in TVET programmes and employability of their graduates.

Literature Review

There are a lot of benefit gained from the implementation of the TVET in several countries all over the world. The TVET is believed can be a part of component in an education system (Oketch, Green & Preston, 2009) and it should be an agenda for international and national policies (MOHE, 2017). The TVET also can be said as an instrument to prepare people for occupational fields. It hopefully can help the people participation in the world of work (UNESCO, 2001 and NUFFIC, 2010) and more effective to increase the employment rate and income for the unfortunate group of people, which driven by the market demand from all over the world (Adams, 2011). As a result, the TVET can be one of the best ways to reduce poverty, since it promises the people with lucrative salary and incentive (The Malaymail, 2019 and Abdullah, 2019). This is due to those who are graduated from the TVET academic programmes are those who are technologist, multi-skilled and have creative knowledge, which have higher demand from the IR 4.0 industries (MOHE, 2017). It is expected that the rate of unemployed graduates will be reduced as many job opportunities suit to the TVET graduates will be generated in near future (Nurhaeni & Kurniawan, 2018, NUFFIC, 2010, UNESCO, 2001 and Fawcett & Howden, 1998, pg. 8).

The history of TVET in Malaysia begins with an establishment of a Trades School in Kuala Lumpur back in 1926 (JPM, 1965). The purpose of the establishment of the Trade School is to provide the trade's education to the youth. Since then, in the past 93 years ago, there are series of initiative and improvement have been done for TVET empowerment in Malaysia (Rasul et al., 2015). The TVET now is monitored by the Department of Skills Development (DSD), under the National Skills Development Act (NASDA) (DSD, 2019). The function of

DSD are to promote and coordinate strategies of the TVET programmes and develop and control the TVET system. Under the DSD, a certification scheme known as Malaysia Skills Certificate (MSC) is awarded to graduates who pass the programme through training and job experiences (DSD, 2019). Other than MSC, there is also a National Dual Training System (NDTS), which introduced in 2005 as an alternative to strengthen the training transmission, with involvement and cooperation from industries. It is reported that 138 companies involved with NDTS in 2012 (Rasul et al., 2015).

There are many researches have been done to study the effectiveness of the implementation of the TVET programmes in several countries. Baraki and Kemenade (2013) adopted the realistic evaluation approach by Pawson and Tilley (1997) to investigate the scenario of the implementation of TVET in Ethiopia. The study reveals that the Ethiopia's TVET system has adopted international best practices and the recognition from industries towards its TVET graduates increased gradually from 2010 to 2012, since the TVET has been introduced in 2008. Meanwhile, Rasul et al. (2015) studied about the effectiveness of the management of the TVET programmes in Malaysia. They used the document analysis technique by skimming, reading, and interpreting all related documents in order to collect the data and information. The study discovered that multiple ministries and certifications have led to confusion in deciding the amount of starting wage and the quality of the employees, thus created bad perception among the public towards the TVET education. Besides, it affected the credibility of the TVET programmes where the employees have trust issues with the qualification and the value of the skills training provided under the TVET. Other studies are by Triki (2010) investigating the TVET in Libya, Dike (2013) examined the opinion of Nigerians about the TVET in their country, Ismail (2019) explores the significance of TVET policy issue and the challenges facing design and implementation of this policy in Kurdistan Region and Ali, Che' Rus, and Abd. Razak (2019) investigating the relationship between public expenditure for technical and vocational education and employability skills of the graduates of vocational colleges in Malaysia.

Methodology

This study used the primary and secondary data. The primary data are obtained through survey collected at one of the faculties in a Malaysia public university. The questionnaire survey was adopted from Dike (2013), which covering the level of knowledge about the TVET. The questionnaire was distributed among lecturers and students of the faculty and the sample has been chosen in random from the list of 899 students and 75 lecturers. The difference of knowledge level about the TVET programme between lecturers and students is tested with statistical parametric independent samples t-test. The alternative hypothesis of the study is there is a difference between the average of knowledge level of lecturers and average of knowledge level of students. Meanwhile, the secondary data are gained from the Ministry of Education Malaysia (MOE) for statistics of accredited TVET programmes offered in Malaysia and the Skills Development Department (SDD) for number of students who enrolled and get employed from the programmes between January 2002 and June 2018. The data were then analysed with descriptive statistics and independent samples t-test analysis. The descriptive statistics is used to describe the basic features of the data in a study. It provides a simple summary about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data. The independent samples t-test analysis is a parametric test that tells us how significant the differences between groups are. In other words, it lets us know if those differences which is measured in means or averages could have

happened by chance.

Results and Findings

This section is organised based on the analysis done to achieve each of the objective of this study and as follows.

Objective 1: The Comparison Between Public and Private Agencies

Table 1 tabulated the statistics of accredited TVET programmes recorded between January 2002 and June 2018. There are two agencies responsible to offer the TVET programmes in Malaysia with 22 types field of works, involving 405 public skill training institutes and 584 private skills training institutes, which are available to teach the programmes under each of the work field. They are 2,899 programmes teach in the public agencies and 2,192 in the private agencies. This shows that the TVET programmes are offered more in public agencies comparing to the private agencies. From the perspective of work field offered, manufacturing covers more than 50% of number of programmes (i.e. 1,248 programmes) under the public agencies and almost 50% under the private agencies (i.e. 710 programmes), followed by construction work field under the public agencies (i.e. 577 programmes) and information and communication work field under the private agencies (i.e. 264 programmes). Other than these three work fields offered in both agencies, there are the other five work fields with more than 100 programmes offered, such as (1) Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles, (2) Administration Activities and Support Services, (3) Professional, Scientific and Technical Activities, (4) Agriculture, Forestry and Fisheries and (5) Other Services Activities. Unfortunately, there is very little programme offered for heavy duty work task, such as Water Supply; Protection, Water Management and Recovery Activities, Mining and Rolling and Electricity Supply, Gas, Warp and Air Conditioning. This is due low demand from the youth since they are quite hard to study which require specific and sophisticated knowledge and skills (Zaliza, Arasinah, Kiong & Mohd Hasni, 2016). Furthermore, these types of programmes are also required high cost for training. But the fact is those programmes have higher demand in the industries especially in oil and gas companies (Ogundu, Enyiche, & Obed, 2019 and Md Taib, 2016). So, the government should plan and initiate some activities to popularise those programmes among the youth and take a consideration to increase the training cost for those programmes.

Table 1
Statistics of the accredited TVET programmes

No.	Field of Work	Number of Programmes Offered	
		Public	Private
1.	Manufacturing	1,248	710
2.	Construction	577	204
3.	Wholesale and retail trade, repair of motor vehicles and motorcycles	396	211
4.	Information and Communication	168	264
5.	Administration Activities and Support Services	97	225

6.	Other Services Activities	89	191
7.	Professional, Scientific and Technical Activities	127	93
8.	Accommodation and Activities of Food and Beverage Services	34	123
9.	Agriculture, Forestry and Fisheries	103	10
10.	Education	12	10
11.	Transport and Storage	6	58
12.	Health and Humanities Activities and Social Works	5	28
13.	Household Activities as Employed	8	18
14.	National Skills Standard (NCS)	5	13
15.	Arts, Entertainment and Recreation	9	9
16.	Financial Activities and insurance / Takaful	5	6
17.	Water supply; protection, water management and recovery activities	0	7
18.	Public administration and defense; social security activities compulsory	6	9
19.	Mining and rolling	3	0
20.	Electricity supply, gas, warp and air conditioning	1	1
21.	Property activity	0	2
22.	Agency activities ad territory establishment	0	0
	Grand Total	2,899	2,192

Source: Ministry of Education Malaysia

Objective 2: The Level of Knowledge about the TVET Programmes Among Lecturer and Students

The summary of respondents' profile who participate in the survey is shown in Table 2. From Table 2, there are 132 respondents, which 53 of them are lecturers and the rest are 79 students and majority of them are female (72.73%) and aged between 19 and 25 years old (59.85%).

Table 2
The Summary of Respondents' Profiles

Profile Factors	Particulars	Frequency	%
Status	Lecturer	53	40.15
	Students	79	59.85
Sex	Male	36	27.27
	Female	96	72.73
Age	19-25 years	79	59.85
	26-36 years	4	3.03
	37-47 years	39	29.55
	48-58 years	10	7.58

Table 3 tabulated the lecturers and student's knowledge about the TVET general. From Table 3 we can see that majority of the lecturers know about the TVET (88.68%) and half of the students are also known about the programme (58.23%), but the other half of the students are either do know (22.78%) or not sure about the programme (18.99%). This indicates that lecturers have more knowledge about the TVET comparing to the students. This is due to the involvement of lecturers as one of the suppliers in the education system, which enable them to get access for detail information about the TVET as compared to the students, which their role

is merely act as a client in the education system.

Table 3
The Summary of Respondents' Knowledge about the TVET Programmes

Respondents	Answer	Frequency	%
Lecturer	Yes	47	88.68
	No	6	11.32
Students	Yes	46	58.23
	No	18	22.78
	Not Sure	15	18.99

Then, we discuss the results of the differences of knowledge level between lecturers and students, as shown in Table 4. The knowledge differences are about (1) the TVET institutions are needed in Malaysia education system, (2) the TVET programmes are the last choice to be chosen to pursue higher level education, (3) the TVET institutions should be govern by the government, (4) there is a demand of TVET skills and knowledge in industries and (5) the TVET knowledge is important in achieving IR 4.0. However, there are no difference on their knowledge about (1) The TVET involves with machinery and (2) the public TVET agencies are equips with modern teaching and learning technologies. Comparing the level of knowledge about the TVET between lecturers and students, results indicate that lecturers have more knowledge about the TVET in the prospect of the governance of the TVET programme itself, the importance of the programme and the quality of TVET graduates. This finding supports the discussion of Table 3 where lecturers have more access to the information about the TVET programme as they are directly involved in the education system activities, while students merely involve just as clients in the system. But both lecturers and students have same knowledge about the content of the TVET programme, which involves with machines. This is due to the TVET, which synonyms with vocational study has been existed in Malaysia more than 90 years ago and has become a general knowledge among the Malaysia citizen. The lecturers and the students also have same knowledge about the quality of the public TVET agencies, which is very well-known in Malaysia how the government is success in providing a world-class education to all.

Table 4
T-Test Result for the Level of Knowledge about the TVET among Lecturers and Students

Item	P-value
The TVET institutions are needed in Malaysia education system	0.000*
The TVET programmes are the last choice to be chosen to pursue higher level education	0.014*
The TVET involves with machinery	0.746
The public TVET agencies are equips with modern teaching and learning technologies	0.057
The TVET institutions should be govern by the government	0.024*
There is a demand of TVET skills and knowledge in industries	0.020*
The TVET knowledge is important in achieving IR 4.0	0.008*

*Note: * shows significant result from the t-test*

Gender Equality in Enrollment and Employability under the TVET

The statistics of the student's enrolment and graduate's employment from the TVET programmes are given in Table 5. Based on Table 5, from 2012 to 2014, the total number of the male and female students who enrolled into the TVET institutions are 33,796 and 33,657, respectively. While, there are 23,999 males and 24,058 females of TVET graduates have been employed by the industries. In term of the trend of employability rates, there are more than 50% of students succeed to graduate and get employed every year. From the statistics, we can see that there is not much different between male and female in term of the trends of enrolment of the TVET students and employment of the TVET graduates. To further investigate the statistics, we run the independent t-test to examine whether there is a different in gender for the enrolment and employment of the TVET with the hypothesis statement; there is a difference between the average of male and average of female in the TVET programme.

Table 5

The number of students enrol and employs in the TVET programmes

Year	Enrolment		Employment	
	Male	Female	Male	Female
2012	11,001	11,492	0	0
2013	12,170	11,166	0	0
2014	10,625	10,999	0	0
2015	0	0	6,934	7,047
2016	0	0	8,725	7,969
2017	0	0	8,340	9,042
Total	33,796	33,657	23,999	24,058
	67,453		48,057	

Source: Skills Development Department (SDD)

From Table 6, we can see that the p-value is very big, thus we can say that there is no difference between male and female in enrolment and employment among the TVET students and graduates. It shows the existence of gender equality in the Malaysia TVET programmes. Even though technical education women are likely to be denied the right to education with the highest rate in unemployment in the world (UNEVOC, 2016), we believe that gender equality are being promoted in the TVET programmes. The fact is women's today can also work like men in the field of heavy-duty work, such as at the oil rig (Md Taib, 2016).

Table 6

Independent t-test for student's enrollment and employability in TVET

Item	p-value
Students enrollment in TVET institutions	0.982
TVET students employbility	0.989

Conclusion

The implementation of TVET in Malaysia still facing several issues and challenges such as of the governance and management structure for continuous quality improvement and the feasibility of the programme for Malaysia citizen. A lot of works needs to be done for future Malaysia, which must have not just intellectual works, but it also needs a large pool of skilled workers to cater the demand from the local and international industries. For promising success of the TVET, the stakeholders of the TVET should pay attention to the above addressed issues and challenges. To sustain the quality of TVET, synchronisation of TVET among the programmes' providers, government' ministries and agencies are essential for better managed the TVET supply chain, especially management that involve monetary. To promote the TVET to the excellent students, more exposure should be given to the public especially students at secondary schools and their parents about the TVET programmes. On top of that, support and encouragement from the parents are also important to encourage their children to choose the TVET program. This is possible with continuous promotion from the TVET agencies.

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Transforming Teaching Through Digital Immersive Learning Experience (DILEX): Evidence of Students' Learning Outcome

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Abstract

Digital Immersive Learning Experience (DILEX) is a transformative teaching project aims to provide meaningful and immersive learning experience to the future teachers through digital-based learning activities. This project also aims to make assessment as a motivating and engaging learning process by involving 34 postgraduate student-teachers in authentic learning experiences through the development of interactive educational game and get involve in an international innovation competition. This project was inspired by Create-Share-Collaborate© instructional strategy and designed within the qualitative approach of Scholarship of Teaching and Learning (SoTL). Through this project, students engaged in meaningful learning activities through authentic tasks, directly involved in active learning (learn by doing); and reflect on the teaching and learning processes. Analysis of students' work and their reflection indicate that the impact of this project on the students' learning outcome and achievement are highly positive. The outcome of this project implies the importance to develop future-proof teachers that are able to cope with the educational and technological transformation through the production of innovative and creative educational products.

Keywords: immersive learning, technology-enhanced learning, reflective e-portfolio, alternative assessment

Introduction

Teachers of the 21st century are expected to be creative, innovative and transformative in the teaching and learning process to align with the needs of the digitalized generation. However, the current innovation and integration of digital technology among Malaysian teachers are still at a minimum level (Majeed & Yusof, 2015; Ghavifekr & Rosdy, 2015; Ghavifekr, et al., 2016; Sailin, 2018). In addition, there are a lot of criticism that today's classroom has not changed significantly compared to the last century (Iwuanyanwu, 2019; Karakas, Manisaligil, & Sarigollu, 2015). Therefore, it is our responsibility to develop the future teachers to be more competitive, creative and innovative in facing the IR 4.0 challenges, the disruptive education phenomenon as well as the "open market" education industry. This is in line with the Malaysian Education Blueprint 2013-2015 that highlights the importance of transforming higher education learning into more personalised learning experience by using technology-enabled models to develop students' talent.

This DILEX project has been embedded in a university course namely Technology and Innovation in Education, within a Postgraduate Diploma in Education Programme at Universiti Utara Malaysia. 34 students that involved in this project are future teachers that will face the ever-challenging educational landscape. The primary objectives of this DILEX project are:
1. To provide meaningful and immersive learning experience to the future teachers

through the digital based teaching and learning activities.

2. To make assessment as a motivating and engaging learning process by involving students in authentic learning experience through development of interactive educational product and participation in innovation competition.

This paper is part of an ongoing DILEX project and thus only provide brief overview about the DILEX project and some evidence on how the course learning outcomes have been achieved through this project.

The Theoretical Underpinnings

The DILEX project is inspired by the Create-Share-Collaborate© instructional strategy (Sailin & Mahmor, 2016) that emphasizes on three aspects of student learning experiences; (i) students create their own knowledge in the form of digital product, (ii) students share their product creation with their peers, instructors and wider audiences to get feedback and responses for improvements, and (iii) students collaborate with peers, instructors and educational stakeholders to create their product in order to achieve the learning outcome. This strategy allows students to develop an understanding towards a content subject, find solutions to a problem, generate ideas and design a real product. In addition, students engage in meaningful learning activities through authentic task, directly involved in active learning (learn by doing) and reflect on the learning processes.

The Create-Share-Collaborate© instructional strategy is underpinned by the meaningful learning theory within the constructivism (Jonassen, et al., 2003; Howland, Jonassen & Marra; 2012) and connectivism perspectives (Downes, 2010; Siemens, 2005). This instructional strategy when applied in the teaching and learning can provide students with meaningful and immersive learning experience. Students are directly involved in the construction of knowledge and make sense of their experiences by engaging in active cognitive and affective domains through authentic experience and reflecting on those experiences by utilising digital technologies (Sailin & Mahmor, 2018).

Scholarship of Teaching and Learning

This DILEX project is designed within the Scholarship of Teaching and Learning (SoTL), a systematic research approach that analyses the teaching and learning process. SoTL encourages systematic academic inquiry into teaching and learning practices within the classrooms and sharing the findings with other academicians and practitioners for wider benefits (Felton, 2013). There is a wide range of methodological approaches for conducting SoTL. It can be either quantitative or qualitative in nature or combination of both (Hudball & Clarke, 2010). In this DILEX project, we adopted qualitative approach of data collection and analysis, such as the content analysis of students' works based on an evaluation rubric and thematic analysis of student's reflective writing in their e-portfolio. These data were gathered from 34 future teachers taking a course namely Technology and Innovation in Education within a Postgraduate Diploma in Education Programme.

Alignment with the Course Learning Outcome

Digital Immersive Learning Experience (DILEX) is a non-lecture approach that require students to participate and engage in digital based learning activities and assessment tasks to achieve the course learning outcome (CLO). The CLO catered for this project is *"At the end of the course, students should be able to design innovative product for teaching and learning"*. There are two assessment tasks that students required to fulfil for achieving this CLO; (i) Interactive Educational Game, and (ii) Reflective E-Portfolio which considered as authentic experiences for the students.

CLO	TEACHING METHOD	ASSESSMENT TASKS
4 Design innovative product for teaching and learning (C6, P4, A4)	**Digital Based Teaching and Learning Activities**	**Authentic Experiences: Interactive Educational Game (30%)** - Develop Innovative Educational Product - Participation in Innovation Competition **Reflective E-Portfolio (20%)**

Figure 1. Alignment between the CLO, teaching method and assessment tasks

To suit the nature of the course syllabus and to achieve the CLO, this course is conducted mainly through digital-based teaching and learning activities where students have the opportunity to immerse with the course contents and achieve the learning outcome through the integration of various digital technologies such as Flipgrid, Padlet, Whatsapp Group, Augmented Reality Apps and YouTube Channel. For example, students represent their products' development progress in a Padlet wall to enable sharing and feedback from peers and instructors.
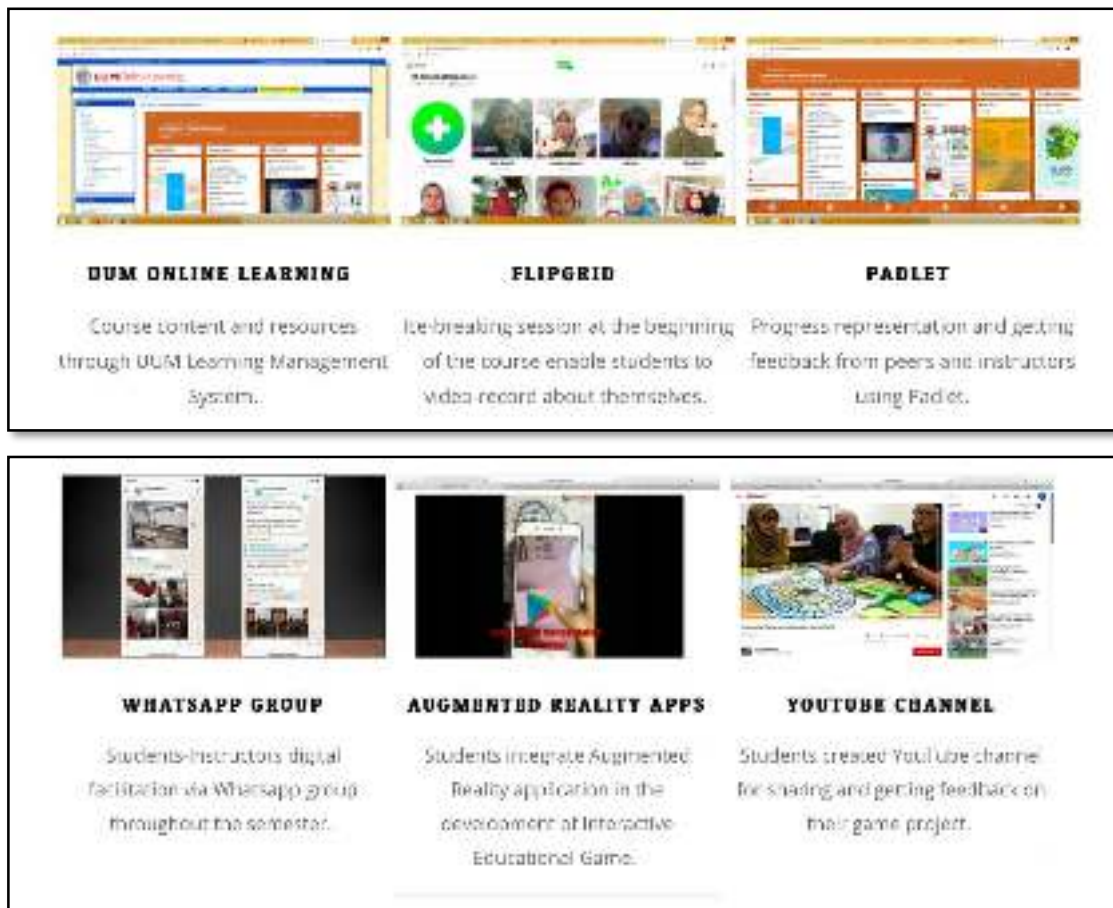
Figure 2. Examples of learning activities conducted using various digital tools

Learning Outcome Achievements

The highlight of DILEX project is on the authentic experiences in which students have to design and develop an interactive educational product and share their creation through showcase in an innovation competition as well as in their e-portfolio. At the end of the course (Semester A181), the CLO was achieved through the followings.

Development of Innovative and Creative Educational Products

Through this DILEX project, it was found that students are able to design and develop innovative and creative educational products that can be used in their future teaching and learning practice. A total of six products were produced by the groups of students that consist of 4 to 5 members. The products or games also integrated some digital technologies such as Augmented Reality application, QR code, computer programmes and other gamification tools. The following is an example of one of the products, namely OMG: Obstacle Maths Game, it's description, together with a poster and montage video prepared by the students.
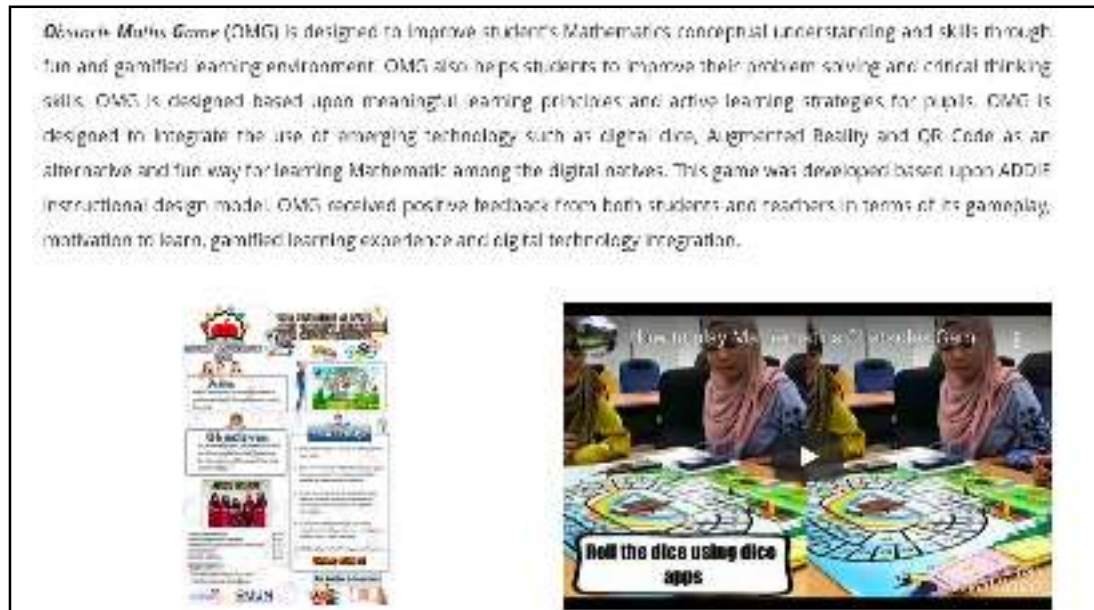
Figure 3. Example of the innovative educational product created by students

International Recognition

In this project, students are required to participate in an exhibition competition to get feedback from external experts and potential users as well as to make their product reachable by wider audiences. Involvement in an innovation competition is a strategy employed by the instructors to gamify the learning process in which group of students will also get some marks based on their achievement in the competition as part of the overall mark for the project. For Semester A181, students managed to take part in an *International Conference and Exhibition on Global Education (ICEGE)* held in November 2018. Out of the 6 products created and exhibited by the students, 2 product received Gold Medal, 2 products received Silver Medal and 2 products received Bronze Medal in the exhibition competition. The name of the product, type, integration of digital tools in the game development and the achievement are listed in Table 1.

Table 1
List of educational products produced by students and achievement

Product Name	Product Type	Integration of digital technology	Achievement
OMG: Obstacles Math Game	Board Game	QR Code and Augmented Reality	Gold Medal
Power Speed	Digital Game	Computer Program	Gold Medal
Zappy Math	Board Game	Augmented Reality	Silver Medal
The Earth Captain	Digital Game	Computer Program	Silver Medal

Dent CAS	Electronic Game	Augmented Reality	Bronze Medal
SUNSHINE vs RAINBOW	Spinner Game	QR Code	Bronze Medal

These achievement during the exhibition competition indicate that the students are able to demonstrate their ability to create an innovative product and receive recognition from the external assessors. During the exhibition, students get the opportunities to demonstrate their products to the wider audience and get feedback for improving their product or prototype.

Figure 4. Students taking part in an innovation competition

Reflective E-Portfolio

This project also integrates reflective e-portfolio, in which students reflected on the learning activities and showcase their product in their respective e-portfolio. At the end of the course, a total of 34 reflective e-portfolios were produced by each individual student.

Figure 5. Examples of the student's reflective e-portfolio

Content analysis of the student's e-portfolio based on a rubric developed by the instructors indicate that students have deepen their learning and develop soft skills through the e-portfolio development. Soft skill elements such as creativity, digital literacy, information management, and digital communication are evident in their e-portfolio. These findings are triangulated by student's reflection of the learning activities in their e-portfolio. The followings are example of student's reflection that indicate students valued the soft-skills development that they gain through this DILEX project.

Table 2
Example of student's reflection and the soft-skill

Soft skills	Example of student's reflection
Creativity	*The e-portfolio development has increase my creativity. I can showcase my ability not only through writing but through the video. I am also become more creative in coordinating the information layout and be more selective on what information to be put on my e-portfolio.*
Digital literacy	*In this project, I can develop my potential to improve my technology because I learn many ways to embedded information in our group's product and e-portfolio such as through QR Code and links. I can showcase that I have extra knowledge in IT in the e-portfolio.*
Information management	*I learn how to arrange the information in the e-portfolio more effectively. The choice of theme and colours are very important so that my information can be seen easily. Other than that, only important information need to be showcased in the e-portfolio so that it will give added value to myself.*
Digital communication	*Through the e-portfolio, I can tell more details about the project or innovation product that I have created. Reader of my e-portfolio can get the information and processes involved.*

Conclusion

This DILEX project implies the importance of digital based learning activities and authentic learning experiences in developing future-proof teachers through the creation of innovative and creative educational products. The authentic experiences that the future teachers gain from this DILEX project are also very important for their professional development. Apart from that, students also demonstrated their creativity, digital literacy, information management and digital communication skills throughout this project. This project is hoped to prepare teachers that are able to cope with the educational and technological transformation. The aapproaches employed in this DILEX project is consistent with the previous literature that highlight the importance of authentic learning experiences to help students developing appropriate skills and effective understandings of the subject area, as well as to sustain learning (Kearney, 2013; Stein, Isaacs & Andrews, 2004).

This project has given rich SoTL data to the instructors especially from the student's reflective writing that need further analysis. Thus, future work from this DILEX project will analyse and share the findings on the student's learning experience and motivation that they gain from this project as evident in their reflective e-portfolio.

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Alternative Assessment in MOOC-Based Courses

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Abstract

Part of the move in redesigning higher education to meet the challenges of 21st century is to provide quality education in terms of access and equitable opportunities for lifelong learning to occur in line with the sustainable development goals. Massive Open Online Course or highly referred to as MOOC has the potential as an alternative platform for higher education providers to design their curriculum to meet this demand of promoting lifelong learning. This paper shares experiences in monitoring and implementing two courses, which was developed in the form of MOOC for postgraduate students. It also examines ways of alternative assessment being implemented in MOOC based courses. Data was collected via content analyses of evidences provided through MOOC within a period of a semester the courses were offered. Providing delivery and assessment that focuses on students' learning is crucial, especially for outcomes based education. Alternative assessment, which still has yet to place a firm footing in higher education in Malaysia for conventional face-to-face courses, may seem more daunting to be implemented in MOOC based courses. However, implementing alternative assessments via MOOC provides potential not only for formative assessment but also for self and peer assessment to take place especially for the postgraduate students taking these courses.

Keywords: Massive Open Online Course, Alternative assessment, postgraduate, higher education, student centered learning

Introduction

Part of the move in redesigning higher education to meet the challenges of 21st century is to now embrace the *opening doors* concept to provide opportunities for learners regardless of their location to attain a form of life long learning and qualification through online education and the use of technology (Chai & Kong, 2016). This include technology based assessment and the use of web. 2.0 tools as ways of providing technology based assessment. The impact of the use of technology not only to deliver the curriculum but also assessment has changed the way learners pursue learning (Duderstadt, 2012).

From various parts of the world, higher education providers began investing on the idea of developing online courses that may benefit learners all around the world (Mullen et al., 2017; Baragash & Al-Samarraie, 2018). This global education avenue that caters for the massive audience is designed in the form of Massive Open Online Course or highly referred to as MOOC (Sinclair, Boyatt, Rocks & Joy, 2015).

MOOC, depending on the types of courses especially if it is life long based (Duderstadt, 2012), enables learners to learn at their own self-paced mode (Mullen et al., 2017; Baragash &

Al-Samarraie, 2018). Learners are free to enroll and communicate with not only the instructor as facilitators of the course but also the community of learners that enrolled in the course. This is also similar for MOOC that was designed for attaining credit transfer for qualification purposes, although it would be time based depending when the semester begins as differ one institutions from the other (Kaplan & Haenlein, 2016).

Although MOOC has many advantages, it does not always come without challenges especially sustaining learners' motivation to pursue and complete the course they have enrolled, assessing students especially for credit purposes. These challenges require instructors to equip themselves not only creativity and innovative minds in developing an enticing course to begin with but also creating interesting activities to sustain learners' engagement as well as communicate and motivate the learners so that successful completion is attained (Dabbagh et al., 2015). Thus it is necessary to understand how learners learn through MOOC and this can be derived from the assessment that is used when delivering lessons via MOOC. Understanding the learners' learning process captured via assessments benefit instructors as developers and course instructor to continuously make improvement on their MOOC (Kesim & Altınpulluk, 2015). However, as much as MOOC is seen to provide alternative platform for immersive and learning engagement to occur, there is a need to also consider alternative ways of providing assessment to obtain evidence of learning. Therefore there is a need to examine ways of using alternative assessment in MOOC based courses that are offered to students.

Methodology

Using constructivist approach in designing the lessons and assessment, this paper examines and shares the initiatives as well as personal experiences of the first author when developing and teaching via MOOC as well as provision of alternative assessments for two taught postgraduate courses. Information on the courses, description of the learners, alternative assessments and challenges faced when delivering and assessing in this alternative ways as well as planned action for improvements were shared. Using qualitative approach in the form of narratives, data was collected and analysed via content analyses of evidences provided through MOOC within a period of a semester the courses were offered. Personal narratives are used to provide personal contexts in order for the readers to understand the processes of the instructors' critical views when designing and reflecting (Khalaf, 2018), when implementing alternative assessment in MOOC based courses.

MOOC for Human Lifespan Development and Understanding Learners: A personal journey

When I completed my first MOOC on a course entitled *Human Lifespan Development,* one of the courses offered under the Masters in Educational Psychology (M. Ed. Psych.) programme, I thought that was an arduous one and a half year journey, especially having to juggle between many commitments as an academe. In addition, I had to also design and develop the course via MOOC and to fulfill my administrative duties that I had which apart from the tasks of an academic faculty member requires one attending many meetings and meeting deadlines.

However once the course was completed I was eager to pilot test it to see reactions and feedback from my postgraduate learners. The only way to obtain this information is to truly

provide the previous conventional face-to-face course into MOOC-based. This task that required committed concentration in handling a new way of delivering and assessing, can only be done successfully if the university agreed to release me from the administrative duties, to which the intention was attainable. Nevertheless, in the beginning of 2018, I was also asked to teach a new course, which I helped designed for a new programme entitled Postgraduate Diploma for Higher Education Learning and Teaching (PGDHELT), a programme designed for new lecturers in institutions of higher learning. The programme was designed to be heavily online, with only three face-to-face meetings. Taking into consideration that the learners enrolled in this programme are working lecturers pursuing on a part-time basis there was a need to design a more systematic and cohesive structure course delivery as well as assessment to help the learners become more engaged in the learning process to which MOOC was an available option. I have decided to develop another MOOC course but this time I just had about two months to get it all sorted before the course commenced.

The courses and description of learners

This section elaborates further on the courses and samples of the designed task as well as samples of alternative assessments, the description of the learners as well as challenges that the learners and I faced when the two courses were delivered via MOOC.

Human Lifespan Development

Human Lifespan Development is a course that students often find interesting and able to relate to because it generally is about understanding how human develop which can be applied to everyone around them. The course has 11 topics which include theories of human development, principles of human development, and stages of development from conception, birth, infancy, early childhood, middle childhood, adolescence, young adulthood, middle adulthood to late adulthood.

Generally, most of the students enrolled in the course are in-service teachers; lecturers as well as some are fresh graduates with a first degree in education programme. Depending on the enrolment of students into the (M.Ed. Pscy.) programme usually the enrolment of students varies from 7 to 15 numbers of students. Since these two courses were newly designed via MOOC and there was a need to pilot test the two MOOC-based courses before it was ready to be offered to the massive learners, this paper only concentrates on findings and evidence related to students enrolling in the course in Universiti Utara Malaysia only. Especially due to the number of students the course delivery has always been student centered in nature, which involves students preparing mind-map, analyzing and providing critique on cases given, role-play, seminar presentations and reflection from using paper to Web 2.0 tools.

However, beginning A172, which related to the end of 2017, the course was offered and taught through MOOC.

Figure 1. Interface of Human Lifespan Development MOOC
https://www.openlearning.com/courses/sgdy5013-human-lifespan-development/HomePage

As shown in Figure 1, the interface above the modules/activities section entails the sub topics and tasks given, for example sharing of mind map below. This task serves as a formative assessment in which provides feedback to the students before they submit their summative assessment which is the developmental table which also requires them to compare developmental theories taught in the course.
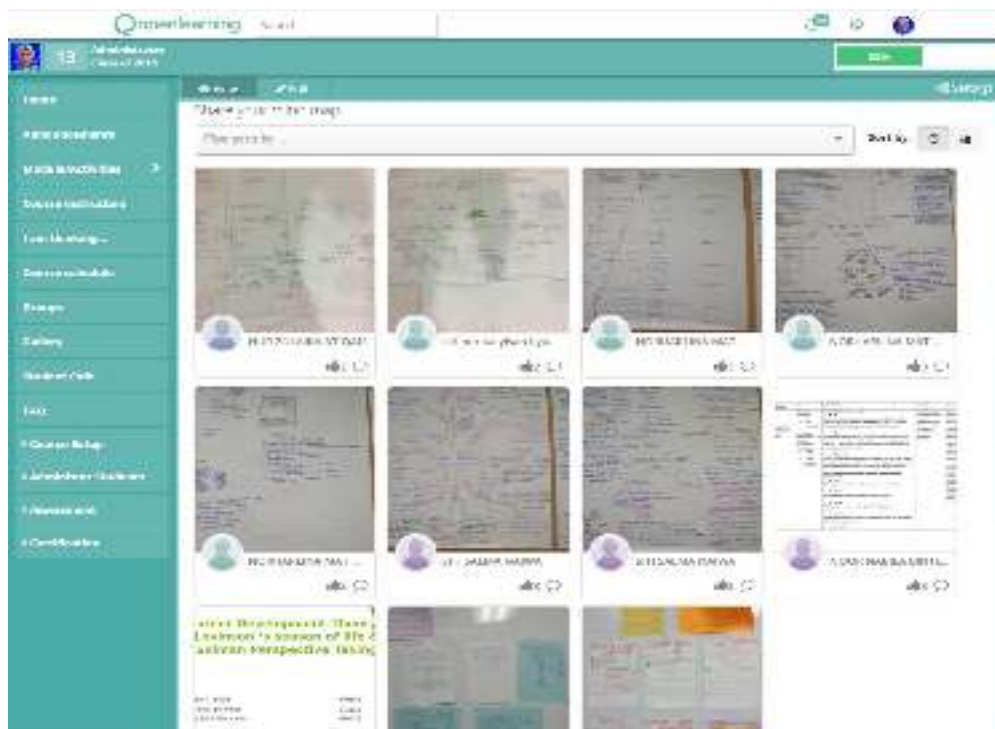
Figure 2. Samples of task on mindmap shared by students

Students were also given a case to solve in which they responded to the way in which they perceive it should be best solve the problems faced by the protagonist i.e. Mrs. Chin.

Obviously I responded as the protagonist whilst providing learning mediation through feedback to the students either to praise, to ask for further explanation or to probe them to think further.
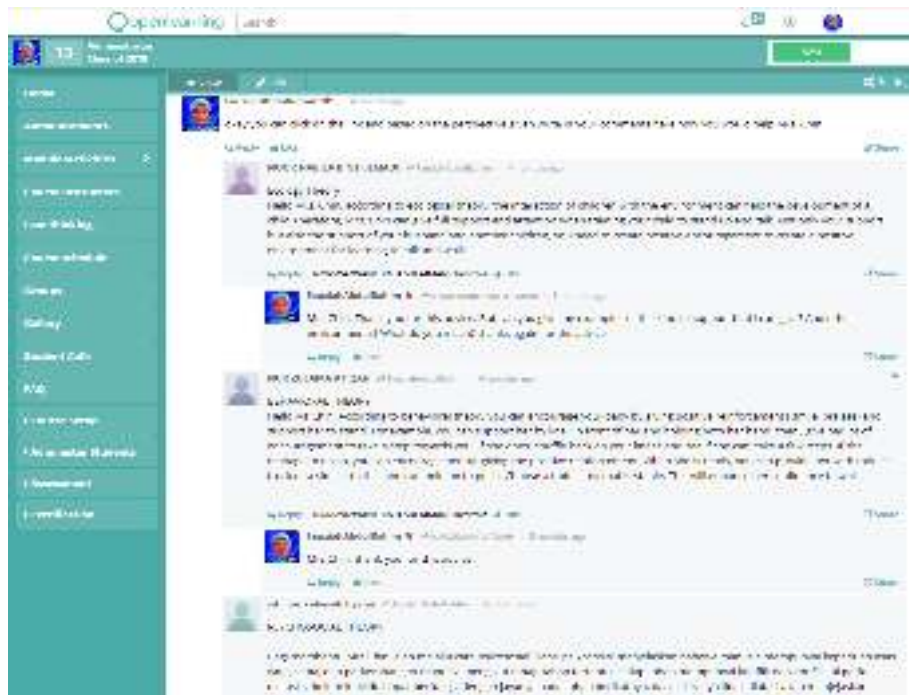
Figure 3. Responses from the lecturer on students task

Apart from that, in Figure 4, humour (sekarang juga saya pergi beli…) was also used as a point to motivate students to continue partcipating as they initially felt uncomfortable responding in writing and especially in English.

Figure 4. The use of humour as a form of motivating students to engage in the lesson

Decription of learners in Human Lifespan Development

Most of the students were teachers 3 being secondary teachers and 2 special education teachers in primary schools, while one each works in a college as a lecturer while the other works in a factory as a trainer. Coincidentally all the students this semester were women. The three secondary teachers have working experiences that ranges between 5 to 15 years. The two primary school teachers have between 8-10 years of teaching experiences while the other two students had less than 7 years of services in their respective places.

Initially it was challenging to get the students to navigate via MOOC even after giving the introductory video and explanation on how the course was to be delivered. Only one of the secondary teachers, apparently the most experienced, was the only one participating on a weekly basis while the rest will do three work load in a week. During one of the face-to-face sessions, I obtained some information that explains the nature of the problem. The most experienced teacher was able to get herself involved diligently because she was doing her postgraduate studies on a full-time basis whilst the rest were on part-time basis. In addition to that, this was her last semester after having completed all her courses whilst completing her writing of the final project. So in comparison with the rest of her classmates, she had ample time to complete the task given. The rest however because of their work-load in their respective settings and having to take more than one subject for this semester meant they had less focused time for what is required in completing important tasks in the MOOC. Understandably due to their background and blended nature of the course I did not expect them to have 100% completion of all tasks because that will be too overwhelming for them especially being newly exposed to MOOC. Hence time management was a problem for these students in this course.

Taking that into consideration assessments in the form of group critique on a given case, producing developmental tables in groups and portfolio done individually were given for the students to undertake related to the course learning outcomes respectively. Given a case, the students in groups were asked to search for relevant articles that could help solve the case. The students were asked to develop a critique on the articles chosen whilst solving the case given and being assessed on their ability to think critically and apply to the case given. The developmental table assessment required the students in groups to compare the different milestone across the lifespan and their ability to retrieve and manage information they gathered. The final assessment, which was portfolio, assessed the ability of students to use the developmental theories that they have learned to solve a case that they develop. The students were also required to conduct intervention that benefits the respondents in their case. Rubrics for each of the assessment were designed taking into consideration the learning outcomes as well as the related softskills.

Understanding Learners

The other MOOC, which was developed after *Human Lifespan Development,* was entitled *Understanding Learners*. Unlike *Human Lifespan Development*, which I have taught many semesters, the latter was newly offered. To help students, who are UUM lecturers, navigate the course with ease, I have decided to design the course in a modular basis.

Figure 5. The interface of Understanding Learners MOOC
https://www.openlearning.com/courses/sghe5053-understanding-learners/HomePage

Whilst *Human Lifespan Development* details all the topics covered under one menu (Module/Activities), this course had four main modules with which sub topics and tasks were embedded in each module. The four main modules include 1) Learners and Learning in Higher Education: Principles and Practices; 2) Perspectives and Theories of learner centered pedagogical principles; 3) Learner Engagement and Motivation and finally 4) Engaging and supporting learners' learning. Like *Human Lifespan Development*, the students in this course also felt the relevance of the course when they began exploring it because the course helped them to better understand their learners who sometimes may come from different generation. Some of the students, who are also from the industry, lack the knowledge and skills to cater for the younger generation. Though they started the programme blaming the new generation in relation to commitment to work ethics among others, after taking the course and understanding the characteristics of the learners they realised how through collaborative work, enabled students from various generation (e.g. Gen X, Gen Y and Gen Z) to focus on the strengths and collaborate to complete tasks given in a more efficient and creative manner.

This was achieved when they too had to work in groups and naturally because of the varied backgrounds they come from either Generation X or Generation Y, they began to learn from and with each other in tolerance.

Description of the learners for Understanding Learners

It was interesting to observe how initially it was the younger ones that were active in the MOOC activities. However, after the first face-to-face meeting I discovered that the more experienced students were given administrative posts that apart from their daily academic routine were too demanding for them to be focussed. This was daunting for them when doing the assignments as well as tasks given via online, requires them to diligently do weekly visits to the platform to watch, read, think or execute tasks given.

Nevertheless, this had to be dealt in a *walking on thin-ice* analogy because reprimanding mature students were unwise especially if they were, in this case in which the data was collected, were mainly colleagues from the same institution. In order to convince them to

complete the tasks given online, the students were required to introduce themselves and share their views about how they learn and how they perceive how their students learn- somewhat in a ripple effect manner. Completing the activities and assessments became an eye opener to some and soon they become more active in the discussion and tasks especially the experienced ones. Observing their thoughts and reflection it was clearly distinct that those due to their experiences tend to have deeper thoughts in their reflection and appreciated the change in them as a result of now beginning to understand their learners. This class had 10 men with 3 being from Generation X and the rest Generation Y. However, the women in the class, who mainly were from the Generation Y, outnumbered these men.
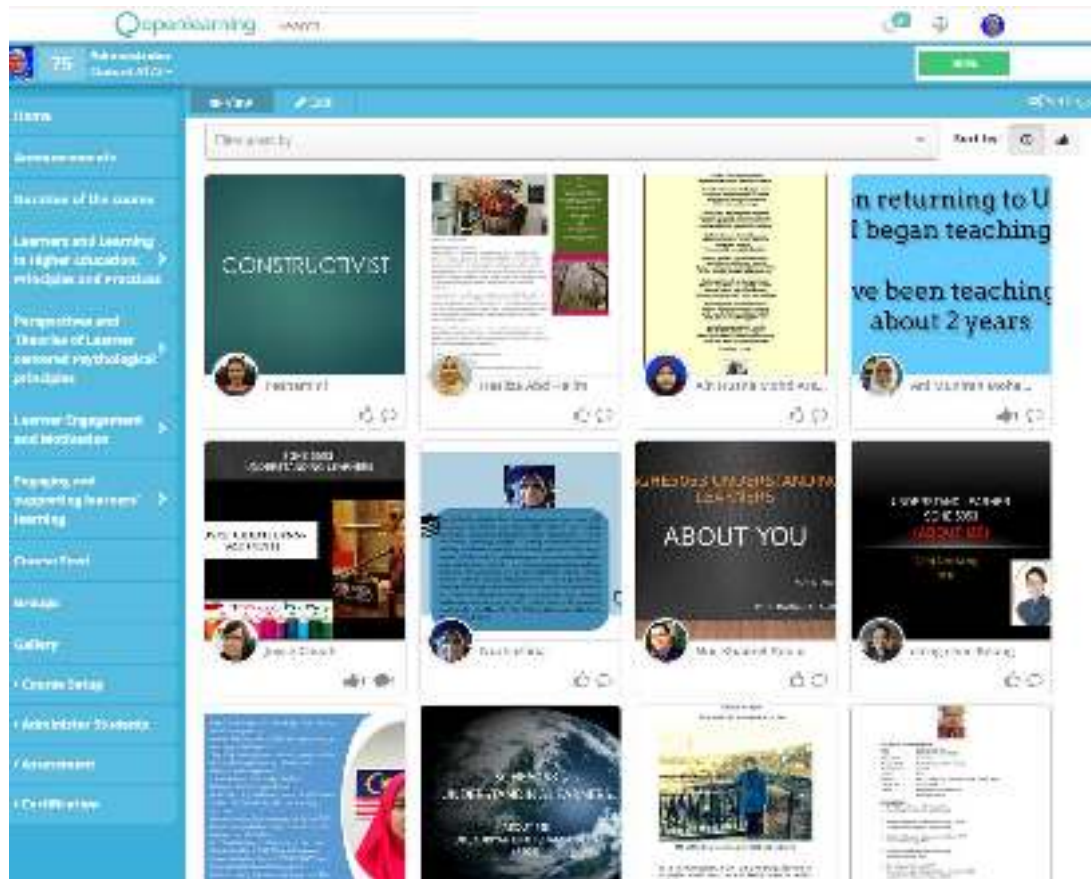
Figure 6. Samples of students' assessment in Understanding Learners

Tasks to describe themselves as learners and their views about what was read as part of reflections, were also asked to be done. This was part of the alternative assessment.

Table 1
Rubric for the assessment on understanding learners

Criteria	0	1	2	3	4	Comments
Describe learners information in a meaningful way	No attempts	Description provided minimally.	Partial information provided to describe learners. It could have been done better.	A good attempt to describe the learners with relevant information	Detailed description of the multiple learners provided with meaningful explanation to the readers.	
Use appropriate tool to gain information	No attempts	Dubious description was done on the way information was gained	Partial information provided to describe the use of tools	A good attempt to describe the way information were gathered	Detailed description of relevant tool(s) used and evidence of how information were obtained	
Describe elements that are required in the task	No attempts	Unsatisfactorily done.	Partial information with some elements required missing	Description of the elements required were done well	Clear description with added information that made the work exceptional	
Describe how higher education provider can help students achieve their potential	No attempts	Unsatisfactorily done that it caused confusion	Some descriptions are not relevant to the information.	Acceptable description.	Detailed description is provided to show serious thoughts have been made to relate to information and suggestion	
Coherence in presentation	No attempts	Very confusing	There were substantive portion of the work that was hard to follow	A good attempt to present in a relatively coherent manner	Exceptionally done making reading fun and very easy to understand	
TOTAL 20%						

Rubric was designed to constructively align the learning outcomes to the criteria set in the assignment.

Figure 7. Students responses on a task given as a formative assessment

Challenges and reflection

This experience of conducting courses via MOOC was not only new to me but also to my postgraduate students. Naturally each of us faced various challenges along the way. As for my postgraduate students many lamented finding time to focus although the course is interesting and beneficial to them proved to be a major barrier to learning. In reflect, I realised that perhaps these challenges that they confronted could be psychological in nature.

Based on my interview with the students in *Human Lifespan Development* though they appreciated MOOC as an avenue for them to revisit many times on topics that they were not sure of in their own time, they still preferred the face-to-face session because they wanted the physical environment of learning apart from the virtual. Psychologically they have been induced to the idea of a programme that was face-to-face in nature, so having introduced to them MOOC and hoping for them to swiftly make the transition was unfair to them as they did not searched for an online programme to begin with. However overall they felt that they have benefited from the course online or offline.

1	terima kasih banyak-banyak prof atas pengajaran yang begitu bermakna
2	Kurusu ini sangat membantu saya memahami proses perkembangan manusia. Prof. Fauziah sangat memberi inspirasi kepada saya .
3	overall this subject interesting and help me to discover more knowldge
4	Prof mempunyai ilmu yang tinggi tentang perkembangan hayat individu dan mempunyai banyak pengalaman. Pengalaman prof banyak memberi manfaat kedapa diri saya.
5	kursus yang menarik

As for the *Understanding Learners* students though they prefer the online course they too struggled to find time amidst their busy schedule. In the case of these students, PGDHELT

was part of their confirmation as new recruited lecturers. They were the pioneers to this programme and psychologically were still in denial, especially when comparing their ordeal, compared to their seniors who did not have to attend such programmes.

As for me as a lecturer, I realised that I simply allowed them be immersed in the process without properly preparing them psychologically for what is to be expected from them when learning via MOOC. Having students to complete their tasks and submit their work via MOOC was not a problem for the students as they were already been exposed to the use of learning management system (LMS), which is known to them as UUMonline. However, the difference between face-to-face interaction and the interaction via MOOC was the fact that collaborative work between students via MOOC required students to be online at the same time in order for them to get the task done. In a conventional class however, discussions can be made easily during allocated class time.

Lessons learned: Planned action for improvement

Looking back at what happened to these pioneer groups from the two MOOC courses that I taught and understanding the challenges that they face, I realised the importance of preparing students specifically psychologically before MOOC is introduced to them.

I thought by just explaining and showing the introductory video on MOOC would suffice. However to make things better, if I were to do this again, not only the introductory video on MOOC and explanation about the course is important but preparing the psychologically and breaking their barriers to learning must be dealt so that they can really reap the benefits of MOOC.

Students who are psychologically prepared for MOOC are those that are not only self regulated but may also have heutagogical mindset and grit to overcome the barriers to learning and were able to adapt faster when using MOOC to complete the activities or assignments as well as assessments. Such barriers to learning like time management and motivation that may impede learning and development to the potential level must be dealt with if not rectified so that learning and transformation can truly take place.

Conclusion

This paper has shared the authors' development and delivery as well as assessment of two postgraduate courses via MOOC. Though students have the potential to develop and learn via MOOC, many still face challenges that largely loomed around time management and juggling between work and motivation. Above all, most of these challenges were psychological in nature and must be dealt by instructors if learning through MOOC is to unleash their true potential. The use of alternative assessment via MOOC were designed and executed without a problem although collaborative tasks remain a challenge unless coordinated well by the students themselves, as MOOC provides flexibility for students to log on and complete their task at various time.

Perhaps the kind of students and the motivation to learn may vary in students' response to learning in MOOC whilst some may still prefer the physical environment of learning and what it has to offer compared to the virtual setting like what MOOC can offer. Coming back to question is MOOC for everyone? At this juncture we might conclude that perhaps not, unless psychologically intervened.

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The Effects of Different Learning Series on the Students' Achievement and Attitude in STEM Subject at Higher Education

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Abstract

The purpose of this study is to identify the effects of different learning series on the students' achievement and attitude in Science, Technology, Engineering and Mathematics (STEM) subjects at a higher education in Malaysia. For this purpose, three learning series were designed. Two learning series comprise of blended learning, face-to-face conventional learning and MOOC (Massive Open Online Courses) in different order while another learning series consist of face-to-face conventional learning only. 66 students studying STEM subject at a higher education in Malaysia were randomly selected and divided into three groups; two experimental groups and a control group. They learned a science subject for twelve weeks using the assigned learning series. After justifying the reliability and validity, the pre-test and post-tests for achievement as well as attitude scale have been used as research instruments for students' assessment of achievement and attitudes in the different groups. The outcomes of the study show that there are significance differences among different learning series in the achievement test scores in favour of learning series which initially implemented blended learning method followed by face-to-face learning and MOOC. Otherwise, the students prefer the learning series which initially performed MOOC followed by face-to-face learning and blended learning as the most effective for them in the learning mode. The results indicate that there are significance differences in attitude for all of the learning series used in this research. Based on the results obtained, the researcher provides several recommendations regarding online learning environment to STEM subject educators and instructional designers for future studies.

Keywords: Learning Series, Blended Learning, MOOC, Conventional Learning, Achievement, Attitude, STEM

Introduction

Teaching science subject is a demanding task because it involves the requirement of manipulation of science concepts and the visualisation of the elements. Not everyone is able to do this due to their abstract, scientific or spatial nature present some limitations (Botella, Peñalver & Borrás, 2018). Awan & Khan (2013) emphasised that students struggle in understanding abstract concepts and visualising the invisible science concepts. Consequently, the teaching and learning process in science should be improved in order to allow the students to have better understand in the science concepts. This problem can be prevented using various

teaching methods and tools as suggested by educators (Siew-Eng & Muuk, 2015). Unfortunately, most of the teaching methods require additional time and efforts on the part of lecturers. However, the emergence of the current technology-driven world has decreased the burden on the resources needed to support the teaching and learning process (Chai & Kong, 2016). Many institutions in Malaysia appear to have implemented blended learning as the learning method due to its effectiveness (Haron, Abbas & Rahman, 2012). Nevertheless, the data gathered by Haron, Abbas & Rahman (2012) revealed that the adoption rate of blended learning in Malaysia is low where only 13% of academicians are using this approach. MOOCs have been mentioned as the most favourable to increasing accessibility, potential for student engagement, and expanding lifelong learning opportunities (Duderstadt, 2012). The learning community is getting wider as hundreds of universities are offering free MOOCs a huge number of students. This implies that the way students prefer to learn, acquire knowledge and enhance their skills is shifting and academic institutions should take this shift into consideration in order to address the changes.

The new generation students adopt technology at high levels and approaches all aspects of life from a global and visual perspective. Therefore, they crave regular and technology-enhanced learning opportunities. In order to make the most of academic opportunities for this generation, novice and veteran university instructors provide a collective response to the challenges (Mohr & Mohr, 2017). One of the responses is a twenty-first century learning model such as blended learning and Massive Open Online Courses (MOOCs) (Mullen et al., 2017; Baragash & Al-Samarraie, 2018). The models include collaborative learning, use of ICT as tools for knowledge construction and co-construction, critical and creative thinking, and authentic problem solving. Twenty-first century learning models are essential for the students because the models emphasise on developing skills for employability in the current global economy. Due to the fact that twenty-first century learning models use ICT as a learning platform thus, Massive Open Online Courses (MOOCs) which aim unlimited participation and open access via the web provide an affordable and flexible learning opportunities for the students. MOOCs are courses of study available online and accessible to anyone without any charge (Dabbagh et al., 2015).

The increasing number of implementations of blended learning in academic institutions also results in the improvement of the students' performance. One of the reasons of this due to the differentiated instruction use by the teacher to address student diversity. This approach provides the students with additional support throughout product development (Boelens, Voet & De Wever, 2018). Both MOOCs and blended learning is an ideal environment for teaching and learning science subject such as chemistry because it included not only the provision of a virtual laboratory for students to conduct experiments and be assessed, but also short focused video screencast lectures interspersed with short quizzes for immediate formative feedback. Hakimzadeh, Hakimzadeh & Batzinger (2011) found that active learning is effective to enhance student engagement and learning which are able to improve the student achievement and attitude. According to recent report by Lin, Yen & Wang (2018), the findings showed that collaborative learning made the students performed better than individual learning in conventional learning environment. The aim of this study is to identify the effect of different learning series using MOOC, blended learning and conventional learning on the students' achievement and attitudes.

Theoretical Framework

Fleming & Baume (2006) concluded that students are able to learn effectively if they meet the needs of their learning preferences. However, a group of students in class has different learning preferences so it is impossible for teachers to teach different students using different teaching styles at the same time teachers have to make sure that all students can learn effectively. Blended learning, a combination of conventional face-to-face classroom model with technology support appears to be an appropriate solution for this issue (Ghoul, 2013). In this study, the researcher will provide three learning series which allows the students to experience different learning methods in order to learn effectively (Rajkoomar & Raju, 2016). The series has evolved through the following methods: conventional learning, MOOC, and blended learning.

When the teacher-centered teaching method has been shifted to students-centered, a transformation from a behavioristic model to a constructivist model is required to enable the learners through the integration of internet and information and communication technology into all aspects of the teaching and learning process (Clarke, Lindsay, McKenna & New, 2004). Although online tools and online environment has been used in the teaching and learning process nowadays, behaviorism, cognitivism and constructivism theories have not become outdated, yet they have to be used in a different way to integrate the present teaching and learning environment. Connectivism theory was proposed by Siemens (2005) who interprets learning occurs through connections within networks. This learning theory along with behaviorism, cognitivism and constructivism was applied in this research because it provides the information on the facilitation and educational design involving technology such as computer mediated tools in implementing blended learning and fully online learning (Bell, 2011). MOOC phenomenon which originates from this theory was used in this research as a platform for student learning. MOOC is chosen over other online platforms because the learning structures and activities can be monitored by the instructors according to the learning outcomes (Swigart & Liang, 2016) at the same time allows the students to learn at their own pace and time (Patru & Balaji, 2016).

Consequently, in order to facilitate MOOC and blended learning effectively, the instructor must act in accordance with the recommended Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006). The framework addresses the teachers' capabilities in manipulating pedagogy and appropriate use of technology for teaching specific subject content. With this purpose in mind, the educators should aware that the learning environment in the digital age are networked, social and technological. Thus, while applying other traditional learning theories along with connectivism, integrating pedagogy, technology and content knowledge appears to support the current teaching and learning process (Padmavathi, 2017).

Previous Studies

Massive Open Online Courses (MOOCs) term initially appeared in 2008, applied to the groundbreaking "Connectivism and Connective Knowledge" (CCK08) course facilitated jointly by Stephen Downes and George Siemens which based on 'connectivist' distributed peer learning model (Sinclair, Boyatt, Rocks & Joy, 2015). In general, according to Kesim and Altınpulluk's (2015), MOOC is a particular type of online course that allowed very large number of participants and freely accessible for anyone for the purpose of the self-development

of knowledge and competences by individuals. On the other hand, Kaplan and Haenlein (2016) mentioned many MOOCs provide interactive elements to promote interactions among participants and between participants and the teachers, although the latter is not a defining requirement. OpenLearning is an online learning platform that provides MOOCs for public universities in Malaysia. This platform allows anyone to join the MOOCs provided for free (OpenLearning, 2015). However, Pollack (2018) argued that even though MOOCs offer free online learning environment, MOOCs could not be used to fully replace the formal education as the conventional learning environment has its own beneficial for the teachers and students. The idea of combining face-to-face learning and online learning is not new. The literature has highlighted that the definition of blended learning is varies from one researcher to another. For instance, blended learning is a mixture of traditional face-to-face learning and online learning which provide flexibility in the teachers' schedules increase the students' satisfaction (Owston, York, & Murtha 2013). This statement is supported by Baragash and Al-Samarraie (2018) as they pointed out that blended learning environment can be created by having students attend the face-to-face classes and use online learning technologies in their learning process. In general, Margulieux, McCracken & Catrambone (2016) stated that blended learning combines two delivery medium of instruction which are via an instructor and via technology. This type of learning allows instructional support during both receiving and practicing content.

A further description of blended learning is given by Shu and Gu (2018) who mentioned that this approach provides both collaboration and self-learning as well as more medium for the students to communicate between them and the facilitators. Blended learning is beneficial in teaching and learning process because it creates both costless platforms for interactive dialogue. It also enables the instructor to conduct the online seminar at the same time allows the students to explore the learning content at their own time and pace. Merging the online and conventional learning in class enhances the students in understanding the subject matters and promotes their intellectual and social skills simultaneously (Okaz, 2015). As a result, this teaching approach can lead to positive learning outcomes in academic settings. Matukhin & Zhitkova, (2015) is also in the same vein with Boelens, De Wever, & Voet (2017) by stating that the implementation of blended learning allows the students to be flexible during learning and the use of online tools provides individualization and differentiation for their learning process. By all means, the preference of teaching tools should be educationally and economically feasible, as well as methodologically provided.

On the other hand, conventional learning also known as traditional learning can be portrayed as teacher centered learning environment which implementing face-to-face interaction between teachers and students in a classroom. Hassan, Abiddin & Yew (2014) described traditional learning as a combination of relationship of both teacher and students, between students and both subjects and method of learning which take place in a classroom. By the same token, according to Shah (2015), a conventional learning is when a teacher giving a lecture while the students listening and taking notes. The teacher is the authority during the teaching and learning process so they mostly talk and the students are not involved in inquiry-based education or problem-solving activities but completing the tasks set by the teacher instead (Solak & Cakir, 2014). However, the lectures given by the teacher allow the students to hear out the overview of the materials at the same time enhance them to integrate information from various sources with the teacher's guidance. Nevertheless, the lectures may be less effective when courses require the application of facts or critical thinking tasks (Miller, McNear & Metz, 2013). The teacher who implemented conventional learning commonly focuses on the behavioral impacts of immediate context and unlikely practices active engagement of learners in the learning process while expecting no individual or group activities but the whole class participation (Khalaf, 2018).

The main issue about conventional learning was that the teacher's role who is dominant during the teaching and learning process caused poor outcomes in their homework. Thus, this proved that conventional learning did not meet the requirements of situations encountered by the student (Olk, 2003). A study done by Farkas (2003) shows the students who experienced instructional method of learning had higher acquisition for knowledge and performance compared to students who learnt in conventional learning environment had lower levels of knowledge development. In conclusion, the scholars in the field of education affirmed that the conventional learning is not the most effective method in the current educational field anymore (Sung, Chang & Liu, 2016).

Methodology

Sampling Size

An appropriate sampling technique for this study was used which the samples were selected by cluster sampling. According to Gay and Airasian (2003), when the population is large, cluster sampling is most useful because it is not always possible to acquire a list of all members of the population. Therefore, by using cluster sampling, three groups who are studying STEM subjects were selected from a higher education in Malaysia for the present study. The study samples in those three groups consist of 66 students in total. All groups were allocated to be treated differently as a control group, experimental group one and experimental group two. The study samples comprised of 21 students in experimental group one, 26 students in experimental group two and 19 students in a control group based on actual classes in selected samples. The distribution of students in groups is shown in Table 1.

Table 1
Distribution of Students on Groups

Group	Teaching Methods			Number of students
	Week 1-4 (9 hours)	Week 5-8 (9 hours)	Week 8-12 (9 hours)	
Experimental 1	Blended Learning	F2F	MOOC	21
Experimental 2	MOOC	F2F	Blended Learning	26
Control	F2F	F2F	F2F	19

Experimental Group One. For the first four weeks, the blended learning approach was used in which they had to use online tools and resources such as Google Classroom as part of the daily classroom instruction and as a medium for collaborative learning and streamline educational workflow. The students demonstrated their knowledge and engaged with online activities. Apart from interacting online during this period, weekly face-to-face meeting with the instructor for four weeks was scheduled for the students in this group. Conventional learning approach was implemented during the fifth week until the eighth week where the students taught orally and visually in a classroom by the instructor. The students experienced F2F teaching and learning process three times a week. The duration for every F2F session was

one hour. During the ninth week until the twelfth week, MOOC method using Google Classroom was carried out for the students to experience fully online learning environment.

Experimental Group Two. The students in this group were initially instructed online using MOOC and they did not have any F2F meeting with the instructor for the first four weeks. The instructor allowed the students to access Google Classroom for their learning process even interacting between them using the medium. The students were provided electronic worksheets and online feedbacks by the instructor were given to the students. They were also allowed to upload the worksheets and assignments and discuss about the tasks during online session. The mode of teaching during the fifth week until the eighth week is similar to the experimental group one in which the students were taught using conventional learning approach. For the rest of the weeks until week twelve, the blended learning was implemented. The students used online tools and resources during the learning process. They will also be required to meet the instructor three times per week for four weeks. The purpose of the meetings is to discuss any issues about the knowledge learned and to improve the students' development.

Control Group. There were 19 students in this group experienced conventional learning setting in a classroom. The students were scheduled to meet the instructor three times a week for the whole duration of learning series. The duration for every F2F session was one hour. All teaching materials used in conventional learning were the notes provided by the instructor and the tools were a whiteboard and marker. The students were taught orally and visually by listening, watching and interacting with the instructor in a classroom. The instructor delivered the content materials to the students in person using only normal whiteboard.

Research Instruments and Materials

The researcher allocated three groups of students for a control group and two experimental groups. The instructor also informed the students about the meeting schedules throughout the research. A briefing on how to use online tools was given to the students.

Achievement Test. There were several subjective questions for the achievement test. The questions developed were based on and matched the learning outcomes of the topic. All questions were adapted from the past year questions and verified by the subject matter expert of the STEM subjects. The questions focused on cognitive domain level two and three. The achievement pre-test was held during the first week of the experiment and the post-tests were taken by all students after each different method done by the instructor to check on their level of knowledge of the content. The marks were analysed to determine the students' achievement. There were four sets of achievement test; pre-test, post-test 1, post-test 2 and post-test 3. The time required for the students to answer the test was one hour.

The Attitude Scale. The attitude scale which measured the students' responses and reactions to twenty-five (25) statements used in this research to find out the learning preferences of the students. The scale consisted of five response options, which are strongly agree, agree, undecided, disagree and strongly disagree. These options provided more preferences for the students to express their responses.

The implementation process of the experiment. Cognitive domain of the students was focused in this research for measuring the students' achievements. Using Bloom's Revised Taxonomy, the topic for achievement test involved level two (understand) in lower-level cognitive skills and level three (apply) in higher-order cognitive skills (Stanny, 2016). An experimental research method in which three independent variables were examined to determine the effect on two dependent variables with pre-test and post-tests, three group design were adopted. The independent variables in this research are three learning series, which

consist of conventional learning, blended learning and MOOC.

Prior to the implementation, the achievement test was given to a pilot sample comprised of 25 students who were not included in the experimental or control group. The objective of this pilot study was to validate the time required for the students to answer all questions and the clarity of the questions and instructions. In order to verify the validity of the achievement test, the questions and marks allocated for each question were submitted with the course learning outcomes, learning outcomes, teaching plans and the contents of the topic to the subject matter experts of the STEM subjects for their advice and comments regarding the suitability and clarity of test questions. The attitude scale was submitted to several experts and the researcher utilised the useful feedback to ensure the scale statements are clear and appropriate. A number of suggestions regarding the statements from the experts were taken into account and included in the attitude scale form. This step was necessary to determine the validity of the attitude scale. The next crucial part was reliability of the attitude scale. The attitude scale copies were assigned to every student in the pilot group and the researcher made a clarification about the instructions, the scale statements and the aim of the scale. After analysing the data using Cronbach's Alpha equation, the results showed that the degree of internal reliability for the scale was 0.926 indicating that the value is acceptable. Nunnally (1978) mentioned that the value above 0.70 is an acceptable level of coefficient alpha. The time taken for the students to complete the form was also recorded.

Table 2 illustrates the delivery and assessment process for the implementation of this study to identify the effects of different learning series on the students' achievements and attitudes. For experimental group one, the students will experience learning series one which consists of blended learning followed by F2F and MOOC. The students in experimental group two will undergo learning series two which delivery methods were the same as in learning series one but in different order. Learning series two comprises of MOOC followed by F2F and blended learning. Meanwhile, the control group students will only encounter F2F teaching method which is known as learning series three. Students' achievement and attitude are the dependent variables. The pre-test and three post-tests were conducted for all 66 students (both control and experimental groups). Questionnaires were distributed to analyse the effect of the learning series towards the students' attitude.

Table 2
Delivery and Assessment Process of Students

Group	Pre-test	Teaching Methods						Attitude Questionnaire
		Week 1-4 (9 hours)	Post-test 1	Week 5-8 (9 hours)	Post-test 2	Week 9-12 (9 hours)	Post-test 3	
Exp.1	/	Blended Learning	/	F2F	/	MOOC	/	/
Exp.2	/	MOOC	/	F2F	/	Blended Learning	/	/
Control	/	F2F	/	F2F	/	F2F	/	/

Data Collection. The quantitative research method is used in this study to collect the data about the effects of different learning series on the students' achievements and attitudes.

The achievement test and the attitude scale questionnaires were two methods used for the collection of data. The data information for achievement test was collected referring to the marks obtained by the students for their test. A given amount of time was given for the students to complete the test. The marks for the achievement test of every student were recorded and analysed. Meanwhile, the attitude scale about the learning series was given to the students and the students' response were collected after they completed the questionnaires.

      Data Analysis. All research subjects' names and their personal information such as email address were kept confidential, with identities only known to the researcher. All data obtained from the pre-test and post-tests and the attitudes scale entered in SPSS (Statistical Package of Social Sciences) for analysis was discussed in the results section. Cronbach Alpha Coefficient was carried out using the statistical package for social sciences (SPSS) to measure the reliability of the attitudes of the students. In this study, each experimental groups were treated with different learning series and the achievement of the students was measured with a pre-test and post-tests. The independent t-test was used to identify any significance difference between the experimental groups with the both achievements and attitudes of the students.

Findings

      Achievement Test. The graph in Figure 1 shows the mean marks in percentage of pre and post achievement tests for the three approaches. Meanwhile the data in Table 3 illustrates the statistic results of the post achievement of the students within the same groups. This indicates that there was a positive effect from each approach on the students' achievement as all the means of the three post-test have greater values than the means of the pre-test.
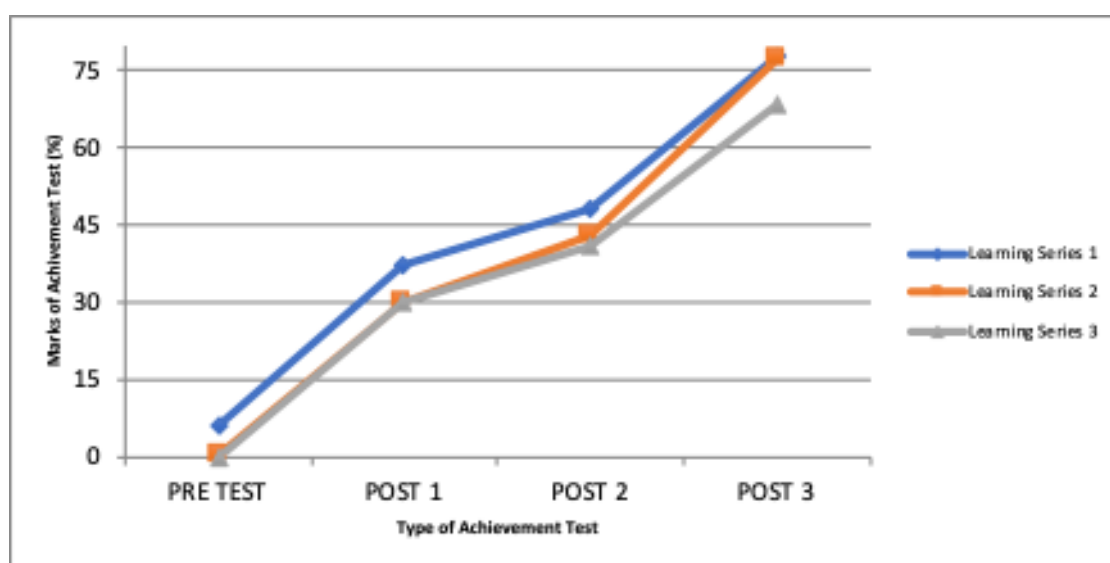

Figure 1. Mean Marks Percentage of Different Learning Series

Table 3
Post Achievement Test Means

Learning Series	N	Mean	Std. Deviation	Std. Error Mean
One	21	54.3934	12.43816	2.71423

Two	26	50.0229	10.89657	2.13699
Three	19	46.3189	11.67360	2.67811

Table 4 shows that there is no significant difference of the students' achievement of the means of learning series one and two as well as learning series two and three at (0.05) meanwhile a comparison of both learning series one and three shows a significant difference of due to the different learning methods.

Table 4
Comparison of Achievement Marks between Different Learning Series

Learning Series	Mean Difference	Std. Error Difference	t	df	Sig.
One and Two	4.37053	18.63951	.234	4	.206
Two and Three	1.43725	.94225	1.525	4	.280
One and Three	8.07450	16.65593	.485	4	.041

Table 5
Means of Attitude Scales in Different Learning Series

Learning Series	N	Mean	Std. Deviation	Std. Error Mean
One	21	4.1888	.25019	.05004
Two	26	4.4984	.06878	.01376
Three	19	3.7252	.23374	.04675

Table 6
Comparison of Attitude Scales Between Different Learning Series

Learning Series	Mean Difference	Std. Error Difference	t	df	Sig.
One and Two	.30960	.05189	5.966	48	.000
Two and Three	.77280	.04873	15.859	48	.000
One and Three	.46320	.06848	6.764	48	.000

Attitude Scale. Table 5 shows the mean for the students' attitudes scale towards a number of statements. The highest value for the attitude scale is five which means the student strongly agree to the statement provided. The mean of attitude scale in learning series two is the highest while the mean of attitude scale in learning series three is the lowest. This proves that students prefer the learning series two and most effective for them in the learning mode. The data also shows that students less likely prefer the traditional learning approach.

Furthermore, Table 6 shows there is significant difference in all learning series because each learning series has different delivery method than the other.

Discussion

The findings of this study will be discussed in detail considering the research questions and hypotheses. The first research question is, "Is there any significant difference between the achievements of students who experience different learning series for the learning process?" The data in Figure 1 and Table 3 indicate the mean marks percentage of learning series two and three which comprised of are higher than learning series three which consists of indicating that students who experienced fully online and blended learning achieved better than the students who experienced conventional learning. The result may be attributed to the students' preference in using blended learning and MOOC which is reflected in the attitude scale. The significant difference between learning series one and three as shown in Table 4 supports the data in the Table 3. This result rejects the null hypothesis "There is no significant difference between the achievements of students who experience different learning series for the learning process". Although the data in Table 4 illustrates that there is no significant difference of the students' achievement of among the learning series one and two and learning series two and three, the mean marks percentage of learning series one and two and learning series two and three prove that students who experience learning series one and learning series two achieved better than the students who experienced learning series three. This might due to due to the different learning methods used by the instructor in learning series one and two compared to learning series three. No significant difference of the students' achievement of the means of learning series one and two at (0.05) as shown in Table 4 confirms the same delivery methods but in different order did not result in any difference on the students' achievement.

Referring to the second research question which state "Is there any significant difference between the attitudes of students who experience different learning series for their learning process?", the results in Tables 5 and 6 illustrate there are significant differences in the students' attitudes for all three learning series. Therefore, the second hypothesis "There is no significant difference between the attitudes of students who experience different learning series for their learning process" is denied.

Table 5 shows the attitudes of students in experimental group two are the most positive toward the learning series than the other two learning series. Higher value of means of students' attitudes scale in learning series one and two compared to learning series three explains that the online learning environment regardless the order of fully online or blended learning in the learning series is preferable by the students. This perhaps due to active learning environment and visualised course content.

Table 5 indicates the mean for the students' attitudes scale towards a number of statements. The highest value for the attitude scale is five which means the student strongly agree to the statement provided. The mean of attitude scale in learning series two is the highest while the mean of attitude scale in learning series three is the lowest. This proves that students preferred the learning series two and most effective for them in the learning mode. The data also shows that students less likely preferred the conventional learning approach. Furthermore, Table 5 shows there is significant difference in all learning series because each learning series has different delivery method than the others.

Hence, it can be noted that the e-learning environment whether it is blended learning or virtual is preferred by students since they both have more interactive learning environment between students and instructor, students themselves, and students and course content. From

the students' personal preferences to some statements of the attitude scale the students feel that online environment enhance the social interaction between the students as well as between students and instructor and they can access to various and rich resources which is very helpful in their learning process.

Limitations

As with the majority of studies, the design of the current study is subject to limitations. This research was limited to the students at university level, who are studying STEM subjects in Malaysia. The primary limitation to the generalisation of the results is the study mainly focuses on the effect of the learning series using blended learning, MOOCs and conventional learning on the students' achievement, and the ways these techniques affect the students' attitudes for learning in chemistry subject for science topic. Therefore, the results obtained cannot be generalised for other subjects. The second limitation concerns the access to the sample size. The researcher has limited access and authorities to the sample size due to the number of students assigned for every class have been set by the college management. The fact is that such a small number of sixty-six randomly selected sample participated can be doubted to represent nature of the participating sample. This is because more accurate results can be acquired using larger sample size. On the other hand, the students' learning capabilities and learning access to other sources are the extraneous variables in this study. In addition, they received the same nature of teaching materials and instructor.

Recommendation

As far as the current study is concerned, in the light of the finding, the following recommendations can be produced:
1. The teaching and process in universities in Malaysia should not rely on the traditional pattern of lecturing in relation to teaching STEM subjects. Instead the delivery method which involving online environment such as blended learning or MOOC has to be introduced and widely implemented where the presence of an instructor is supported by the use of modern technology.
2. More studies have to be carried out for the subjects other than STEM subjects in the future using different types of online environment for teaching and learning process as the effectiveness of e-learning has been proved by the literatures.
3. In order to allow the students to get used and fully utilised the modern technology for education, the teaching period using e-learning approaches should be elongated so the benefits of it can be maximised.
4. More student samples are required and the research area should be broadening in further studies to get more accurate results.
5. It is recommended that further studies need to be carried out to cover different education levels to optimise the modern technology in the teaching process.

Conclusion

This research determined the achievements and attitudes of the students in three different learning series which comprised of MOOC, blended learning and conventional

learning. The finding demonstrated that there is significant difference in the achievement test scores in the interest of learning series one which consists of blended learning followed by conventional learning and MOOC. On the other hand, according to the data obtained, it revealed that learning series one and two which comprise of blended learning and MOOC are preferred by the students over conventional leaning in learning series three. These results offer some recommendations to STEM subject educators and instructional designers in using learning series which consists of different delivery method including online learning as students may prefer one over the other. Inadequate knowledge about an approach in delivery methods can be inconvenient to students although they may prefer that approach.

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Enhancing Undergraduates' Understanding of Polymerase Chain Reaction (PCR) Through Gamification in Aquaculture Biotechnology

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Abstract

Aquaculture Biotechnology is a compulsory course for students pursuing a degree in aquaculture. It covers processes related to the use of various DNA techniques including the Polymerase Chain Reaction (PCR). PCR is used to solve various problems in aquaculture such as the identification of the species, gender, diseases, and halal verification. Feedback gathered from students indicated that PCR was a difficult topic as there were too many terminologies and steps in experiments that they needed to remember while taking the course. The present researcher believes that one of the ways to overcome this problem is by using gamification in teaching the course. Gamification is the use of game elements in a non-game context and students can improve their understanding and skills through the games used in class. Thus, this study was carried out to determine the effects of gamification on aquaculture biotechnology undergraduates' understanding of PCR. This quasi-experimental study involved two groups of undergraduates taking a course in aquaculture biotechnology; the experimental group (n=42) and control group (n=42). In this study, students learned PCR using a board game which incorporated questions, puzzle, crossword, word search and online analysis. The data on undergraduates' perception and performance were collected through a questionnaire, and an MCQ test. The data was keyed in and analyzed using Statistical Package Social Sciences (SPSS) software 25.0 version. Both descriptive and inferential statistical analyses were performed on the data and two interesting results were obtained. First, the independent and paired sample t-test showed that the experimental group performed significantly better than the control group in the test given indicating a positive impact of the use of gamification. Second, the analyses done on the questionnaire data indicated that students had positive perceptions of the elements used in gamification; many students indicated that gamification enhanced their social interaction, engagement, understanding and motivation. It is therefore suggested that gamification be used in Aquaculture Biotechnology course and improvements be made in the design of the gamification system before it is used in class.

Keywords: gamification, aquaculture biotechnology, DNA, student performance

Introduction

Gamification is the use of elements from games to "gamify" something like systems or activities (Kim and Lee, 2015). These emerging concepts have been applied in domains like marketing for some time, and are increasingly being applied to learning (Landers and Callan,

2011). According to Cheong et al., (2014), gamification is useful for promoting the desired behaviour. However, gamification is not a simple process and it can be quite complicated to implement correctly. It requires creative and innovative thinking to make a game of learning especially. There are three important things to consider in ensuring the proper implementation of gamification: firstly, to understand the target audience or player, secondly, determine what players have to do the activities in game, and finally, use the appropriate game elements to motivate players to act (Aparicio et al., 2012).

According to Deterding et al., (2011), game elements can be classified at various levels of abstraction such as game interface design pattern (that is common game), successful interaction design components, and design solutions for known issues in the context, including the prototype implementation. According to Felder and Brent, (2005), each student has his or her own Visual, Aural, Read/write, and Kinesthetic (VARK) learning styles which means he or she needs to learn by following his or her learning styles to improve understanding in education. Prithishkumar and Michael (2014) argue that if students are required to learn using a learning style that is different from their own, their ability to learn the concept or subject taught will be affected. So teachers or lecturers need to find mechanisms or learning tools that can address a variety of students' learning styles to make learning more effective, interesting and fun. Prithishkumar and Michael (2014) in their study found that students' learning styles had a strong influence on their understanding of things learned in the classroom. Some students may experience learning difficulties if classroom teaching does not accommodate students' different learning styles. Teachers or lecturers must, therefore, address the issue of students having different learning styles. This can be done by employing a variety of teaching techniques or class activities.

Aquaculture Biotechnology is a compulsory course for students taking a degree in Aquaculture at UMT and this course is offered to students when they are in their fourth semester at the university. In this course, the students need to study relevant topics in biotechnology that can be applied in their future career in the aquaculture sector. Having knowledge in aquaculture biotechnology enables scientists to identify and combine traits in fish and shellfish to improve productivity and quality of products (Danish et al., 2017). Besides, such knowledge is a powerful tool to use for the sustainable development of aquaculture and fisheries. The employment of biotechnology knowledge makes it is possible for researchers and farmers to increase the growth rate in farmed species, increase the aqua feeds nutritional value, improve fish health, and help to restore and protect the environment (Letourneau, 2011). One of the main techniques used in biotechnology is Polymerase Chain Reaction (PCR), which is the amplification of specific DNA sequences *in vitro*. PCR is the molecular biological techniques used for diagnosing diseases, analysing phylogeny, studying functional genomics, and cloning DNA for aquaculture study (Shen and Zhang, 2013). However, PCR has always faced many technical challenges and it has to be taught to the students using a variety of teaching techniques so that the students can understand it easily.

Development in education is often associated with the change observed in the young generation. The new generation of learners learn differently from the old generation. Thus, new teaching strategies need to be used with this different kind of learners. Nowadays, learning needs to focus on enhancing certain technical skills, new thinking, different learning environments and new approaches to education (McGrath and Bayerlein, 2013). According to Kiryakova et al., (2014), teachers in the present century are faced with new challenges and need to make some adaptations to the teaching and learning process to accommodate students' needs, priorities and requirements. Teachers may need to use different teaching methods and approaches to enable students to become strongly motivated, active, and engaged learners who will take charge of their own (Huang and Soman, 2013). Previous studies have provided

evidence that gamification can be used to enhance students' understanding of Polymerase Chain Reaction (PCR) technology. Besides, gamification has the elements of Visual, Aural, Read/write, and Kinesthetic (VARK) sensory modalities which make it possible for teachers who use it to address the issue of students' different learning styles. Therefore, using gamification in classroom teaching can help make the learning of PCR be less difficult or challenging (Husmann and O'Loughlin, 2018). In addition, the employment of gamification in teaching can motivate students to learn a difficult subject or topic like PCR in a more enjoyable and easier way (Hanus and Fox, 2015).

Having acknowledged the strengths of gamification as a teaching tool, the objective of this study were to employ gamification in the teaching Polymerase Chain Reaction (PCR) and to determine the effects of gamification on aquaculture biotechnology undergraduates' understanding of PCR.

The present study attempted to answer the following research questions:
1. Do students in the experimental group perform significantly better than those in the control group in the PCR test?
2. Is there a significant difference in the experimental group's PCR test performance before and after the intervention?
3. Is there a significant difference in students' perceptions of their knowledge about PCR and their soft skills?
4. What are the students' perceptions of the use of gamification as a learning tool?

Methodology

Sample

This study was conducted with 84 second year students studying at University Malaysia Terengganu (UMT). The sampling method chosen for the study was convenience sampling. The sample of the study consisted of students who took the Aquaculture Biotechnology course at UMT. Two classes of students taking the course were chosen. One class was categorised as the experimental group (n= 42) while the other class was made the control group (n= 42).

Design

This experimental design study was carried out to determine the effects of the use of gamification as an intervention in the learning of the Polymerase Chain Reaction (PCR) which was one of the 12 topics taught to the students taking Aquaculture Biotechnology course. Three hours were allocated for the class teaching and learning of PCR. The control group learned the topic in a traditional lecture class. The experimental group, on the contrary, learn about PCR on their own using a board game which incorporated puzzle-based questions; three types of puzzles namely, crossword, jigsaw and word search were used. Three levels of challenge were designed to enhance student understanding in PCR; terms in PCR, calculation and PCR procedures, PCR simulation and online DNA sequence analysis.

Instruments

To collect data from the study, the researchers developed a questionnaire and a multiple-choice test on PCR. The questionnaire had two parts. The first part consisting of ten- point Likert scale items, was designed to obtain students' perceptions on 11 things which included their understanding of PCR, motivation to learn biotechnology, self-confidence, and related soft skills. The second part contained 5 ten- point Likert scale items, designed to get the students' perceptions of the board game, questions posed to them to complete the game, and of the use of the board game as a learning tool. The PCR test contained 20 MCQ items which were based on the facts about PCR that students learned when they played the board game.

Data Collection

To the data for this study, a PCR test and a questionnaire were given to the students. The PCR test was given to both the experimental and control groups twice as pre and post-tests to measure students' actual performance. This was done to determine if the experimental group outperformed the control group, and to examine the amount of increment in the form of test mark that the experimental group managed to obtain after the learning session. The questionnaire was only given to the experimental group. The first part of the questionnaire was given to the experimental group twice; that is, before the intervention and after its completion. This was carried out to see if the students' perceptions differ after having undergone the PCR learning session using a board game. The second part of the questionnaire was given to the experimental group to enable the researchers to collect data on students' perceptions of the usefulness or strengths of the board game, which the researchers had innovated, as a learning tool.

Data Analysis

The data were keyed in and analysed using the Statistical Software Package SPSS version 25.0. Descriptive and inferential statistics were computed from the PCR test data and the data gathered from the questionnnaire. Both the independent samples t-test and paired samples t-test were also performed on the quantitative data (Yildirim, 2016) to address the research questions in this study.

Results

Students' Performance

The independent samples t-tests performed on the PCR test data collected from the experimental and control groups yielded significant results. Table 1 and Table 2 present the results obtained when PCR test was used as a pre-test, and a post-test, respectively. As can be seen in Table 1, prior to the PCR learning session, the levels of knowledge on PCR between the experimental and control groups were different. The mean pre-test score obtained by the experimental group (M= 26.55) was much lower than that (M= 42.98) obtained by the control group. This means the knowledge that the experimental group has on PCR was not on a par

with that of the control group when the two groups started the PCR learning session; that is, the control group seemed to be more knowledgeable on PCR at the beginning. Ideally the two groups' level of knowledge on PCR should be similar. However, this is difficult to obtain since the researchers used convenience sampling.

Table 1
Independent samples t-test results: The comparison of the experimental and control groups pre-test scores

Test Type	N	X̄	SD	t	p
Experimental Group	42	26.55	17.789	-4.398	0.00
ControlGroup	42	42.98	16.419		

*P<0.05

Table 2
Independent samples t-test results: The comparison of the experimental and control groups post-test scores

Test Type	N	X̄	SD	t	p
Experimental Group	42	64.05	16.050	4.917	0.00
Control Group	42	47.86	14.062		

*P<0.05

The results of the independent sample t-test performed on the PCR post-test are positive and help the present researchers to claim on the positive effect of gamification on the learning of PCR by the experimental group. As shown in Table 2, the experimental group (M= 64.05) outperformed the control group (M= 47.86) in the PCR post-test. The mean difference between the scores obtained by the two groups was big (i.e., a difference of 16.19 points).

The paired samples t-tests on the pre and post test scores conducted separately for the experimental and control groups lend further support to the positive effects of gamification. The results of these tests are presented in Table 3 and Table 4. Both of the analysis done yielded significant positive results indicating that both control and experimental groups had an increment in PCT test score at the end of the 3 hour PCR learning session. However, the difference between the mean score obtained in the pre-test and that obtained in the post-test was much bigger in the experimental group. The control group (who had much higher level knowledge of PCR before they had the PCR lesson compared to the level of PCR knowledge that the experimental group had) only had a mean difference of 4.88 points. The experimental group, on the other hand, had a large mean difference (of 37.50 points) reflecting that the students in this group showed a great improvement in test scores after undergoing the PCR lesson which used a newly invented board game as a learning tool.

Table 3

Paired samples t-test results: The comparison of the pre-test and post-test scores of the control group

Test Type	N	X̄	SD	t	p
Pre-test	42	42.98	16.419	-5.025	0.00
Post-test	42	47.86	14.062		

*P<0.05

Table 4

Paired samples t-test results: The comparison of the pre-test and post-test scores of the experimental group

Test Type	N	X̄	SD	t	p
Pre-test	42	26.55	17.789	-23.295	0.00
Post-test	42	64.05	16.050		

*P<0.05

Students' Perceptions

The reliability test done on the data collected using the questionnaire produced an acceptable reliability coefficient ($\alpha = .74$); the value is considered acceptable considering that the questionnaire is a newly developed instrument.

The paired samples t-test conducted on the data gathered from the first part of the questionnaire produced a significant result. As demonstrated in Table 5, the students' mean score for their perceptions of their understanding of PCR, motivation to learn biotechnology, self-confidence, and related soft skills improved significantly from 52.95 (before the intervention) to 79.99 (after the intervention); that is, there is an increment of 25.04 points in students' perceptions.

Table 5

Paired samples t-test results: The comparison of the pre-test and post-test scores of students' perceptions (experimental group)

Test Type	N	X̄	SD	t	p
Pre-test	42	51.95	8.32	21.041	0.001
Post-test	42	76.99	6.62		

*P<0.05

This increment in mean perception score reflects that the use of gamification in the learning of PCR is successful and meaningful as the students perceived its use to have had positively affected their PCR knowledge and skill, their motivation, self-confidence, and their soft skills like team work skills, creativity, communication skills, critical thinking, and problem-solving skills.

Further examination done on the data output which was based on the 11 perception items revealed a considerable difference between the mean score range computed for the data

collected before the intervention and the mean score range calculated for the data gathered after the invention.

As tabulated in Table 6, the range computed for the former data was between 4.52 to 5.95 while the range for the later data was between 6.79 to 8.17. Each of the 11 items showed an increment in mean score implying a positive impact of the inclusion of gamification in the teaching and learning of PCR. The highest increment observed was for item 1 which asked students to rate themselves on their level of basic knowledge in PCR. Prior to the intervention, the mean score obtain for this item was 4.55 but after the intervention it increased to 7.67. This large increment of 3.12 points in mean score indicates the substantial improvement made by the students in the most basic and important knowledge needed to understand PCR.

For items assessing students' perceived level of soft skills, the critical skill item (i.e., item number 5) recorded the highest increment; the mean score for this item increased by 2.81 points. This finding implies that the use of gamification in the learning of PCR helps to enhance students' ability to think critically. Item 9 and item 10 which measure students' perceived level of confidence and motivation in learning biotechnology also showed big increments of 2.38 points and 2.29 points respectively. The analysis done on the data obtained using the 5 items in the second part of the questionnaire also yielded positive results. For these 5 items, students were asked to rate their perceptions on a scale of 1 to 10.

The results of the analysis are presented in Figure 1. The mean scores calculated for the items were high, ranging from 8.57 to 8.86. The scores indicate that majority of the students perceived that it was interesting and easy to use the newly invented board game in learning PCR. In addition, most of them found the game to have helped them improve their knowledge in PCR and helped them to simulate the PCR process/ procedure to a real situation. The students also found the questions created by the researchers, as clues for them to complete the game, to be relevant.
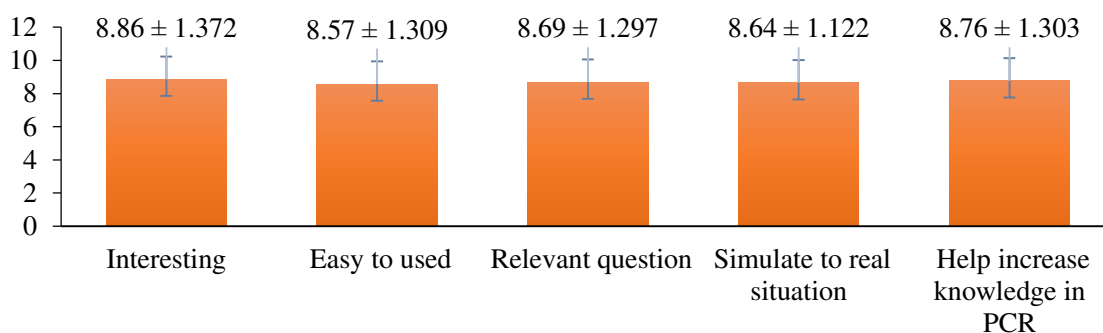

Figure 1. Mean and standard deviation students' perceptions of the board game used

Table 6
The comparison of mean, standard deviation and student responses before and after gamification applied of student evaluation form of experimental group

Items	$\bar{X} \pm SD$		Responses (%)									
	Before	After	Very Weak (1-2)		Weak (3-4)		Good (5-6)		Very Good (7-8)		Excellent (9-10)	
			Before	After	Before	After	Before	After	Before	After	Before	After
A1 Basic knowledge in PCR	4.55±1.234	7.67±1.509	33.33	-	33.33	-	16.67	-	16.67	66.67	-	16.67
A2 Terms on PCR	5.00±1.397	7.71±1.503	33.33	-	50.00	-	16.67	-	-	33.33	-	50.00
A3 Technical or practical skill in PCR	5.00±1.653	7.50±1.452	33.33	-	16.67	-	50.00	-	-	66.67	-	33.33
A4 Bioinformatics analysis skills	4.52±1.330	6.79±1.507	33.33	-	33.33	-	16.67	-	16.67	33.33	-	33.33
A5 Critical thinking skills	4.76±1.303	7.57±1.434	33.33	-	-	-	66.67	-	-	83.33	-	16.67
A6 Problem solving skills	4.98±1.220	7.29±1.642	16.67	-	16.67	-	66.67	-	-	50.00	-	50.00
A7 Teamwork skills	5.62±1.637	8.17±1.378	16.67	-	16.67	-	50.00	-	16.67	33.33	-	66.67
A8 Communication skills	5.83±1.513	7.76±1.478	-	-	33.33	-	50.00	-	16.67	16.67	-	83.33
A9 Self confidence level	5.43±1.579	7.81±1.452	16.67	-	33.33	-	33.33	-	16.67	16.67	-	83.33
A10 Interest in biotechnology	5.71±1.642	8.00±1.343	33.33	-	33.33	-	33.33	-	-	66.67	-	33.33
A11 Student creativity	5.95±1.780	8.02±1.423	16.67	-	33.33	-	50.00	-	-	66.67	-	33.33

Discussion

The findings of the present study seem to support the employment of gamification in the teaching and learning of PCR. The use of the newly invented game board did not only help to enhance students PCR test scores but also improve their level of perceptions of their PCR knowledge and skills, self-confidence, motivation, and important soft skills like critical thinking, problem solving, team work, and communication skills. The students also perceived the game to be interesting, useful, and enabled them to improve their knowledge in PCR.

The findings of this study on the significant positive effects of employing gamification on students' non-cognitive and cognitive skills are consistent with the findings of previous experimental studies on gamification (Sahin & Namlin, 2016; Su, 2016; Bonde et al, 2014; Eastwood & Sadler, 2013; & Sadler et al, 2012). Two of these studies (Bonde et al, 2014, and Sadler et al, 2012) specifically focused on enhancing the learning of biotechnology among school and college students which included PCR as one of the topics to be comprehended by the students. Bonde and his colleagues in their research paper (2014) cited four studies which they had conducted on the learning of biotechnology using gamified simulation. The findings of their three studies showed that students' motivation and interest to learn biotechnology were high upon completing the intervention session. The findings of their fourth study also supported the use of gamified simulation in teaching biotechnology as the employment of the simulation in the study successfully helped to improve students' test scores. Sadler et al (2013) also found gamification to have had a positive impact on students' test scores. It seems that gamification can be effectively used as a teaching and learning tool of theory-loaded contents has been proven by Taspinar et al (2016).

Most studies (Cheong et al, 2014; Bakhshialiabad et al., 2015; Rai et al 2019) on gamification have produced similar findings to that of the present study with regard to students' having a positive perception towards the employment of gamification in learning. Rai et al (2019) also found that gamification using VR game-lab simulations led to an increase in student knowledge of DNA-based technologies, specially PCR and gel electrophoresis.

Conclusion

In conclusion, employing gamification in the teaching and learning of a subject or topic, particularly a challenging and procedural topic like PCR can help improve students' understanding of the subject, and increase their interest and motivation to continue learning it. In the present research, the use of gamification in the teaching of PCR did not only help students to improve their cognitive skills but also enhance their affective and psychological domains. A study similar to the present one needs to be conducted to provide more convincing empirical evidence on the use of gamification in teaching and learning PCR. Limitations of the present study such as the sample chosen and the need to establish the reliability and validity research instruments used must be addressed by future studies.

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Enhancing Classroom Participation Using Blending Learning via *eleap* for Digital Electronics Course

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Abstract

Eleap is a platform for blended learning to deliver the teaching and learning of Digital Electronics for Bachelor of Engineering (with honours) Electronic Engineering (Computer) first years in Universiti Malaysia Sarawak (UNIMAS). Among the teaching and learning activities via *eleap* platform are group discussion, collaborative assignment, discussion, video making session and quiz. Based on the students' feedback through course evaluation form, it shows the overall quality of teaching and learning approach was obtained. Also, majority of the students gave positive feedbacks on their learning experience in this course. Furthermore, based on the instruction's observation the students are interested to participate during group discussion session. With this feedback, it can be used to improve the learning delivery for Digital Electronic for future class.

Keywords: IJLLCE, Blended Learning, *eleap*, Digital Electronics, Enchancing Classroom Participation.

Introduction

Blended learning is a combination of face-to-face (F2F) instruction and learning experiences as well as online learning experiences to support teaching and student learning (Poon J, 2012; Reay, 2001; B. Guzer and H. Caner, 2014). Based on previous studies, both academics and students discover that by using blended learning can give greater flexibility for students learning in term of learning satisfaction, retention and classroom space utilization and interaction (Graham, C.R., 2006; Owston et al., 2019). In this paper, blended learning via *eleap* was designed for Digital Electronics course for first year student of Bachelor of Engineering (with honours) Electronic Engineering (Computer) in Universiti Malaysia Sarawak (UNIMAS). This course introduces the basic concepts of digital electronics dealing with digital number systems and codes, logic circuits, Boolean algebra, combinational and sequential circuit analysis. Simplification of logic circuits using Boolean algebra, Karnaugh map method, and function simplification are also included. Students are exposed to logic design, particularly combinational and sequential logic circuits design. By the end of this course, students will be able to analyze various digital number systems and codes, and the operation of various logic gates with different input patterns (course learning outcome (CLO 1)), design simple combinational logic circuits by applying of Boolean Algebra, Karnaugh Map and function simplification (course learning outcome (CLO 2)) and construct combinational and sequential logic circuits (course learning outcome (CLO 3)). Course learning outcome is statement describing describe what students should know, understand and can do at the end of the course

or the outcome that students need to achieve upon completion of the course. Program learning outcome (PLO) describes what students are expected to know and able to perform upon the graduation. In other word, PLO is the outcome that students need to achieve upon graduation.

Before this the Digital Electronics course was conducted in conventional method where students sit in silence, memorise the information and there was no communication between the students and educator. The problem with this conventional method that the students not developing their critical thinking, problem solving and decision making. Based on past results it shows that 50% of the students can answer the application question that involved with critical thinking and problem solving. So, the educator having problem with underperforming students for the past semesters because the delivery method is in conventional method. Hence, modern method of effective teaching using blended learning via *eleap* was implemented to replace the conventional method. There were many times this course was conducted by giving lecture for one hour followed by group discussion with guiding question and this process was repeated until all the contents are covered. Before this *eleap* was used to share the learning material and assignment submission. Nevertheless, educator notice that many students not interested to participate during group discussion. Therefore, the Digital Electronics course delivery was redesigned by using UNIMAS learning management system, *eleap* to enhance student's classroom participation. Moreover, to improve the learning experience in Digital Electronics course via collaborative work on *eleap* platform.

Methodology

In Figure 1 shows the process of blended learning via *eleap* in teaching and learning delivery of Digital Electronics course.

Firstly, all the CLOs for Digital Electronics are mapped to suitable PLOs as shown in Table 3. After that the educator need to set suitable teaching and learning activities according to CLOs, total students of 40, and classroom size that can fit for 40 students**.** Then, the educator will conduct the teaching and learning activities to the students. The students need to participate all teaching and learning activities in *eleap* platform. Before Final Examination, the students need to fill in the evaluation form.

The evaluation form is divided into three section:

i)   Achievement of course learning outcome as shown in Table 1
ii) Learning Environment (Physical and Online) as shown in Table 2 and Table 3
iii) Comment or suggestion for improvement as shown in Table 4

After the final examination, the analysis needs to be done before and after implementation based on teaching and learning activities via *eleap*, tests and final examination. In order to close the loop, the continuous quality improvement need to done based on the analysis result and feedback from the students.
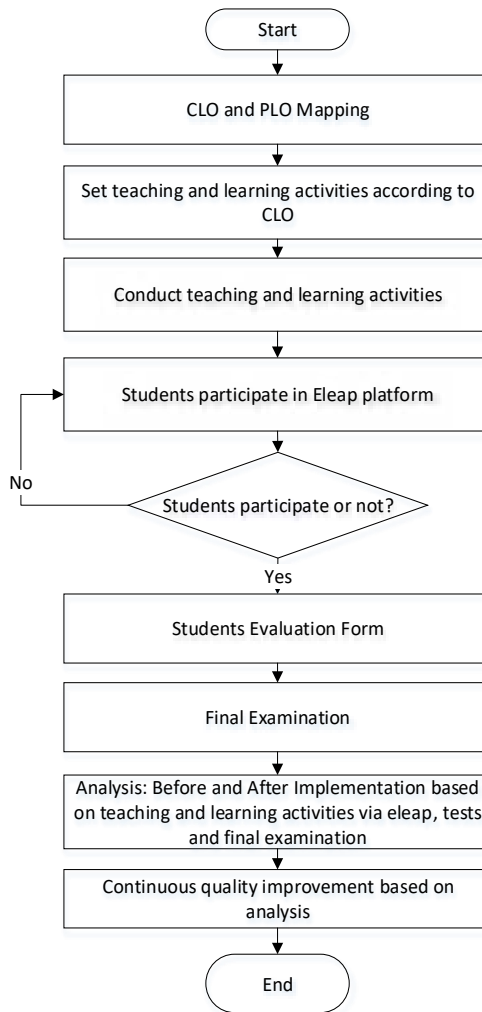
Figure 1. Flow chart of blended learning process via *eleap* in teaching and learning delivery of Digital Electronics course

Table 1
Achievement of course learning outcome

Please indicate your achievement level for the following course learning outcome.

CLO	Fully not achieved	Not Achieved	Uncertain	Achieved	Fully Achieved
Analyze various digital number systems and codes and the operation of various logic gates with different input patterns					
Design simple combinational logic circuits by applying Boolean Algebra, Karnaugh Map and function simplification					
Construct combinational and sequential logic circuit					

Table 2
Learning Environment Physical Classroom

Question	Strong disagree	Disagree	Undecided	Agree	Strong agree
The room used for conducting the course is conducive for learning	1	2	3	4	5

Table 3
Online Learning Environment

Question	Strongly agree	Disagree	Undecided	Agree	Strong Agree
My course instructor's use of *eleap* is helpful	1	2	3	4	5

A) Using *eleap* for Enhancing Classroom Participation

There are a few activities using *eleap* to enhance classroom participation include group discussion, collaborative assignment, video making, pair discussion and quiz as shown in Table 4. It is important to design the teaching and learning activities and assessment tasks that align to each other and addressed in the desired course learning outcome and program learning outcome (PLO) as shown in Table 5 and Table 6. The assessment is divided into two which is continuous assessment (50%) and final assessment (50%). For Digital Electronics course, all teaching and learning activities such as group discussion, collaborative assignment, video making, pair discussion, quiz and tests are in continuous assessment. While final assessment is for final examination they will be conducted at the end of the semester.

Table 4
Examples of classroom activities using eleap to enhance classroom participation

Activity	CLO	Targeted participation	Description
Group discussion	3	Group	Each group have 3-4 students. Different topic was given to each group based on the targeted CLO and content. Students are given 20 minutes to solve and design based on engineering problem. The group leader will upload the solution into *eleap*. All the students need to participate in online *eleap* discussion to discuss the topic given to them.
Collaborative assignment	3	Group	Each group have 3-4 students. Different topic was given to each group based on the targeted CLO and content. The students will upload the solution into *eleap*.

Pair discussion	2	Partner	Subtopic was given based on targeted CLO. In the classroom, the students spend 20 minutes to discuss and explain to her/his partner on the topic given. Also, she or he need to come out with the best method to share with their friends through *eleap*.
Video making on target topic	1	Group	Each group have 3-4 students. Different topic was given to each group based on the targeted CLO and content. The students spend one week to prepare their video and upload it into *eleap* as well as share with their friends.
Quiz	1	Individual	All students need to participate in the online quiz session. Each quiz based on the targeted CLO and content.

Table 5
Course Assessment

CLO	PLO	Assessment Method	Level of Domain			Assessment Marks Distribution	Percentage (%)
			C	P	A		
CLO1	PLO1	• Video making on target topic • Quiz	C4	-	-	Video making on target topic=10% Quiz = 3% Test = 10% Final Exam = 12.5%	25.5
CLO2	PLO1	• Pair discussion assignment • Test • Final exam	C4	-	-	Pair discussion assignment = 4% Final Exam = 12.5% Test = 10%	26.5
CLO3	PLO2	• Collaborative assignment • Group discussion • Test • Final Exam	C4	-	-	Collaborative assignment=5% Group discussion= 8% Final Exam = 25%	48
						Total	**100**

Note: C= Cognitive, P=Psychomotor, A= Affective

Table 6
Program Learning Outcome

No	Program Learning Outcomes (PLO)
1.	Apply knowledge of mathematics, science, engineering fundamentals or an engineering specialization to solve complex Engineering problems
2.	Identify, formulate and analyze complex Engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences
3.	Design solutions for complex Engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for global, socio-economic and environmental aspects
4.	Conduct investigation into complex Engineering problems utilizing systematic approach to provide valid conclusions
5.	Create, select and apply appropriate techniques, resources and modern engineering and IT tools, to engineering activities, with an understanding of the limitations
6.	Apply reasoning informed by contextual knowledge to assess societal, health, safety and cultural issues and the consequent responsibilities relevant to professional Engineering practice
7.	Understand the impact of professional Engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development
8.	Apply ethical principles and commit to professional ethics and responsibilities and norms of Engineering practice
9.	Communicate effectively on Engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
10.	Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings
11.	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change
12.	Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments and cultivate entrepreneurship skills

i)   Before blended learning implementation

At the end of semester, the results of student feedback on teaching and learning delivery are obtained from course evaluation form. Based on the results, it shows that majority of the students gave positive feedback and suggestion for improvement on their learning experience in this course. As an overall, it shows slightly increment of percentage in CLO achievement after blended learning via *eleap* implementation as shown in Figure 2. There is a high degree of complexity in terms of legitimacy and acceptance of instructors and learners when online environments are integrated with traditional F2F settings (Stacey and Gerbic, 2008). Some feedbacks from students, before the blended learning implementation are as follows:
1.   More activities to be conducted in classes for interactive learning

2.   Still have room for improvement
3.   Slow down on teaching approach
4.   Overall the lesson is sufficient and clear. I just hope that the lecturer could provide more tutorial samples and exercises that are exam based

Figure 3 shows the PLO achievement and CLO achievement before blended learning via *eleap* implementation. Based on the data, it shows that all POs are achieved. Out of three CLOs only two CLOs are achieved. It shows that majority of the students able to analyse various digital number systems and codes, and the operation of various logic gates with different input patterns as well as design simple combinational logic circuits. However, 59% of the students no able to construct combinational and sequential logic circuits. This is because the students are not able answer the question that involve with engineering application due to weak in fundamental and concept of digital electronics.
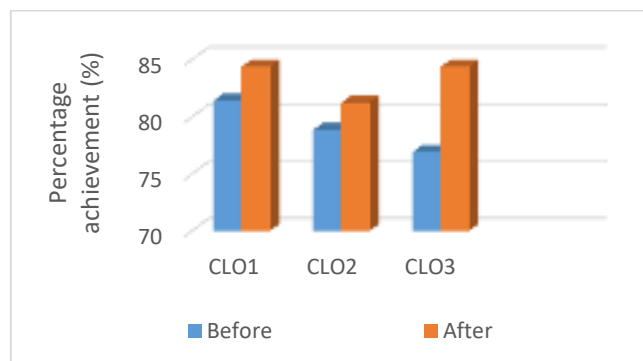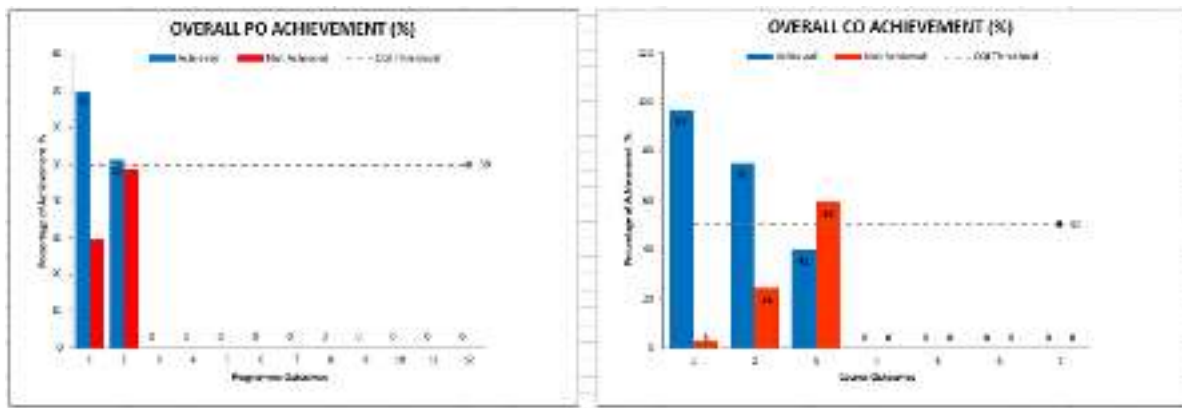

Figure 2. Perceive CLO achievement

             (a)   (b)

Figure 3. a) PLO achievement   b) CLO achievement   before blended learning via *eleap* implementation

ii)   After blended learning implementation

Some feedbacks from students, after the blended learning implementation are as follows:

1. Class is very interesting
2. A great lecturer and would help students to understand topics. Encourage students to think too.
3. Very understanding and the class is fun

4. I really enjoy in this class because various teaching method that our lecturer did in our class
5. Hands on or laboratory session is needed to help students understand this course

Figure 4 shows that all POs are achieved while 2 out of 3 CLOs are achieved. After blended learning implementation, actually CLO 2 was not achieved due to the students still no able to relate the concept how to design combinational logic circuit. Figure 5 shows the comparison CLO achievement before and after the implementation. It clearly can be seen that all CLOs were achieved accept for CLO 2 nearly achieved to 50%. Based on the student's feedback and the result of actual CLO achievement, it shows that by using blended learning can increase the participation of the students in the class. Moreover, it can have enhanced students' experience and improve their engagement in term of students' satisfaction on the instructor's delivery and the students' perceived CLO achievement. From educator's observation blended learning via *eleap* can perceived as useful, enjoyable, supportive and flexible for the students. Unfortunately, these factors were not good enough to create an atmosphere for successful learning. Therefore, to create a successful learning, the educator using *eleap* should encourage to participate in the environment and should dine ways of creating social interaction through more collaboration. Also, the educator need to plan well to benefit more from this approach by considering many factors such as number of students, classroom size and continuous assessment and final assessment in the future.
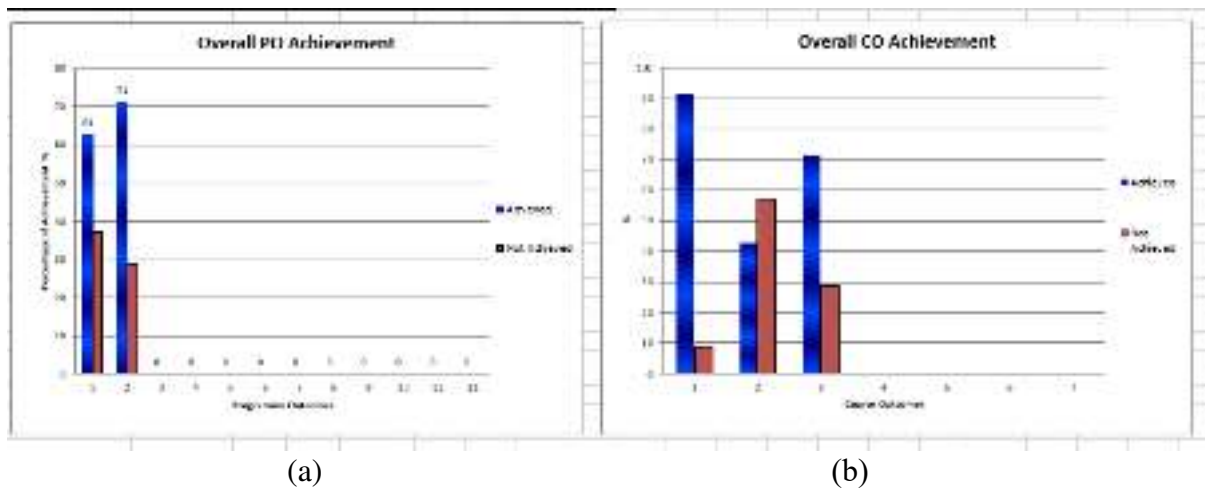

(a)   (b)

Figure 4. a) PLO achievement   b) CLO achievement after blended learning via *eleap* implementation
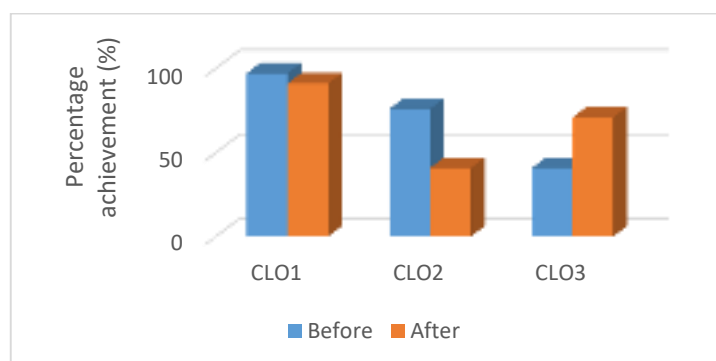

Figure 5. Actual CLO Achievement

Conclusion

In conclusion, by utilizing *eleap* as a platform for blended learning can have improved students' experience and enhance their engagement in term of student satisfaction on the instructor's delivery and the students' perceived CLO achievement. In contrast, achievement of the actual CLO decreased for CLO1 and CLO2 but increased for CLO3 after implementation. Therefore, it is recommended that students' readiness, maturity, and expectations for blended learning must be set clear before the blended learning implementation. Ample time must be allocated for course planning by instructor. Consistent and transparent feedback from students are also important for them to maximize the benefits gained through blended learning. Also, the question final exam must be consistent for every semester so that it will not become other factors to achieve CLO and PLO.

Acknowledgement

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Alternative Assessment as a Valid Means for Measuring Student Performance

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Abstract

In line with the needs of Industry 4.0, Education 4.0 and 21st Century learning, the assessment in the classroom should be able to prepare students with the skills needed by the industry. Alternative assessment is expected to be carried out and aligned with transformative learning methods and constructive learning outcomes. Alignment between these three components; constructive outcomes, transformative learning methods and alternative assessment will enable students to create their own learning experiences resulting in meaningful learning experiences. This form of learning environment is supportive of the theory of constructivism and applies procedural and conditional knowledge in the classroom. This paper will provide a discussion on alternative assessments by synthesizing the definition of alternative assessments from the literature, stages in alternative assessments, characteristics of alternative assessments and how to strategize alternative assessments to ensure that the assessments used in measuring student performance are valid.

Keywords: Alternative Assessment, Stages in alternative assessment, Validity, Rubric and Constructive Alignment

Meta-content analysis of Alternative Assessment

It is important to understand the meaning of assessment before a discussion on alternative assessment can be carried out. Assessment comes from the Latin word '*assidere*' which means to 'sit by the side'. This meaning of assessment can be explained using the analogy of a mother in confinement who stays by the baby's side at all times for a few months during the confinement period. It can be said that the mother will be able to observe every step of the baby's growth process. The mother will also be able to describe all that the baby can do and react as well as changes in the baby's physical growth. This analogy could also be brought into the classroom. As an educator, we would know the strengths and the weaknesses of the students and know how to maximize their potential by designing a constructive learning environment.

The next important point about assessment is it must be done periodically by giving evidence and feedback to the students. This monitoring process is crucial to clearly distinguish between assessment and evaluation. Thus, the term alternative assessment is being used instead of alternative evaluation. If an educator gives a task to the students in the first week of the semester and only collects the submissions without any monitoring and guidance on the task, even though the task may not be of the traditional pen and paper test, it cannot be considered as an assessment. However, it can be considered as an evaluation.

600

The term 'assessment' first started being used in Malaysia in the year 2007 and began with the term 'school-based assessment'. The term 'evaluation' was commonly used instead of 'assessment' prior to the year 2007. The term 'assessment' embeds enrichment and remedial activities and has been a topic of discussion since the 'school-based assessment' was introduced in Malaysia. In line with the needs of the Industry 4.0, Education 4.0 and 21st Century learning, the assessment in the classroom should be able to prepare students with the skills needed by the industry. Thus, it is expected that alternative assessment comes be aligned with transformative learning methods and constructive learning outcomes. This form of learning environment is supportive of the theory of constructivism and applies procedural and conditional knowledge in the classroom.

Alternative assessment has been defined by many authors and Table 1 below shows the meta-content analysis from ten authors on the definition of alternative assessment.

Table 1
Meta-content analysis on alternative assessment concept and definition

Reference	Non-traditional	Authentic procedure	Students Empowerment	Formative	Evidence Learning
Siemens (2015)	/		/	/	/
Hargreaves, Earl, and Schmidt(2002)	/			/	/
Alderson and Banerjee (2001)	/			/	/
Smith (1999)	/			/	
Kohonen (1997)	/	/	/		/
Sabol & Zimmerman (1997)	/				
Hamayan (1995)	/	/		/	
Huerta-Macias (1995)	/		/	/	
Law &Eckes (1995)	/	/	/		
Chittendon (1991)	/		/		/

From Table 1, it can be seen that most of the authors agree that alternative assessment is an alternative to the traditional assessment such as the paper and pencil test. Thus, assessment like quiz, examination and test are not considered as alternative assessment. It can also be observed that majority of the authors agree that alternative assessment must be a formative and continuous activity and provides evidence of learning for student's empowerment. Not all of the authors emphasize on authentic procedure as a major element of the definition. This may be due to the confusion that often arises in distinguishing between authentic assessment and performance-based assessment. However, it can be concluded that alternative assessment is non-traditional assessment as evidence of students' continuous development. The purpose of alternative assessment is not to compare students' ability as in a norm referenced test, but to develop student's ability to achieve the criteria being set based on the outcomes.

Ladder in alternative assessment

The different levels in alternative assessment will be discussed based on the Assessment Ladder by Carol et al. (2004). Level 1 happens when an educator is using one or more alternative assessments strategies as a summative measure. For example, the educator is using the final presentation or portfolio presentation in her class as an alternative assessment and use the marks as a summative measure to be included in the final evaluation. This final evaluation will contribute to the student's grade point average value. In this level, the educator will use the tool of assessment like rubrics, portfolio and checklist to record student's performance.

The second level is the moving upstage level. In this level, the educator will use the level 1 practice and use a variety of formative assessments at least four times during the grading period. This method is used to track students' progress rather than to use the alternative assessment as a summative assessment only. For examples, before the educator finalize the marks for the student's performance in a given task, the students will need to do a self-reflection, and the educator will do the track record for students' progress with the date, feedback, summary notes and so on. The process of monitoring should happen at least four times to ensure that the educator can track the students' progress continuously (Owen, 2016).

Level III is known as nearing the top level. In this stage, the educator will use the Level I and Level II strategies as the basis in the class and allows the flexibility in their standard assessment. In this level, the educator also allows the students to choose any medium or techniques to demonstrate their knowledge and skills that are aligned with the learning outcomes. In this phase, the most important part is the willingness of the educator to substitute what a student perceives in the assessment and give the students the freedom to choose any techniques to demonstrate their abilities. As an example, the educator gives the freedom to the students to select an assessment technique to prove their knowledge of the history of Malaysia. Students will perform the task based on the rubric given. Some of the students may choose to use drama, role-play, sing a song, documentary, report of interview and so forth. Then, the educator will evaluate and will use the marks for grading purposes. Figure 1 shows the hierarchy of the Ladder in Alternative Assessment.
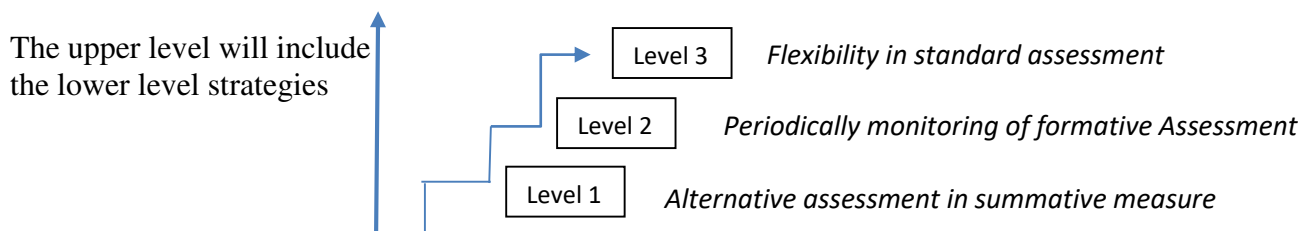

Figure 1. Ladder in Alternative Assessment

The educator who includes alternative assessment in the learning process recognizes the range of students' ability and will be rewarded with the student's creative work. Hence, what is more crucial is the process and outcome of the activities and not the product and output only. Ndoye (2017) and Ozdemir and Ozkan (2017) reports that educators must be creative in assessment to produce transformative activities. Now is the era in which educators should trust the students to assess themselves through self-assessment and peer assessment, not the assessment carried out by the educators only. To provide meaningful assessment, good preparation must be carried out through research and analysis of the impact towards student's achievements and outcomes.

Steps in Alternative Assessment

This paper will present a guideline on the complete steps in implementing alternative assessment. This guideline is based on the authors' practice of outcome-based education and constructive alignment. The first step is to look at the outcomes highlighted in the course learning outcomes and to ensure the assessment will measure the behavior expected from the outcomes. The behavior might be in the form of cognitive, affective and psychomotor achievements. In constructive alignment, it is important to take into consideration the outcome when planning a learning experience (Biggs, 2014).

The second step is choosing an alternative assessment method. The alternative assessment should be able to measure the behavior in the outcome. For instance, if the outcome is students will be able to conduct research with valid and reliable instrument, the alternative assessment that can be utilized is the mini-scale research. This assessment method is utilized because students will achieve at least level 3 of the Bloom Taxonomy (Applying), or level 4 in Simpson Taxonomy (Mechanism) and Level 3 of Krathwohl Taxonomy (Valuing). All these three different learning domain levels would require the students to be able to work independently (conducting research as in this case). Many other factors should be taken into consideration while planning the assessment (Tam, 2014). The number of students, students experience, and maturity, student's pre-knowledge, resources and facilities should be considered while planning the assessment.

The third step is choosing the tools of assessment. No one tool can suit all assessment techniques. An educator can choose either a checklist, rating scale, anecdote notes, rubric and interview protocol as the tool of assessment. The assessment tool is essential as the data will be taken from the tools. The right tools will produce valid marks. For example, if someone wants to measure their weight, he or she will use the weighing scale to get a valid measure, not by using a ruler or tape measure. In physical measurements, it would be obvious if someone is using the wrong instrument for measurement. However, in social science which involves latent trait aspects, it is not as straight forward. Many educators do not realize that they are using the wrong tools in measurement which will not yield valid results. The validity of results will be discussed further in the following section. The tool of assessment should be given to the students before they perform the task. This is to ensure that they are clear about the standard that they are expected to achieve. The educator can still change the tool (for example, the rubric) after getting some information from the students. This is known as negotiable rubrics. The rubric must always be aligned with the outcomes. The educator cannot change the rubric in the middle of the process in which the students are performing the task.

The next step is monitoring student's progress. The educator should have one progress record that will show the student's performance from the beginning until the end of the task. It is advisable to do more than three times (Carol.2004) so that students can get more feedback from the educator. This formative assessment is known as assessment for learning as students will learn and grow from the assessment that they go through and from the feedback they received. The record of the assessment is also evidence for the educator to use for summative assessment. The final step is to carry out continual quality improvement (CQI) towards the assessment. This can be done directly (from the student's score and item analysis of the rubric) or through indirect methods (survey and feedback from students or peers or stakeholders). The CQI is also an assessment process in assessing the assessment itself. There might be some improvement towards the techniques of assessment, the rubric, the monitoring process, the track record of students, or the way of giving feedback. The CQI should be done every semester after the completion of the course and reported in the Course Assessment Report. For the next implementation, new assessment with new CQI can be implemented. This cycle is referred to

as the Check -Do- Plan and Assess in CQI. Figure 2 shows the cycle of alternative assessment.

Figure 2. The cycle of Alternative Assessment.

How to ensure that the assessment is valid?

The validity of the assessment is an essential aspect that needs to be given attention. Validity is measuring what is supposed to be measured. As in the previous discussion, if you want to measure weight, the value that you get by using the weighing scale will give the accurate interpretation of your weight. Thus, the instrument can be said to be valid when the interpretation is appropriate for the trait. For example, if the educator wants to measure student's communication skills, the rubric must reflect the component of communication skills like the clarity of the ideas in communicating, the fluency and eye contact and not the content of the course.

In assessment, this is known as construct validity. Messick (1983) defines construct validity as determining the degree to which certain explanatory concepts or constructs account for performance on the test. For examples, if the educator has a rubric to measure the students' communication skills, there is a need to ensure that the items are accurate and adequate in measuring communication skills. The accuracy and the adequacy will guarantee the construct validity. In this paper, two approaches will be discussed, which is the meta content analysis and raw variances explained by measure analysis.

The first approach is more on gaining content validity. This is to ensure that the rubric is measuring the important constructs. Content validity shows how well the content of the rubric samples the criteria (such as communication in this case). Meta content analysis and expert interview are two approaches that can be conducted to gain content validity. Table 1 above is an example of meta-content analysis. In constructing Communication skills, the educator should refer to the references related to communication skills to get the accurate and appropriate construct to be measured. As a result, all the construct measured are appropriate and aligned with the underpinning theory. Besides doing meta-data analysis, the educator can also perform interviews with experts (such as experts in communication skills in this case) to get the level of agreement of selecting the accurate constructs under communication skills. This level of agreement can also be measured using Kappa analysis (inter-rater reliability).

The second approach to yield validity is by checking the raw variance as explained by a measure of the items toward the construct. This is one of the psychometric approaches that can measure the adequacy of the rubric. For example, the inter-rater reliability has two types

of rubric that measure communication skills. To know which rubric is more appropriate to use, the educator would first need to ensure that all the constructs are aligned with the outcomes and the assessment strategy. Then, the educator can analyze the rubric after taking some marks or observation towards the students. Table 2 and 3 show the possibility of analysis for two rubrics that measuring the same learning outcomes (communication).

Table 2
Example (a) for rubric analysis

```
Table of STANDARDIZED RESIDUAL variance (in Eigenvalue units)
                                          -- Empirical --   Modeled
otal raw variance in observations    =   70.3 100.0%        100.0%
  Raw variance explained by measures  =   36.3  51.6%         51.5%
    Raw variance explained by persons =    7.4  10.5%         10.4%
    Raw Variance explained by items   =   28.9  41.2%         41.1%
  Raw unexplained variance (total)    =   34.0  48.4% 100.0%  48.5%
    Unexplned variance in 1st contrast =   2.7   3.8%   7.9%
    Unexplned variance in 2nd contrast =   2.3   3.3%   6.7%
    Unexplned variance in 3rd contrast =   1.8   2.6%   5.4%
    Unexplned variance in 4th contrast =   1.6   2.3%   4.7%
    Unexplned variance in 5th contrast =   1.5   2.1%   4.3%
```

Table 3
Example (b) for rubric analysis

```
Table of STANDARDIZED RESIDUAL variance (in Eigenvalue units)
                                          -- Empirical --   Modeled
Total raw variance in observations    =   66.3 100.0%        100.0%
  Raw variance explained by measures  =   16.3  24.6%         24.7%
    Raw variance explained by persons =    5.4   8.2%          8.2%
    Raw Variance explained by items   =   10.9  16.4%         16.5%
  Raw unexplained variance (total)    =   50.0  75.4% 100.0%  75.3%
    Unexplned variance in 1st contrast =   2.3   3.4%   4.5%
    Unexplned variance in 2nd contrast =   1.9   2.9%   3.8%
    Unexplned variance in 3rd contrast =   1.8   2.7%   3.6%
    Unexplned variance in 4th contrast =   1.7   2.5%   3.4%
    Unexplned variance in 5th contrast =   1.6   2.4%   3.2%
```

It can be observed from Table 2 and 3, that the analysis shows that Rubric (a) can measure 51.6% of characters in communication skills, while Rubric (b) can only measure 24.6% raw variance for Communication Skills. Hence, by doing this analysis, we can know that Rubric (a) has better construct validity compared to Rubric (b) in measuring communication skills.

Conclusion

If we wish to transform students to be ready for the future, then we would need to change the traditional practice of assessing students. We will need to use alternative assessment to design transformative learning experiences and achieve constructive outcomes. The proper strategy in planning the alternative assessment is crucial to ensure the cycle of assessment can

benefit students and provide feedback to both students and educators. It is important to ensure that the tools used in alternative assessments are valid. It is also important that the interpretation of the assessment is valid and describe the true ability of the students. It is worth to note that students can escape from bad teaching, but they cannot escape from inadequate assessment.

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