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Teaching Approach using Microsoft Teams: Case Study on Satisfaction versus Barriers in Online Learning Environment

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Abstract. The current pandemic due to Covid-19 has affected most industries including education services. All universities in Malaysia were instructed to close during the first Movement Control Order (MCO), however the classes were still going on in some of the universities. Most of the student's learning time during this period has been added to the time that most of them already spent at home since the semester began without explicit face-to-face (FTF) instruction from lecturers. Meanwhile, lecturers are scrambling to adapt with the new situation and prepare suitable contents for an online learning platform. This study investigates the problems and challenges that emerged when using online platform, focusing on Microsoft Teams application (Microsoft Teams), and proposes a model of online teaching for theoretical courses in university. The constructive online survey is chosen as the methodology and data collected from 154 undergraduate students are analysed using a technique of quantitative analysis. The results are discussed and at the end, this study proposes a teaching online course via Microsoft Teams application model that is suitable based on successful outputs.

Keyword. Face-to-face, online learning, student's behaviour, online application, online study challenges

1. Introduction

This study investigates the problems that are emerged among students who were involved in online learning and proposes a model for online teaching and learning using Microsoft Teams (MS Teams). This study was conducted on Microsoft Teams (MS Teams) application for the course of Introduction to Computer Organization and Architecture at a private university in Malaysia. The course lecturer created meeting sessions based on the number of classes per week, for both lecture and tutorial. Although this class was running during MCO period, the teaching and learning process were held as the same as in face-to-face (FTF) classes, in which it requires students to log in to the sessions and expected them to complete the module assessments, such as quiz, midterm test and final exam.

Classes, dynamic settings and experiences via online learning in education have been well studied. Due to the Covid-19 pandemic crisis all over the world, the education setting is also affected and comes to a transition from teaching to learning as a primary goal of education. Currently, many



university lecturers are using online or virtual applications, such as MS Teams, Google Meet, Hangout and the university systems during the Covid-19 pandemic for their classes. Microsoft Teams application allows users to create a 'real-time' meeting that has online post-class lecture video recording feature, share the teaching materials like lecture notes, articles or additional exercises, and it provides a chat relay for direct communication. In addition to that, it has a function to create the online quizzes that automated marking, which eases a user to check his or her answer.

2. Related Works

According to Dziuban et al [1], online learning has been confronted by concerns about quality from the established educational community and society at large. Often, in addressing these concerns, students' perceptions of their course experience becomes a surrogate for learning engagement in the context of satisfaction [1]. Loh and Smyth [2] identified the issues of 'less active or missing in action', 'social exchange', 'perceived equity' issue and 'final fairness' issue as the challenges in first time online learning setting. Here, students construct and hold greater responsibility for their own learning from the face-to-face (FTF), lecture-based model [3].

The online learning should achieve four major elements: interaction; social presence; structure; and satisfaction [4]. According to his study, the increased percentage of students' satisfaction will reduce the rate of students drop out of online classes. The same goes to social presence rating, in which when it increases, students will feel that they are a part of the learning environment and it makes the class more interactive and less structured. Learning style has no relationship with students' performance. Unfortunately, Weiling and Hofman [5] found that 'study behavior' and 'motivation' factors are significantly related to students' performance via online learning. Based on the experiment, students who are expecting high difficulty in online study at the first time for their module grades and also the difficulty level of texting and test items show poor ability of students through online assessments. On the other hand, online students might easily feel isolated and lose their confidence and patience since they have limited opportunity to communicate and receive direct encouragement from lecturer and classmates [6].

The problems in online learning environment that are mainly identified are related to the impacts toward learners' achievement, engagement and retention [7]. All these impacts can reflect to enhancement of learners' engagement, effective facilitation, developing assessment techniques and designing interactive faculty development program. In another paper, Dziuban et al. [1] successful identified three underlying satisfaction components of learners via online study: (1) engaged learning, (2) agency, and (3) assessment, which supports previous studies.

Continued studies of learner's perspectives of online learning environment are needed in order to build more effective web-based instruction that can optimize the learning experience. However, research found that the offering of online learning with emphasized recordings of meeting is an easy extension of regular FTF meeting, and is of practical importance [5].

3. Methodology

The method of this study can be divided into three sections: (1) participants, (2) measurement and research design, and (3) procedure.

3.1. Participants

The participants were 154 undergraduate students enrolled for Software Engineering major in a Malaysian private university. Table 1 shows the overall participants with most of them came from a middle-class family. They were freshmen and sophomores aged from 19 to 22 years old, with total of 99 males and 55 females. They enrolled the course of Introduction to Computer Organization and Architecture (coded as UECS1013) in their first semester. Research found 96 percent (96%) of the students were a first-time user of MS Teams application, in which they started using it for this course during online classes.

Table 1. Demographic (n = 154).

	Number of Learners	Percent (%)
Gender		
<i>Male</i>	99	64
<i>Female</i>	55	36
Age		
<i>19</i>	60	39
<i>20</i>	68	44
<i>21</i>	23	15
<i>22</i>	3	2
Online Course Experience		
<i>First time online learner</i>	77	50
<i>More than one time</i>	77	50
Experience using MS Teams		
<i>Yes</i>	5	3
<i>No</i>	149	97

3.2. Measurement and Research Design

An online survey was used to measure individual student's satisfaction, based on the questionnaire model by Song et al [8]. Table 2 shows the measurement used for the level of satisfaction, which is referred to with three-point scales: more satisfied; equal satisfied; and less satisfied. The three-point scales communicate two pieces of information, which are neutrality and direction [9].

Table 2. Measuring Components on Students' Satisfaction as Online Learner.

	Degree of Points
Level of Satisfaction	
<i>More satisfied with online learning</i>	3 – Agree
<i>Equal satisfied with online learning</i>	2 – Neutral
<i>Less satisfied with online leaning</i>	1 – Disagree

The result is obtained by analyzing the collected data from two components: (1) create satisfaction online learning environment; and (2) create barrier in online environment; as shown in Table 3.

Table 3. Categories in Question Design (Song et al., 2004).

	Indicator(s)
Category A	
<i>Create satisfaction online learning environment MS Teams</i>	<ul style="list-style-type: none"> • Design course via MS Teams • Comfort with MS Teams • Motivation • Time management
Category B	
<i>Create barrier in online learning environment MS Teams</i>	<ul style="list-style-type: none"> • Technical problem • Lack of community • Difficult to understand the instruction's goals

3.3. Procedure

There were 154 number of students enrolled in UECS1013 class in May 2020 semester. All students followed a same university course assessment with 20 percent of quizzes, 20 percent of midterm test, 20 percent of group assignment and 40 percent of final exam. The lecturer set five tutorial sessions (each session required one-hour lesson) and two lecture sessions (one session required two hours, while another one session required one hour) via MS Teams. The lecture notes, exercises and additional information were uploaded in Files tab, as shown in Figure 1.

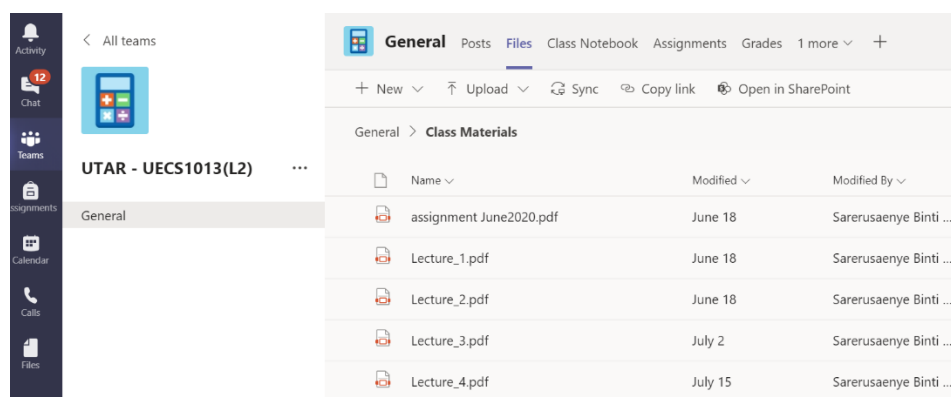
**Figure 1.** Files tab in Microsoft Teams.

Figure 2 shows MS Teams message chat that enabled students and lecturer to do discussion and share files during their online meetings. Each class meeting is automated to record the video, and the lecturer took the attendance by auto-generated function of attendance list. After the online session, lecturer needs to key in the attendance manually in the university web attendance system. Other than that, lecturer must set the assessment marking scheme in university system that has restricted time setting for students to submit their answer scripts, like quizzes and midterm test, while the sessions being conducted via MS Teams.

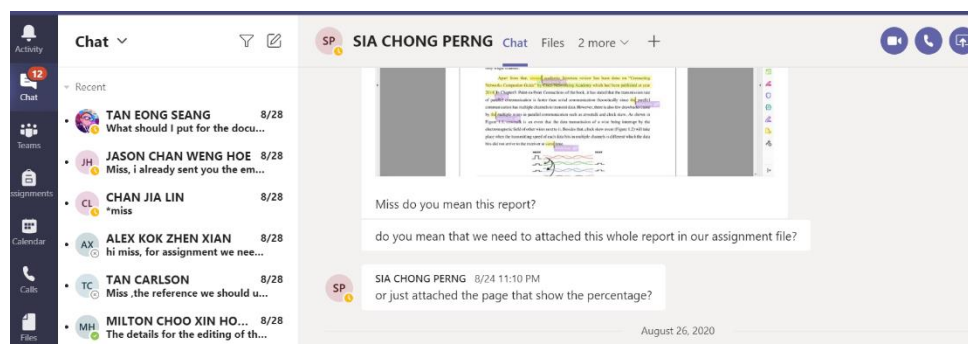


Figure 2. View message chat in Meet session of Microsoft Teams.

MS Teams allowed students to switch on their microphone and request control while they have a discussion during tutorial session. and for this round, the lecturer also created one Teams Meeting session dedicated for special meeting to discuss assignment matters. By the end of the semester, a survey was sent out through online Google Form to assess the components in this study, which is significant to develop a model of teaching approach using MS Teams application. Each of classes meeting is automated recorded and lecturer took the attendance by auto-generated function from the attendance list. Next, instructor needs to key in the attendance manually inside university web attendance system for faculty record. Other than that, instructor sets the assessment marking scheme in university system which it has restricted time setting for submission of student's answer script.

4. Results and Findings

Results indicated that most participants are “more satisfied” in component of design course via MS Teams, comfort with environment of MS Teams and in terms of time management. Most of them found that MS Teams has user-friendly environment and they were not facing any difficulty in navigation although 149 out of 154 number of students were classified as ‘first-time’ users. Table 4 describes the summary of participants in percentage, based on the level of satisfaction.

Table 4. Results of Creating Satisfaction in Online Learning Environment.

	Degree of Points	Percent (%)
Level of Satisfaction		
<i>More satisfied with online learning</i>	<ul style="list-style-type: none"> Design course via MS Teams Comfort with MS Teams Motivation Time management 	78 62 53 58
<i>Equal satisfied with online learning</i>	<ul style="list-style-type: none"> Design course via MS Teams Comfort with MS Teams Motivation Time management 	22 28 57 30
<i>Less satisfied with online leaning</i>	<ul style="list-style-type: none"> Design course via MS Teams Comfort with MS Teams Motivation Time management 	0 10 20 17

Participants described the different learning style between FTF meeting and online meeting, for example the function of post-recorded video helped them to review their lecture topic by topic in every

week, as a group of introvert participants has an opportunity to ask their questions directly to the lecturer, which gave them 24/7 connection to communicate with the lecturer. This factor indirectly helped to build students' self-study motivation, in which they can playback the session recordings many times and could highly pointed up the confusion of information given by lecturer to the next meeting. However, the participants who were in an "equal satisfied" level found the difficulty to show their texts and work flow (in topic of conversion technique and numerical systems) to be discussed during their lesson. Participants also complained that they need more time to meet the lecturer for their assignment due to limitation of each session. Based on the experience with this online meeting, research discovered a problem that participants issued as insufficient time for group assignment discussion. All of them allowed to meet within maximum 15 minutes of discussion every week. Other than that, participants obtained less satisfaction in managing their time for submission of midterm test script during the midterm test.

Many participants reported high satisfaction of studying via online environment compared to FTF classes. However, the participants experienced an equal satisfaction level with FTF classes in terms of technical problem (70%) and lack of community (68%), as shown in Table 5. These two components become the main challenges to participants due to the transmission of FTF classes to online learning using MS Team application.

Table 5. Results of Creating Barrier in Online Learning Environment.

	Degree of Points	Percent (%)
Level of Satisfaction		
<i>More satisfied with online learning</i>	• Technical problem	23
	• Lack of community	20
	• Difficult to understand the instruction's goals	25
<i>Equal satisfied with online learning</i>	• Technical problem	70
	• Lack of community	68
	• Difficult to understand the instruction's goals	65
<i>Less satisfied with online leaning</i>	• Technical problem	7
	• Lack of community	12
	• Difficult to understand the instruction's goals	10

Poor internet connection and low specification of personal computer or laptop was reported at certain time during this study, where participants were disconnected and facing technical problem with their personal computers or laptops during the online sessions. This problem also affected their attendance because when internet was disconnected, they were automatically been signed out from the meeting. Therefore, their name is not appear in the list of attendees.

Sometimes, the meeting did not include lecturer's camera view and focused on lecture notes that are shared by lecturer's desktop screen. Participants relied only on the slides view and listened to the voice. They did not feel as in a real class, where they can talk to their classmates and communicate with their friends. This situation created the isolation that contributes to a gap of community and less communication between participants. Although MS Teams provided flexible online quizzes form, students found that they cannot re-submit the form and cannot do discussion directly as in FTF class.

A total of 65 percent (65%) of participants reported an "equal satisfied" response on using online learning and FTF in terms of difficulty to understand the instruction goals. Overall, the participants have no barrier using online meeting to understand the instruction in lecture topics. According to Akyol and Garrison [10] each student's commitment is cultivating a positive learning community that could be an important factor for success in online learning.

5. Discussions

This online class successfully produces many positive outputs from the first category of survey (Category A). The components of online learning in MS Teams environment that are been recognized as helpful in learning process are: (1) post-recorder meeting; (2) quizzes form; (3) flexible windows chat; and (4) general links using Microsoft (MS) applications. These four components contribute significant impacts toward participants' learning process that can be derived into five units: (1) easily understood instruction; (2) time management; (3) no delay in submission of course assessment; (4) enhance student's understanding (self-study); and (5) effective way in discussion and communication. Therefore, from these four positive feedbacks, this study suggests an idea for a development of teaching approach, initially using current course teaching plan using MS Teams as shown in Figure 3.

Lecturer may create a meeting room (or session) and generate a password to pass it to all students via email or code invitation. The normal classes can be a lecture, tutorial, discussion and others. Each of the meeting room has different authorized access. This study proposes the creation of independent meeting room for assignment progress and discussion. This type of room will be an effective platform to administer and manage a large volume of students at one time. Other than that, lecturer can start uploading any documents and lecture slides a week before the exact date of meeting in post section via MS Teams. Here, all students who join the meeting room can download and view it at any time. MS Teams offers auto-recording function in meeting function, therefore all the sessions recording can be directed to student's email.

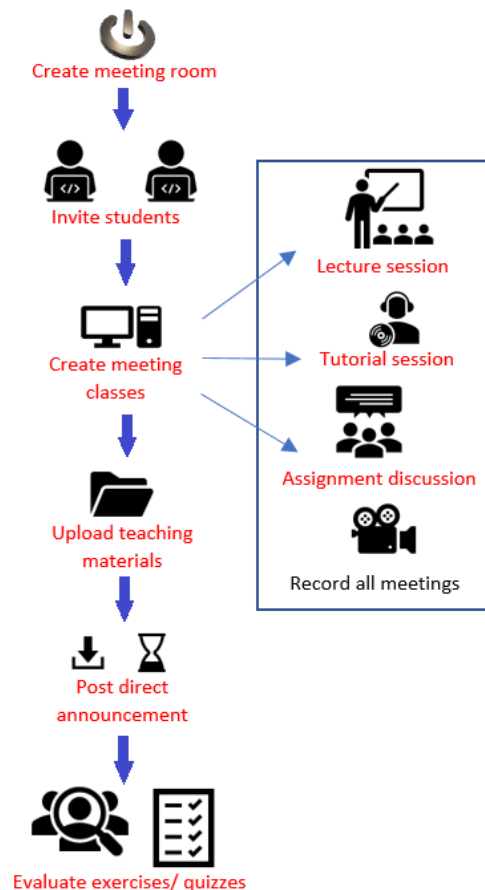


Figure 3: Proposed teaching approach using Microsoft Teams application

6. Conclusion

This study proposes a teaching approach using specific application, i.e. Microsoft Teams, due to the sudden hike in demand to perform online learning due to the recent Covid-19 pandemic. Nevertheless, other applications with similar tools, functions and features as provided by MS Teams can apply the same teaching approach as proposed. With the responses from 154 students in the survey conducted, in which a high percentage of first-time users took part, this proposed teaching approach is deemed valid and scalable for big and small classes. The two main components identified in this study, namely Creating Satisfaction and Creating Barriers, are significant to the online learning platforms. However, a few disadvantages using this application in term of : (1) student feedback, (2) social isolation, (3) time management and (4) self-motivation. Online student feedback is limited and relatively unresearched topic area that may successful demonstrate using peer feedback. Lack of interaction may lead to social isolation with lack of communication that often lead to mental issues such as anxiety and negative thoughts. This problem can be solved by monitoring students for signs of social isolation and instructor may utilized blended learning environment. This study also found students taking online learning course often required to learn difficult in time management because they are comfortable with home setting without any of added pressure that normally associated with FTF classes. This factor makes most of students who lack of self-motivation and time management skills to abandon their studies more easily. Student needs to take initiative to communicate to instructor and peer-to-peer personally. This is important to ensure student's discipline especially when they are unable to work effectively in a team setting or group assignment. Future research in this area is expected to be on the in-depth teaching and learning experience from both lecturer and students' perspectives, for other natures of course contents, e.g. more technical with hands-on lab tutorials, and fully theoretical with less FTF sessions.

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