Students and lecturers in institutions of higher education were critically hit by the unprecedented changes as a result of the Covid-19 pandemic (Chung, Mohamed Noor & Mathew, 2020). Many prestigious universities around the world have since fully adopted online learning as a way to ensure continuity of education. The University of Cambridge has become the first university in the United Kingdom to move teaching and learning online for a full year 2020/2021 to limit the spread of Covid-19 (Europe News, 2020). Other universities around the world have since followed the move.

In Malaysia, like many countries around the world, the Movement Control Order (MCO) was enforced to flatten the curve of the spread of Covid-19. The Ministry of Higher Education announced that all public and private universities in Malaysia are to conduct teaching and learning activities via online learning until the end of December 2020 (Malaysian Ministry of Higher Education, 2020). The academic fraternity were very resilient, quick to adapt and proactive in overcoming the challenges presented by MCO. Lessons, projects, groups work, presentations and assessment were all prepared within two weeks and carried out with the aid of technology. Although it is undeniable that online learning is deemed the best solution to ensure continuity in learning in the era of what has been coined the “new norm”, there may be some setbacks such as lack of human touch such as sensing students’ incomprehension via facial expressions, cracking small jokes to enlighten mood, student engagement and interaction which can be done more effectively in traditional face to face learning. The absence of social interaction and the inability to form study groups previously enjoyed by students are also some of the challenges they now have to contend with.

Universiti Teknologi MARA (UiTM), a public university in Malaysia, started online learning on 12th April, 2020. Around the same time, the Learning Management System (LMS) known as UFuture was launched to complement the earlier i-Learn system. Prior to the implementation of full online learning, blended learning (BL) was used. The concept of BL was introduced to most disciplines by combining the traditional face-to-face teaching and online communications. It is aimed to prepare the students for self-directed learning, the overall satisfaction towards the theory and real practices are still scarce (Abu Seman, Hashim, Mohd Roslin, Mohd Ishar, 2019). Since the use of i-Learn was not compulsory, many lecturers chose other more user-friendly and free platforms such as Google Classroom and other social media such as WhatsApp, Telegram and YouTube (Chung et al, 2020).

In view of these drastic changes, while lecturers were resilient and had to prepare classes within a fortnights’ time, many university students were found to be grappling with online learning. Despite all policies and preparations by the Ministry of Education, the government, the universities and the academic staff, the question of whether university students in Malaysia are ready for online learning remains. The objectives of the study are to investigate if demographic factors make any difference in their readiness to learn, the experiences they go through and the intention to continue using online learning. The study also attempted to find out the preferred method of online learning and challenges the students face. This study uses the Online Readiness Scale (OLRS) by Hung, Chou, Chen and Own (2010) to answer the following questions:

**Introduction and Background**

Since the 18th of March, a Movement Control Order (MCO) was introduced in order to increase social distancing among members of the public, to curb the Covid-19 pandemic. At the time, schools, colleges, and universities were vacated, and classes came to a halt. Thus, some universities began procedures of moving classes online, including Sunway University. Consequently, the School of Mathematical Sciences moved the MAT1024 Calculus course online for the first time. Hence, students from previous semesters have taken this course face-to-face, while the March 2020 semester are the first batch of students to experience it completely online. Following this, students relied on online learning platforms (OLPs), primarily eLearn, when learning the material and engaging with both peers and the lecturer. Thus, it was vital that the perceived usefulness, perceived satisfaction and facilitation of student-teacher and student-student interaction be studied with more detail in the context of the students’ usage of eLearn.

## **Aim of the Research**

Despite the increasing number of courses fully running online and blended learning environments which utilize OLPs, little is known about the general perceptions of usefulness and satisfaction of students who use the platforms. There is also a lack of in-depth studies examining the interaction of students when using those platforms. The purpose of the study is to investigate the perceived usefulness of eLearn and to identify the factors on eLearn which contributed to student perceived satisfaction and the features that facilitate interaction between students with peers and lecturers.

## **Research Questions**

1. What are the useful features of eLearn that could facilitate learning?
2. What are the important factors on eLearn related to students’ perceived levels of satisfaction?
3. How do students interact with their peers and lecturers using eLearn?

## **Research Objectives**

1. To investigate the perceived usefulness of eLearn.
2. To examine the perceived satisfaction on online learning.
3. To examine the interaction between students with peers and lecturers using technology.

**Literature Review**

**Perceived usefulness of eLearn to students**

As a platform, eLearn has varying degrees of perceived usefulness to the users, namely students and lecturers. In the context of e-learning technology, perceived usefulness indicates that using technology will enhance individuals’ performance in learning, acquisition and in increasing the behavioral intention of students to supplement, complement or to complete their studies via an OLP entirely. The following presents a review of factors that may affect the perceived usefulness of eLearn to students.

Firstly, there are certain characteristics of OLPs that will cause students to perceive it as more useful in the context of their learning and academic performance. For example, similar OLPs have previously been perceived as useful when it creates an enjoyable online learning environment (Şahin, 2019), encourages students to actively participate, to have a greater motivation to study (Keržič, Tomaževič, Aristovnik, & Umek, 2019), or when it increases the interaction and engagement between learners (Wu, Wu, & Li, 2019). As a result, the perceived usefulness of the platform depends on the characteristics of the OLP.

Next, the interaction of other users such as lecturers or peers with the platform or content within the platform also motivates students to perceive it as useful. For example, learners will find the use of e-learn platform particularly useful if it is accompanied with individual help, teacher's feedback, positive teacher-student interaction (Keržič, Tomaževič, Aristovnik, & Umek, 2019), elements of gamification (Şahin, 2019) and class-wide discussion that advances their conceptual understanding and knowledge construction (Wu, Wu, & Li, 2019). The eLearn platform can facilitate most of these functions, to the benefit of the learner and instructor.

Lastly, the efficiency of the OLP when it is used to conduct tests and other forms of student performance evaluation is also crucial in influencing the perceived usefulness of the platform. For example, students have reported higher levels of enjoyment and competition when using online platforms to replicate a standardized testing environment (Şahin, 2019). This is because these OLPs provide feedback to both teachers and learners (Şahin, 2019). The feedback is crucial in understanding the topic or lesson learned during the online learning sessions. Therefore, the efficiency of assessments and tests carried out in eLearn tends to influence the perceived usefulness of the OLP to the user.

In conclusion, the perceived usefulness of an OLP such as eLearn can be influenced by the characteristics of the OLP itself, the interaction of the users with the platform, and the efficiency of the platform when used to conduct tests. Likewise, as the perceived usefulness of the platform increases, the students would be more likely to utilize it to enhance their learning. This is in line with a past study by Faqih, where results demonstrated that perceived usefulness has a positive influence on undergraduate students in increasing the behavioral intention to adopt e-learning systems (2016).

**Factors of eLearn which contribute to student satisfaction when using the platform**

According to Horzum (2017), satisfaction can be defined as the fulfillment and pleasure level of the students about various aspects of the learning service received in an online learning program. The satisfaction affects the duration of usage of OLPs and whether students will use it outside of the required time. The following presents a review of the factors that may contribute to student satisfaction when using the eLearn platform.

In this modern era, mobile devices are part of daily modern life. Students tend to make use of various mobile applications to support their learning process. For example, graphing calculators are easily available as mobile applications, which can become a useful supplement to math-focused subjects. The use of mobile technology in education provides educators with the opportunity to reimagine teaching and learning (Heflin et al., 2017). Taking this into account, online courses may see a huge benefit in student learning when OLPs are designed for use with mobile devices as well. However, despite the wide usage of mobile devices among students at all levels, it might not have a large enough positive impact on students' performance (Bulman & Fairlie, 2016). So, the design and integration of OLPs must be able to adapt accordingly to avoid student dissatisfaction when learning.

Following that, assessment tools are an important determinant of the effectiveness and quality of an online course; therefore, it becomes a factor that affects the satisfaction of e-learning students (Mahmud et al., 2020). As an OLP, eLearn allows lecturers to conduct quizzes and tests for students to complete the required assessment. More importantly, online assessment tools are highly interactive, customizable, trustworthy, secure, and can be accessed via multiple devices. Besides, Rodríguez et al. (2018) showed that using different assessment methods facilitates the relationship between students and teachers. Besides that, the various methods of assessing a student can improve their performance, as this is normally associated with receiving multiple feedback from the teacher or instructor. Therefore, OLPs such as eLearn need to be able to conduct assessments and tests efficiently to ensure student satisfaction.

Lastly, eLearn as an OLP integrates communication tools, including a bulletin board and chat room (Kattoua et al., 2016). Those communication tools allow learners to interact with their peers and lecturers whenever they want. In addition, Gray & Diloreto (2016) stated that active discussion among course participants significantly affected students’ satisfaction and perceived learning. Besides that, good teacher-student interaction will create positive relationships in the classroom and lead to effective learning (Ahmad et al., 2017). Learners will feel more motivated and involved during the learning process. As a result, interactive tools contribute to student satisfaction when using eLearn.

In conclusion, students feel satisfied when using OLPs that can integrate into mobile devices well, when OLPs are able to conduct quizzes, tests, and other assessments efficiently, and when the OLP comes with adequate interactive tools to make the learning experience better. eLearn has been able to adapt these features into the design and structure of the web and mobile applications.

**Student-instructor and student-student interaction facilitated by eLearn features**

Interaction between learners and other learners or with the instructor appears frequently as a defining characteristic in quality learning experiences. Additionally, researchers' belief in the importance of student-teacher interaction is so widespread that it is assumed to be a basic need for learning to occur. The following presents a review of why learner-learner and learner-instructor interaction is important as well as how OLPs especially eLearn may facilitate the need for quality interactions in addition to socially focused course design.

Firstly, in the center of the educational landscape, interactions between learners and instructors are one of the key factors affecting the development of learners. The interactions between instructors and students affect the learning atmosphere. If teachers create a comfortable learning environment, then the students will enjoy being there, both on well-prepared and well-performed (Churchill et al., 2017). Once students can contribute their knowledge in friendly atmospheres, they feel more motivated and positive towards completing their assignments, as well as using a lot of cooperation in groups. As a result, instructors play a significant role in shaping the academic achievements of students (Akhtar et al., 2019).

Next, even though interaction with educators is important, the social presence of interacting with peers in the OLPs will allow students to develop a mutual understanding and become closer to each other (Swan & Shih, 2005). Additionally, unlike the interaction with educators, there have been two different results shown in past studies. One research shows that during collaborative learning, students tend to have less interaction with their team members. (Heflin, Shewmaker & Nguyen, 2017). On the other hand, Barbour and Bennett (2013) identified that building strong online relationships lead students to feel emotionally comfortable which leads them to be emotionally engaged in the learning environment. Gibbs and Poskitt (2010) also argued that this was a requirement for cognitive engagement.

Lastly, OLPs can increase the level of interaction that students have with each other students and their teachers. The courses must be designed to include socially focused exchanges as an extension of core course content. For example, OLPs are used for increasing student participation in discussion forums, giving feedback on student input during classes, assessment feedback, and virtual tutorial classes (Walji, Deacon, Small, & Czerniewicz, 2016). The eLearn platform allows for these activities to be facilitated via features such as ‘Blackboard Collaborate’ for video conferencing, blogs, discussions, groups, organizations, and instructor-enabled class conversations. Through these features, OLPs can increase the level of interaction that students have with each other students and their teachers.

In conclusion, the interaction between students with peers and lecturers is vital in ensuring a quality online learning experience. OLPs that integrate suitable features and course designs that make room for social interaction is highly beneficial to learners. The myriad of features that eLearn provides is a prime indicator of how well the OLP can facilitate the interaction between students with peers and lecturers.

**Research Methodology**

## **Method**

The research employed a non-experimental research design in which a survey was developed and adapted from existing gaps, pertinent to this study.

## **Instrument**

The survey was conducted to investigate the perceived usefulness of eLearn, and to identify the factors of eLearn, which contribute to students’ satisfaction and the features that facilitate interaction between students with peers and lecturers. The study targets students from the School of Mathematical Sciences, who have taken or are currently taking Calculus (MAT 1014).

## **Analyses**

The frequency shows the number of students who think the online assessment is more convenient and reliable, the number of students who vote for the factors contributed to their satisfaction when using eLearn, and the number of students who feel the features of eLearn facilitate the student-student and student-instructor interaction. The percentages help to juxtapose the number of students between the face-to-face classes and online classes from the linear scale towards the 15 statements which 5 of the statements belong to each objective. Lastly, the mean in the analysis shows the average number of students between the last semester face-to-face classes and online classes, and the average number of students between face-to-face classes and online classes from the table for further comparison.

## **Sample**

The study was conducted during June 2020 and focused on students from the School of Mathematical Sciences (SMS) of Sunway University. **A total of 60 students who had attended MAT1014 Calculus subject took part in this study, of which 30 students have taken this subject previously (face-to-face learning semester) and 30 students are taking this subject currently (online semester).**

## **Procedure**

First, the research topic was finalized by reading past studies based on interests. After understanding the arguments presented around 20 academic journals, the title and 3 research objectives were also finalized. After finalizing the sample size of the survey, the research instrument which was a survey was designed. The survey contained 4 sections, one for the survey demographic, and the rest were related to the research objectives. The 3 sections comprise of 5 questions each. After finalizing the survey items in Google forms, the links were sent to prospective respondents via email and WhatsApp messages. The data and information were then collected anonymously and stored automatically in a spreadsheet, convenient for subsequent data analysis using Microsoft Excel.

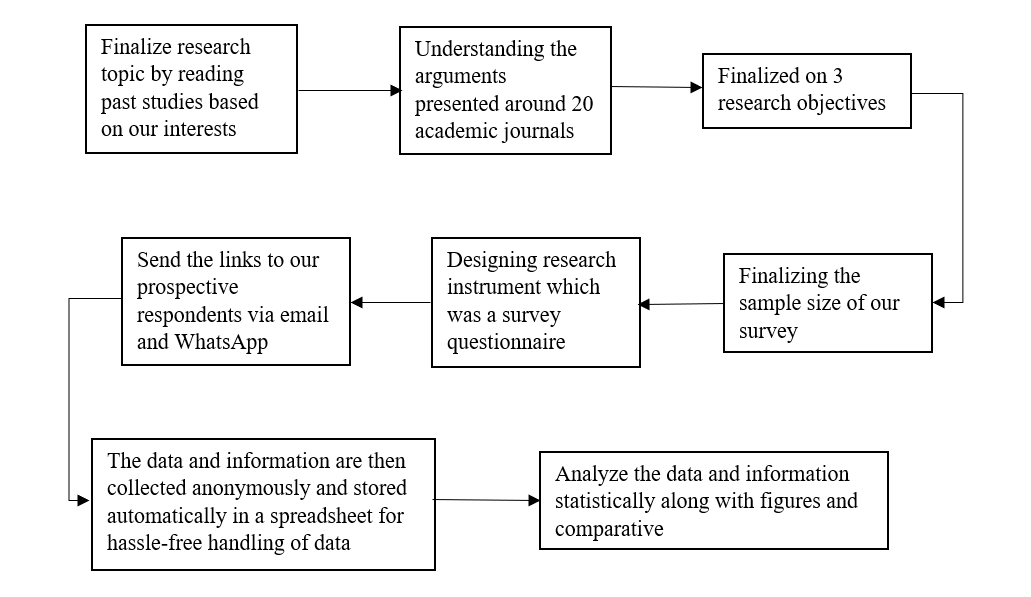


Figure 1: Flowchart of Procedure

## **Findings and Discussion**

The total number of responses collected is 60 responses, where 28 responses are from students that took MAT1014 Calculus during any previous semester and 32 responses from students who are currently taking this subject. To ensure equal comparison, only 28 students are randomly selected from each group.

## **Findings**

## ***The perceived usefulness of eLearn***

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SECTION 1A: THE PERCEIVED USEFULNESS | | January 2020 cohort | | | | | april 2020 cohort | | | | |
|  |  | *SD* | *D* | *N* | *A* | *SA* | *SD* | *D* | *N* | *A* | *SA* |
| S1 | The design of the eLearn website is easy to understand and navigate through. | 0 | 0 | 4 | 12 | 12 | 0 | 1 | 5 | 19 | 3 |
| S2 | The live sessions carried out on BB Collaboration is more reliable and easier to navigate than other platforms. | 0 | 2 | 3 | 14 | 9 | 0 | 5 | 5 | 15 | 3 |
| S3 | The recorded live sessions uploaded on eLearn helps me to enhance my understanding on a lesson after the session has ended. | 0 | 1 | 3 | 11 | 13 | 0 | 1 | 2 | 15 | 10 |
| S4 | The notification settings allow me to filter unnecessary information from being sent to my email. | 2 | 3 | 12 | 6 | 5 | 1 | 2 | 8 | 12 | 5 |
| S5 | The due date function allows me to keep track of the assignment submission date. | 0 | 2 | 6 | 14 | 6 | 0 | 3 | 8 | 11 | 6 |

Mean –

Std Dev –

Based on Table 1 Section 1A, 85.7% of the respondents agreed or strongly agreed with items S1 and S3 respectively. Items S2 and S5 both have the highest number of respondents (50%) that agree, and 42.9% respondents were neutral for item S4. Item S4 is the only statement among all items S1-S5 that have responses for all options in the linear scale.

Based on Table 2 Section 2A, most of the respondents agree with the above 5 statements, as for each statement ‘agree’ is the highest. Next, 89.3% of respondents agree and strongly agree with item S3. Among the items S1 to S5, 3.6% of respondents strongly disagree with item S4, while item S2 has the greatest number of respondents disagreeing with the statement (17.9%).

***Factors of eLearn which contribute to student satisfaction when using the platform***

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SECTION 1B: PERCEIVED SATISFACTION | | January 2020 cohort | | | | | april 2020 cohort | | | | |
|  |  | *SD* | *D* | *N* | *A* | *SA* | *SD* | *D* | *N* | *A* | *SA* |
| S6 | The announcement function allows me to keep track of the notes and assignment given by lecturers. | 0 | 1 | 2 | 17 | 8 | 1 | 1 | 3 | 16 | 7 |
| S7 | The forum feature allows me to engage in meaningful discussion with my peers. | 1 | 6 | 14 | 6 | 1 | 3 | 5 | 12 | 7 | 1 |
| S8 | It is easy to use the quizzes and tests feature on eLearn to complete the required assessments. | 0 | 1 | 6 | 13 | 8 | 1 | 0 | 4 | 15 | 8 |
| S9 | It is easy to access course content provided by the lecturer on eLearn. | 0 | 0 | 2 | 14 | 12 | 1 | 0 | 2 | 14 | 11 |
| S10 | It is easy to submit my assignments on eLearn. | 0 | 2 | 4 | 12 | 10 | 0 | 1 | 5 | 17 | 5 |

Mean –

Std Dev –

Based on Table 1 Section 1B, most of the respondents agree or strongly agree with almost all the statements above except for item S7, where 50% of the respondents are neutral, and the number of respondents who agree and disagree is the same which is 25% of the respondents.

Based on Table 2 Section 2B, the pattern of this table is almost the same as Table 1 Section 1B However, the number of respondents who chose ‘strongly disagree’ is greater, especially for item S7, where 28.6% of respondents disagree with the statement. Additionally, for item S7, the number of respondents who disagree and agree is the same, which is 8 respondents (28.6%) each.

***eLearn features that facilitate interaction between students with peers and lecturers***

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SECTION 1C: FACILITATing INTERACTION | | January 2020 cohort | | | | | april 2020 cohort | | | | |
|  |  | *SD* | *D* | *N* | *A* | *SA* | *SD* | *D* | *N* | *A* | *SA* |
| S11 | The “whiteboard” feature allows me to input my ideas and show them to my peers and lecturer. | 3 | 3 | 17 | 2 | 3 | 2 | 3 | 17 | 5 | 1 |
| S12 | I willingly interact with other students with microphone and use the chat function when having BB Collaboration live sessions. | 3 | 7 | 8 | 8 | 2 | 5 | 11 | 5 | 5 | 2 |
| S13 | I rely on my peers to answer questions asked by the lecturer when having BB Collaboration live sessions. | 0 | 1 | 11 | 14 | 2 | 3 | 2 | 13 | 9 | 1 |
| S14 | Other students are more likely to use the chat feature than talk openly using the microphone feature during BB Collaboration live sessions. | 1 | 0 | 2 | 11 | 14 | 1 | 0 | 4 | 10 | 13 |
| S15 | The external link feature on eLearn allows me to access content related to the subject from other websites easily. | 0 | 0 | 10 | 12 | 6 | 1 | 1 | 5 | 15 | 6 |

Mean –

Std Dev –

Based on Table 1 Section 1C, for this section, more respondents choose ‘neutral’, especially for item S11. For items S12, S13, and S15, the number of respondents agrees with each statement is almost the same as the number of respondents who choose ‘neutral’ for each statement. Lastly, 89.3% of respondents agree with item S14.

Based on Table 2 Section 2C, for above items S11 to S15, the number of respondents who agree is more than the number of respondents who disagree, except for item S12, where 57.1% of respondents disagree with the statement, a higher percentage compared to the 25% of respondents who agree. Item S11 has the greatest number of respondents who are neutral.

**Discussion**

***The perceived usefulness of eLearn***

As mentioned in the literature review, the characteristics of eLearn, the interaction of the users with eLearn, and the efficiency of conducting tests on eLearn affect the perceived usefulness of eLearn to students. In the first part of the survey (items S1 to S5), item S1 and item S2 belonged to characteristics, item S3 asked on the interaction and lastly, item S4 and item S5 fell under the categories of efficiency of conducting tests. By comparing the tables, the number of respondents from 1A that agree on items S1, S2 and S5 are more than in 2A, and the number of respondents from 2A that agree on items S3 and S4 is more than 1A. From the results, seniors found more perceived usefulness of eLearn than current students, as the time that the seniors started to use eLearn is more than current semester students, so seniors may have a better understanding of eLearn function than current semester students (Keržič, Tomaževič, Aristovnik, & Umek, 2019). Due to the current online semester, current students only interacted on eLearn while seniors underwent blended learning, therefore the online interaction of current students with eLearn is more than the seniors (Wu, Wu, & Li, 2019). For both current semester students and seniors, they found that the tests and assessments carried out in eLearn is efficient (Şahin, 2019).

***Factors of eLearn which contribute to student satisfaction when using the platform***

The factors of eLearn which contribute to student satisfaction when using it include the use of mobile technology devices (Heflin et al., 2017), assessment tools on eLearn when conducting quizzes (Mahmud et al., 2020), and communication tools. In the second part of the survey (items S6 to S10), almost all the statements asked were about the assessment tools except for item S7 which focused on communication tools. By comparing the tables, the number of respondents from 1B that agree on items S6 and S9 is more than 2B, as the function of eLearn helped seniors on blended learning a lot more such as the course content uploaded and the announcement reminder on assignment due dates, allowing seniors to find and download the content easily for revision (Rodríguez et al., 2018). The number of respondents from 2B that agree on items S7 and S8 is more than 1A, because current online semester students tend to use the forum and tests features more for discussion and test submission compared to seniors (Gray & Diloreto, 2016). For both tables 1B and 2B, an equal number of respondents agree for item S10, so both groups of students may feel that it is easy to submit their assignments on eLearn.

***eLearn features that facilitate interaction between students with peers and lecturers***

The various features provided by eLearn facilitates the interaction between students with peers and lecturers (Hussain et al., 2019). By comparing the tables, the number of respondents from 1C that agree on items S12, S13 and S14 are more than 2C, and the number of respondents from 2C agree on items S11 and S15 is more than 1C. The items S12, S13, and S14 are focused towards the interaction between students with peers, whereas items S11 and S15 focus on how well the features of eLearn can facilitate the interaction. The result showed that seniors interacted more with their peers and lecturers during the BB collaboration class (Churchill et al., 2017), where current semester students did not interact with peers and lecturers that much, and on average, they are more likely to write down their ideas. As MAT1014 Calculus is a basic core subject that SMS students must take in the year 1 semester 1 (Y1S1), the lesser interactions with peers and lecturers shown is reflected from the lack of chances for current semester students whom are mostly in Y1S1 to know their peers and lecturers in person (Heflin, Shewmaker & Nguyen, 2017).

**Conclusion**

The study aims to investigate the perceived level of use of online learning platforms, eLearn, and the factors of it which contributed to students' perceived satisfaction and the features that facilitate interaction between peers and lecturers.

## **Implications**

The research implications that bring a great impact in the future of education, especially during times of global crises such as the Covid-19 pandemic is that classes are moved online, students interacted more with OLPs yet eLearn is less perceived as useful, so it is encouraged that schools should provide more guidelines on using the OLPs. Besides that, students can discuss with peers and lecturers easily and efficiently when more communication tools are developed for OLPs. At the same time, this contributes to student satisfaction. Furthermore, the relationship between student-instructor and student-student is important, so the presence of a group project may help to improve the student-student relationship because they get to know each other better by working together.

## **Recommendation of Future Researches**

For future researches of similar studies, it is recommended that the researchers utilize various techniques when collecting data. For example, future researches can approach this topic by gathering qualitative data from giving interviews, observations, conducting quasi-experimental research studies, and so on. The research can also be expanded to include a larger sample size so that the data can be generalized and applied to a larger population. Besides that, future researches may also include open-ended questions when designing the survey for more detail of the respondents’ responses.

# **References**

Ahmad, C. N. C., Shaharim, S. A., & Abdullah, M. F. N. L. (2017). Teacher-student interactions, learning commitment, learning environment and their relationship with student learning comfort. *Journal of Turkish Science Education*, *14*(1), 57-72.

Akhtar, S., Hussain, M., Afzal, M., & Gilani, S. (2019, May). Impact of Teacher-Student Interaction on Student Motivation and Achievement. *EUROPEAN ACADEMIC RESEARCH, 7*(2), 1201-1222.

Bulman, G., & Fairlie, R. (2016). Technology and Education. *Handbook of The Economics of Education*, *5*, 239-280. <https://doi.org/10.1016/b978-0-444-63459-7.00005-1>

Churchill, R., Ferguson, P., Godinho, S., Johnson, N.F., Keddie, A., Letts, W., Mackay, J., McGill, M., Moss, J., Nagel, M.C., Nicholson, P. & Vick, M. (2017). Teaching: Making a difference. Milton, QLD: John Wiley & Sons

Faqih, K. M. S. (2016). Which is more important in e-learning adoption, perceived value or perceived usefulness? Examining the moderating influence of perceived compatibility. *In e-Proceeding of the 4th Global Summit on Education*, 372-398.

Gray, J. A., & DiLoreto, M. (2016). The effects of student engagement, student satisfaction, and perceived learning in online learning environments. *International Journal of Educational Leadership Preparation*, *11*(1).

Heflin, H., Shewmaker, J., & Nguyen, J. (2017). Impact of mobile technology on student attitudes, engagement, and learning. *Computers & Education*, *107*, 91-99.

Holmes, K. A., & Prieto-Rodriguez, E. (2018). Student and Staff Perceptions of a Learning Management System for Blended Learning in Teacher Education. *Australian Journal of Teacher Education*, 43(3), 21-34.

Horzum, M. B. (2017). Interaction, structure, social presence, and satisfaction in online learning. *Eurasia Journal of Mathematics, Science and Technology Education*, *11*(3), 505-512.

Kattoua, T., Al-Lozi, M., & Alrowwad, A. A. (2016). A Review of Literature on E-Learning Systems in Higher Education. *International Journal of Business Management & Economic Research*, *7*(5), 754-762.

Keržič, D., Tomaževič, N., Aristovnik, A., & Umek, L. (2019). Exploring critical factors of the perceived usefulness of blended learning for higher education students. PLoS ONE. <https://doi.org/10.1371/journal.pone.0223767>

Mohammadi, H. (2015). Investigating users’ perspectives on e-learning: An integration of TAM and IS success model. *Computers in Human Behavior*. <https://doi.org/10.1016/j.chb.2014.07.044>

Şahin, M. (2019). Classroom Response Systems as a Formative Assessment Tool: Investigation into Students’ Perceived Usefulness and Behavioural Intention. International Journal of Assessment Tools in Education. <https://doi.org/10.21449/ijate.576249>

Walji, S., Deacon, A., Small, J., & Czerniewicz, L. (2016). Learning through engagement: MOOCs as an emergent form of provision. Distance Education. <https://doi.org/10.1080/01587919.2016.1184400>

Wong, S. F., Mahmud, M. M., & Wong, S. S. (2020, April). Effectiveness of Formative E-assessment Procedure: Learning Calculus in Blended Learning Environment. In *Proceedings of the 2020 8th International Conference on Communications and Broadband Networking* (pp. 77-82). <https://doi.org/10.1145/3390525.3390526>.

Wu, Y. C. J., Wu, T., & Li, Y. (2019). Impact of using classroom response systems on students’ entrepreneurship learning experience. Computers in Human Behavior. <https://doi.org/10.1016/j.chb.2017.08.013>