

Factors Influencing the Effectiveness of E-Learning Environment During Covid-19 Pandemic Within Malaysian Private Institutions: From Qs Lecturers and Students Perspectives

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Abstract: *The outbreak of the Covid-19 pandemic has caused huge impacts worldwide, and Malaysia has not been an exception. The impact of the pandemic was also felt by the educational segments in Malaysia. All layers of education, be it the pre-schoolers, primary, secondary well as tertiary students felt the impact. These education institutions were closed for several months during the first Malaysian Movement Control Order (MCO) 1.0. The teaching could only be continued by shifting the method towards online learning. Previous research found that one of the main reasons for high dropout rates of online classes is because online instructional design and delivery does not account for the distribution of diverse characteristics of online students. Therefore, this research tries to focus on finding ways to improve the new learning environment especially for Quantity Surveying courses which can be mentioned as technical courses or STEM courses. To achieve this aim, this paper has set the primary objective, which is to identify the factors that should be taken into consideration when designing an e-learning environment. A quantitative method was adopted to collect the primary data of the research through questionnaires. There were a total of 79 respondents involved in the Quantity Surveying courses. The method of analysis adopted for the quantitative data was the frequency analysis and descriptive analysis (using the IBM SPSS Statistic version 26). Based on the findings, it was found that a two-way interaction between student-lecturer, a clear course structure and organisation and designing the course content in an alive and interesting way placed in the first three rankings by the respondents. Therefore, by highlighting these findings, it is hoped that the lecturer can have a deeper insight into the students' need to design an effective and efficient online learning environment, especially during the Covid-19 pandemic crisis.*

Keywords: virtual environment, e-learning, quantity surveying, private HEIs, effectiveness

1. Introduction

Education is important as it is considered as one of the fundamental pillars or as the backbone for the creation of a better society and better development of a country. In the education system, the increasing use of web-based technology and the internet has become a global trend, especially in tertiary education. Electronic learning which also refers to e-learning was one of the earliest applications of web-based technology (Fahmeeda and Long, 2015). It has been defined as a teaching and learning method which fully or partially indicate the educational

model used. This type of learning was based on the use of electronic media and devices as tools in improving the availability of training, communication and interaction which could help in accepting novel ways of comprehending and establishing learning (Sangra, Vlachopoulos and Cabrera, 2012).

E-learning was first designed mainly for those who are unable to receive formal education like working adults who wish to continue their further studies while working at the same time. Today, e-learning has expanded to include all students, regardless of whether they are full-time university students or distance students. E-learning is not a new learning method for tertiary education studies in Malaysia as it had been introduced and started implemented by some of the universities in the late 1990s. It can be divided into six categories depending on the technologies used for the learning activities which includes offline computer-based e-learning, online and local area network-based e-learning, psychomotor skills trainer, virtual reality environments, digital game-based learning, and m-learning (Fahmeeda and Long, 2015).

However, it can be observed that the most common types of E-learning currently practised in Malaysia could be offline computer-based e-learning, in which the learning activities can be conducted through personal laptops without using the internet connection and the online and local area network-based learning which depends on the internet and intranet networks.

Universities all around the world have increasingly moved towards fully online or blended learning modes in the education system rather than continuously adapting to conventional or traditional teaching and learning modes. This scenario can be due to the reasons that it brings advantages in terms of its flexibility of access from different locations, diversity and saving in cost and time.

Despite the advantages, E-learning is said to also have some negative impacts on students as some of them may feel isolated, lack personal skill development, memory, learning development and students' motivation (Elfaki, Abdulraheem and Abdulrahim, 2019). This might be due use of the learning mode puts much more responsibility on the student as it is more of an individual basis as compared to group learning, which contradicts the traditional ways of learning (Mugahed Al-Rahmi *et al.*, 2018). Thus, to be a successful student in the highly autonomous characteristics of the learning environment e-learning, the student must acquire good self-regulated learning skills, skilled in online learning technologies and strong academic self-concept (Dabbagh, 2007).

The outbreak of the Covid-19 pandemic has caused huge impacts worldwide; education segments in Malaysia no exception. On the 16th of March 2020, the Malaysian Prime Minister, Tan Sri Muhyiddin Yassin made official promulgation on the implementation and enforcement of the movement control order in the whole country. Under the education sector, the universities were not allowed to have any face-to-face classes as usual. Teaching was only allowed to be continued online, causing a shift towards virtual learning. Being unfamiliar with the teaching and learning environment and technologies have given hard times for both lecturers and students. As the shift of learning environment from traditional face-to-face method towards e-learning becomes the new normal for lecturers and students globally, the lecturer plays a significant role in ensuring that students receive enriching and secure learning experience despite being much affected by the sudden change of the e-learning environment (Tan, 2020).

The shift of the learning environment from the traditional face-to-face method towards e-learning due to the Covid-19 pandemic becomes the new normal for lecturers and students globally. E-learning consists of many categories and types, but all of them share one common requirement which is needed to depend on the uses of information technology (IT). It is often taken for granted that teaching by using technology would guarantee a better student's learning environment and engagement, but it is not true.

2. Literature Review

Online teaching has always been considered one size that could accomm with all approaches (Gillett-Swan, 2017), but this has been found untrue as it depends on the types of technology in use and also the curriculum content being taught by the lecturer (Orlando, J., & Attard, 2015). However, when designing e-learning classes, lecturers do not always take into consideration certain significant factors of teaching which includes the motivation of their student. They often assume that all of the students are self-motivated and active students (Nehme, 2010). It needs to be understood that E-learning puts much more responsibility on the students, which are contradictory to the traditional ways of learning, as students can work together in a group (Mugahed Al-Rahmi *et al.*, 2018). As a result, the student requires self-motivation, a high level of self-efficacy and self-regulation. If the student is a fast or average student in the class, or else an independent student, there might not be many problems faced by them to conduct classes by using e-learning. Conversely, for a slow student that cannot be learning as to how a typical student should, i.e. requiring special instructional, frequent feedback, corrective instruction from the lecturer (Rajendran, Venkatagari and Manchireddy, 2017); the implementation of e-learning could be a huge problem for them.

Thus, to ensure that e-learning could result in more effective and efficient learning outcomes, the online classes should be designed by taking consideration into the students' needs and finding ways to improve the e-learning education frame, but not just based on one size fit all approach design. As it is also stated that one of the main reasons for high dropout rates of online classes because online instructional design and delivery would not account for the distribution of diverse characteristics of online students (Ferreira and Maclean, 2017). Hence, the lecturer who is the online facilitator in e-learning needs to play a vital role as he is the one who has the responsibility to decide on the design and how the online course is going to be delivered to the student. The design should include the general factors that ensure an online class to be effective and engaging for diverse types of students from different abilities, backgrounds and characteristics. Similarly, students, should engage or show their interest, need, compassion or desire in the learning class to achieve effective interactions with lecturers (Gray and DiLoreto, 2016).

In other words, lecturers and students engagements remain an important factor for an effective blended learning environment (Kintu, Zhu and Kagambe, 2017). This is because with full engagement from students or students, they would be more motivated to learn and to teach and will indirectly affect their overall performance (Vanslambrouck *et al.*, 2017). The question is how to motivate them to interact on these e-learning platforms? Undoubtedly, previous researchers have proposed various strategies to boost students' interaction and motivation for a better learning environment which include interactive learning and personalised learning for the physical class. Interactive learning or can be mentioned as active learning, refer to the learning activities which include role-playing, brainstorming, case study, debate, demonstration, fieldwork, cooperative learning and more (Palaniyammal and Shanmugam, 2018), while personalised learning includes gamification.

In fact, within this new pandemic, most of the lecturers only share learning platforms with students using various learning management systems (LMS) for example blackboard, Moodle, jam board, google classroom, google meet and more. The shift to fully remote learning models due to Covid-19 had resulted in a significant rise in the usage of Blackboard Ally among students and lecturers since February. There are more than 150 higher education and K-12 clients who adopted it as their inclusive learning solution, joining a community reaching more than 11 million students globally (BlackBoard, 2020). Some of the lecturers have put an initiative to introduce available tools which could be found at google chrome extensions like using push to talk or nod-reaction in Google Meet to encourage the students to give some responses during the lecture or tutorial class in a belief that it could be a way to influence or motivate the student to interact with them. However, lecturers seem to be ignoring the best approach to tackle students who have a passive mode of learning as most of them still offer the same outdated educational content and the same passive teaching methods (Lim, 2020).

Cho and Cho (2016) highlighted the article cited by Hew, Cheung and Ng (2010) stated that when the participation in the online discussion was voluntary, student's participation was extremely low. Some of the students do not feel comfortable contacting their lecturers via online methods (Cho and Cho, 2016, which may be due to their differences in personality traits and behaviour. For instance, neurotic individuals tend to avoid participation in online activities, while introverted individuals feel more comfortable in online environments (Weiser, Blau and Eshet-Alkalai, 2018). The low in self-motivation or interest in the course structure could also directly result in the low participation of students.

This is a worldwide issue that has been faced by various higher education institutions and Malaysians have no exception to this. Within the Built Environment context, particularly technical courses being offered in Quantity Surveying programmes, most of the lecturers also encountered this same dilemma of not taking full interaction from students. If the two ways interaction between students and lecturers are missing, it would cause a lot of bad effects on both sides. The interaction between students and lecturers align with the student's satisfaction, retention in the course, sense of community and perceived learning (Moore, 2014). However, the lack of interaction in the e-learning environment would foster feelings of alienation, isolation, and disconnection. Despite having such negative feelings, students may eventually decide to drop out of online courses (Cho and Cho, 2016). Due to lack of participation and feedback from the student, it would cause the lecturer to have a lack of understanding of the student's needs and feel a lack of motivation to put more efforts into designing the class. They could not figure out the ways to help them out, especially for the one who is slower in learning. Thus, the learning outcomes could not be achieved effectively in the e-learning environment.

Therefore, this research tries to focus on finding ways to improve this new learning environment especially for courses within the Quantity Surveying programme which can be mentioned as technical courses or STEM courses, so that it can be useful and helpful for both lecturers and students during this new normal due to the pandemic. To achieve this, this research aims to achieve the following objective: (i) To identify the factors that should be taken into consideration when designing an e-learning environment.

3. Methodology

3.1 Research Design

This research, it will be using quantitative method. The private institutions that offered the course but are in twinning with the public institutions would not be taken into consideration as the target respondents for this study. There is a total of 13 numbers of private institutions that currently still offering and have current students in the Quantity Surveying programme. The list of the private institutions that are included as the respondents in this research study is presented in Table 1 below. The sequence of listing does not imply the ranking of the particular private institutions.

Table 1: List of private institutions included as target respondents in this study

No.	Private Institutions
1	University College of Technology Sarawak (UCTS)
2	SEGi University & Colleges
3	Infrastructure University Kuala Lumpur (IUKL)
4	Tunku Abdul Rahman University College (TARUC)
5	INTI International University
6	UCSI University Malaysia
7	Taylor's University
8	Heriot-Watt University Malaysia
9	University of Reading Malaysia
10	Universiti Tunku Abdul Rahman (UTAR)
11	IMPERIA Institute of Technology
12	Kolej Laila Taib
13	Linton University College

3.2 Selection of respondents and sampling

For this research, the selection of respondents will be based on the selective sampling method. The samples are chosen by the researcher from a large population to ensure that the respondents are considered to be knowledgeable about the research topic (Smith, 2015). In this study, the samples would be the students who are under the Quantity Surveying programme and the lecturers who teach them and attached with the Department of Quantity Surveying at the listed 13 numbers of private institutions (See Table 1). The questionnaires were distributed through Google Form and they had received the URL for the Google Form via emails. The emails were distributed to the selected group of respondents with the kindness of help from the faculties, the quantity surveying society and the student representative council of the private institutions. The invitation emails for participation in this research survey were sent out and the deadline for the collection of data were all completed in four weeks. A total of 79 sets of questionnaires were received from the respondents. The following sections will describe the general background of the 79 respondents according to their category, gender, age ranges, education level, years of experiences in the education field and the private institutions that they are currently working or studying at by using frequency statistics.

3.3 Pilot Test

The pre-test was conducted involving 6 respondents namely 3 from students and another 3 from lecturers. Based on the students' feedback, most of them commented that the questions are designed in a clear and easy understanding manner, thus they were able to answer them well without much uncertainty. However, several modifications were required such as align the paragraphs in Section A, replace the highest level of academic qualification with the current level of academic qualification for students who are accepted and have been modified in the

questionnaire. However, there are exceptions on the feedback related to making the briefing in Section A to be precise and to have an additional option at the list of private institutions. There would not be any modification on both feedbacks. For the briefing in Section A, it is not appropriate to further simplify the content of the briefing again, or else it would be an unclear explanation given to the respondents especially regarding the aim of this research study. An additional option at the list of private institutions would not be added as the scope of the paper is limited to those selected 13 private institutions only.

Based on lecturers' feedback, only a few modifications were required. Most of the feedback given by the lecturers like deletion on the sentences that mentioned the purpose in Section B but just straight away for demographic section, addition on the option on a part-time or full-time lecturer or student, replacement on the name to IMPERIA COLLEGE, shorten or change the title of the section are accepted and had been modified in the questionnaire. One of the lecturers had uncertainties on the factors stated in Section E like whether the questions relate to peer interaction need to be rated by the lecturer as well and questions relate to the factors on course structure and organisation, fits diverse characteristics and abilities of students seem are more to lecturers. However, there would not be any modification regarding the factors stated in Section E. This research study is aimed to find the similarities shared between both groups of respondents to design a better e-learning environment. Hence, the same set of questionnaires should be given to both groups of respondents to ensure that the researcher can obtain the required findings to achieve the aim of the research. Moreover, the students can answer the questions despite some of the factors being more on the lecturer's side.

After the amendment of the questionnaire based on the feedback and comments given by the respondents during the pilot test, it was distributed to the selected group of respondents through Google Form. The respondents received the URL of the Google Form through their respective emails. The summary of the outcomes found during the pre-test regarding the original questions, modified questions, problems and reflective notes before finalising the questionnaire is shown in the table attached in the appendix.

3.4 Data Analysis

The purpose of conducting data analysis in a research study is to organize and extract the meaning from the data collected, thus draw realistic conclusions on the findings (Bengtsson, 2016). This paper will be using the quantitative method. The data collected through the questionnaire from the respondents would be analysed by using Statistical Packages for the Social Science (SPSS) 26.0 software. The types of data analysis proposed to be used for the quantitative method approach are frequency analysis and descriptive analysis.

4. Discussion

4.1 Demographic background

Table 2 below shows the frequency table based on the category group of the respondents. Among the total number of 79 respondents, the major category group of respondents is the full-time students with 60 responses received (75.9%). The second highest category group of respondents received is the full-time lecturers with 17 responses received (21.5%). There are only 2 responses (2.5%) received from the part-time students.

Table 2: Frequency table for Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-Time Student	60	75.9	75.9	75.9
	Part-Time Student	2	2.5	2.5	78.5
	Full-Time Lecturer	17	21.5	21.5	100.0
	Total	79	100.0	100.0	

Gender

Table 3 below shows the frequency table based on the gender group of the respondents. Among the total number of 79 respondents, the major gender group of respondents is female with 45 responses received (57%). While for male respondents, there are 34 responses received (43%).

Table 3: Frequency table for Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	34	43.0	43.0	43.0
	Female	45	57.0	57.0	100.0
	Total	79	100.0	100.0	

Age Ranges

Table 4 below shows the frequency table based on the age ranges of the respondents. Among the total number of 79 respondents, the majority of the respondents were within the age range of 21 to 30 years old with 55 responses received (69.6%). The second highest age range of respondents received is within 31 to 40 years old with 12 responses received (15.2%). There are 8 responses (10.1%) received from the respondents within the 20 years and below age range. Lastly, there are only 4 responses (5.1%) received from the respondents within 41 to 50 years old age range.

Table 4: Frequency table for Age Ranges

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 years and below	8	10.1	10.1	10.1
	21-30 years	55	69.6	69.6	79.7
	31-40 years	12	15.2	15.2	94.9
	41-50 years	4	5.1	5.1	100.0
	Total	79	100.0	100.0	

Education Level

Table 5 below shows the frequency table based on the education level of the respondents. Among the total number of 79 respondents, the major education level of respondents is bachelor degree with 60 responses received (75.9%). The second highest education level of respondents received is master with 10 responses received (12.7%). There are 5 responses (6.3%) received from the respondents with PhD education level. Lastly, there are only 4 responses (5.1%) received from the respondents with diploma education level.

Table 5 : Frequency table for Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	4	5.1	5.1	5.1
	Bachelor Degree	60	75.9	75.9	81.0
	Master	10	12.7	12.7	93.7
	PhD	5	6.3	6.3	100.0

Years of Experiences in Education Field

Table 6 below shows the frequency table based on the years of experiences of the respondents in the education field. Among the total number of 79 respondents, there are 62 responses (78.5%) received from the students on the selection of 'N/A', as this question is not applicable for them to choose for the years of experiences in the education field. There are 8 responses (10.1%) received from the respondents with 6 to 10 years of experience. Other than that, there are 7 responses (8.9%) received from the respondents with 1 to 5 years of experience. Lastly, there are 2 responses (2.5%) received from the respondents with 15 years and above of experiences in the education field.

Table 6: Frequency table for Years of Experiences in Education Field

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	N/A (Student)	62	78.5	78.5	78.5
	1-5 years	7	8.9	8.9	87.3
	6-10 years	8	10.1	10.1	97.5
	15 years and above	2	2.5	2.5	100.0
	Total	79	100.0	100.0	

Private Institutions that the Respondents Currently Study or Working at

Table 7 below shows the frequency table based on the private institutions that the respondents currently study or work at. Among the total number of 79 respondents, the respondents were from 9 private institutions. The major number of the respondents are from Tunku Abdul Rahman University College (TARUC) with 60 responses received (75.9%). The number of respondents from INTI International University and Universiti Tunku Abdul Rahman (UTAR) are equal with 5 numbers of responses received (6.3%). There are few numbers of respondents from University College of Technology Sarawak (UCTS) with 3 responses received (3.8%) and UCSI University Malaysia with 2 responses received (2.5%). The minor response received from SEGi University, Infrastructure University Kuala Lumpur (IUKL), University of Reading Malaysia and Kolej Laila Taib are equally with one response received (1.3%),

Table 7: Private Institutions that the Respondents Currently Study or Working at

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	University College of Technology Sarawak (UCTS)	3	3.8	3.8	3.8
	SEGi University	1	1.3	1.3	5.1
	Infrastructure University Kuala Lumpur (IUKL)	1	1.3	1.3	6.3
	Tunku Abdul Rahman University College (TARUC)	60	75.9	75.9	82.3
	INTI International University	5	6.3	6.3	88.6
	UCSI University Malaysia	2	2.5	2.5	91.1
	University of Reading Malaysia	1	1.3	1.3	92.4
	Universiti Tunku Abdul Rahman (UTAR)	5	6.3	6.3	98.7
	Kolej Laila Taib	1	1.3	1.3	100.0
Total	79	100.0	100.0		

4.2 Factors that should be taken into consideration when designing a E-Learning Environment

The results shown in Table 8 below was based on overall view from all respondents without categorising them into the category of groups. Among the total number of 79 respondents, the most agreed factors that should be taken into consideration when designing the e-learning environment is the factor on encourages and promote teaching activities that could provide opportunities for two-ways interactions between student-lecturers received the highest mean score of 4.09. This result is supported by Martin and Bolliger (2018) which mentioned that the students valued the interaction between student and lecturer, and this contributed to a higher satisfaction and better learning experiences compared with student-student and student-content interactions. The second agreed factor is the designing of the course content in an alive and interesting way with mean score of 4.04. For the third agreed factor, it is the clear course structure and organisation with a mean score of 4.01. The previous study conducted by Gray and Diloreto (2016) also stated that the more organized and logical of the course layout, the more likely the student will be satisfied with their learning in the e-learning course. The forth agreed factor is to encourage and promote learning activities for peer interaction among students with mean score of 3.95. The least agreed factor is the classes are designed in a way which could fit diverse characteristics and abilities of students with mean score of 3.89.

Table 8: Influential factors

Factors	N	Minimum	Maximum	Mean	Std. Deviation
A clear course structure and organisation with good development and design of the course resources, curriculum, instructional strategies, course schedule and overall planning of the course	79	2	5	4.01	.776
Encourage and promote learning activities for peer interaction among students	79	2	5	3.95	.749
Encourage and promote teaching activities that could provide opportunities for two-ways interactions between student-lecturer	79	1	5	4.09	.865
Designing the course content in an alive and interesting way	79	2	5	4.04	.808
The classes are design in a way which could fits diverse characteristics and abilities of students	79	1	5	3.89	.816
Total	79				
Note : 1- Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly Agree					

The ranking for the factors that should be taken into consideration when designing an e-learning environment are arranged based on the mean scores (see Table 9).

Table 9: Ranking for the factors without categorise the respondents into group

	N	Mean	Rank
A clear course structure and organisation with good development and design of the course resources, curriculum, instructional strategies, course schedule and overall planning of the course]	79	4.01	3
Encourage and promote learning activities for peer interaction among students]	79	3.95	4
Encourage and promote teaching activities that could provide opportunities for two-ways interactions between student-lecturer]	79	4.09	1
Designing the course content in an alive and interesting way]	79	4.04	2
[The classes are design in a way which could fits diverse characteristics and abilities of students]	79	3.89	5
Valid N (listwise)	79		

4.3 Cronbach's Alpha Reliability Test

The coefficient alpha which is also known as Cronbach's Alpha is used to estimate the internal consistency of responses on a measure (Yockey, 2016). The approximate guideline of the adequacy of a range of different values of coefficient alpha shows at table 10 below.

Table 10: Adequacy of internal consistency reliability estimates for different values of coefficient alpha (Yockey, 2016)

Coefficient Alpha	Adequacy
.90 and above	Excellent
.80 - .89	Good
.70 - .79	Fair
.60 - .69	Marginal
.59 and below	Poor

The Cronbach's α reliability test on the five factors (refer Table 11 that should be taken into consideration when designing an E-Learning Environment. The value of coefficient alpha shows is 0.880, which indicates a good internal consistency of responses.

Table 11: Reliability Statistics of factors that should be taken into consideration when designing an E-Learning Environment

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.880	.879	5

4.4 Cross-Tabulation

The cross-tabulation table, frequency table and bar chart have been used to have a clearer interpretation of each factors based on the responses collected from the questionnaire. Cross-tabulation table is used to have clearer understanding on the results shown between the category group of respondents and the factors. The frequency table is used to know the number and percentage of the level of agreement on each factor chosen by the respondents. While for the bar chart, it is shown based on percentage and count that generated from the level of agreement on Likert-scale which chosen by the respondents towards the factor.

4.4.1 Clear Course Structure and Organisation

The cross-tabulation between the category group of respondents and the factor on clear course structure and organisation is shown in Table 12 and Table 13 below. The frequency table also has been generated to show the number and percentage of the level of agreement chosen by the respondents. While Figure 1 showed the bar chart based on percentage and count that generated from the level of agreement on Likert-scale which was chosen by the respondents towards the factor on clear course structure and organisation according to the category of respondents.

Based on the cross-tabulation, frequency table and bar chart shows for this factor, it shows that the major number of respondents chosen 'agree' with 48.1% as their level of agreement towards this factor should be taken into consideration when designing an E-Learning Environment. There are a total 38 numbers of respondents chosen 'agree' and the majority of them came from the category of full-time student with 28 numbers. There are also 10 numbers of full-time lecturers chosen to 'agree' on this factor. This result is supported by Gonzalez and Moore (2020) whereby it also mentioned as one of the course factors that will influence the student engagement in the online courses.

Besides, there are 22 numbers of the respondents (27.8%) chosen 'strongly agree' as their level of agreement towards this factor. In this 27.8% of responses, 14 numbers of them are full-time students, 7 numbers of them are full-time lecturers and one of them is the part-time student. However, there are 17 numbers of the respondents (21.5%) chosen 'neutral' on this factor. The fewest number of 2 numbers of the respondents (2.5%) of the respondents which came from full-time students chosen 'disagree' on this factor should be taken into consideration when designing an E-Learning Environment.

Table 12: Cross-tabulation between the category group of respondents and the factor on clear course structure and organisation

		Category			Total
		Full-Time Student	Part-Time Student	Full-Time Lecturer	
A clear course structure and organisation with good development and design of the course resources, curriculum, instructional strategies, course schedule and overall planning of the course]	Disagree	2	0	0	2
	Neutral	16	1	0	17
	Agree	28	0	10	38
	Strongly Agree	14	1	7	22
Total		60	2	17	79

Table 13: Frequency table on the factor of clear course structure and organisation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	2.5	2.5	2.5
	Neutral	17	21.5	21.5	24.1
	Agree	38	48.1	48.1	72.2
	Strongly Agree	22	27.8	27.8	100.0
	Total	79	100.0	100.0	

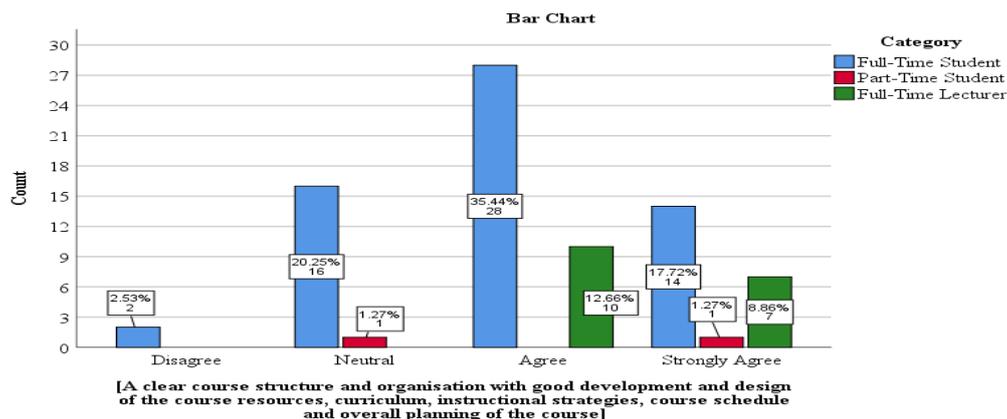


Figure 1: Bar Chart on the factor of clear course structure and organisation

4.4.2 Peer Interaction

The cross-tabulation between the category group of respondents and the factor on peer interaction are shown in Table 14 below. The frequency table is shown in Table 14 and 15 below also has been generated to show the number and percentage of the level of agreement chosen by the respondents. While Figure 2 showed the bar chart based on percentage and count that generated from the level of agreement on Likert-scale which was chosen by the respondents towards the factor on peer interaction according to the category of respondents.

Based on the cross-tabulation, frequency table and bar chart show for this factor, it shows that the major number of respondents chosen ‘agree’ with 48.1% as their level of agreement towards this factor should be taken into consideration when designing an e-learning environment. There are a total 38 numbers of respondents chosen ‘agree’ and the majority of them come from the category of full-time student with 30 numbers. There are also 8 numbers of full-time lecturers chosen to ‘agree’ on this factor. This finding is aligned with Martin and Bolliger (2018) which mentioned that the students experience higher satisfaction with a course when there are opportunities for them to interact online with each other. Besides, there are 21 numbers of the respondents (26.6%) chosen ‘neutral’ on this factor. 18 of the responses came from the full-time students, 2 of the responses came from full-time lecturers and the remaining one response came from the part-time students.

Other than that, there are 19 number of the respondents (24.1%) chosen ‘strongly agree’ as their level of agreement towards this factor. In this 24.1% of responses, 11 number of them are full-time students, 7 number of them are full-time lecturers and one of them is the part-time student. The fewest number of 1 number of the respondents (1.3%) of the respondents which came from full-time students chosen ‘disagree’ on this factor should be taken into consideration when designing an E-Learning Environment.

Table 14: Cross-tabulation between the category group of respondents and the factor on peer interaction

		Category			Total
		Full-Time Student	Part-Time Student	Full-Time Lecturer	
Encourage and promote learning activities for peer interaction among students	Disagree	1	0	0	1
	Neutral	18	1	2	21
	Agree	30	0	8	38
	Strongly Agree	11	1	7	19
Total		60	2	17	79

Table 15: Frequency table on the factor of peer interaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.3	1.3	1.3
	Neutral	21	26.6	26.6	27.8
	Agree	38	48.1	48.1	75.9
	Strongly Agree	19	24.1	24.1	100.0
	Total	79	100.0	100.0	

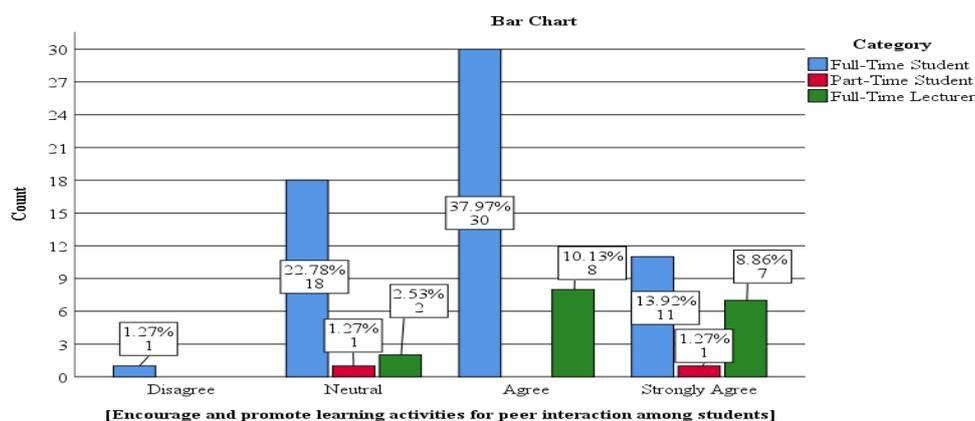


Figure 2: Bar Chart on the factor of Peer Interaction

4.4.3 Student-Lecturer Interaction

The cross-tabulation between the category group of respondents and the factor on student-lecturer interaction are shown in Table 16. The frequency table (see Table 16 and 17) also has been generated to show the number and percentage of the level of agreement chosen by the respondents. While Figure 3 showed the bar chart based on percentage and count that generated from the level of agreement on Likert-scale which was chosen by the respondents towards the factor on student-lecturer interaction according to the category of respondents.

Based on the cross-tabulation, frequency table and bar chart show for this factor, it shows that the major number of respondents chosen 'agree' with 43.0% as their level of agreement towards this factor should be taken into consideration when designing an e-learning environment. There are a total 34 numbers of respondents chosen 'agree' and the majority of them come from the category of full-time student with 24 numbers. There are also 9 numbers of full-time lecturers and a part-time student chose to 'agree' on this factor. This finding is aligned with Gray and Diloreto (2016), which mentioned the instructor presence as one of the factors that affects the student engagement, satisfaction and perceived learning in online learning environments.

Besides, there are 28 number of the respondents (35.4%) that have chosen 'strongly agree' as their level of agreement towards this factor. In this 35.4% of responses, 20 number of them are full-time students, 7 number of them are full-time lecturers and one of them is the part-time student. Moreover, there are 14 numbers of the respondents (17.7%) that have chosen 'neutral' on this factor. 13 of the responses came from the full-time students and a response came from full-time lecturers.

However, there are 2 numbers of respondents (2.5%) that have chosen ‘disagree’ on this factor which both of them are full-time students. The fewest number of 1 number of the respondents (1.3%) of the respondents which came from full-time students chosen ‘strongly disagree’ on this factor should be taken into consideration when designing an e-learning environment.

Table 16: Cross-tabulation between the category group of respondents and the factor on student-lecturer interaction

		Category			Total
		Full-Time Student	Part-Time Student	Full-Time Lecturer	
Encourage and promote teaching activities that could provide opportunities for two-ways interactions between student-lecturer	Strongly Disagree	1	0	0	1
	Disagree	2	0	0	2
	Neutral	13	0	1	14
	Agree	24	1	9	34
	Strongly Agree	20	1	7	28
Total		60	2	17	79

Table 17: Frequency table on the factor of student-lecturer interaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.3	1.3	1.3
	Disagree	2	2.5	2.5	3.8
	Neutral	14	17.7	17.7	21.5
	Agree	34	43.0	43.0	64.6
	Strongly Agree	28	35.4	35.4	100.0
	Total	79	100.0	100.0	

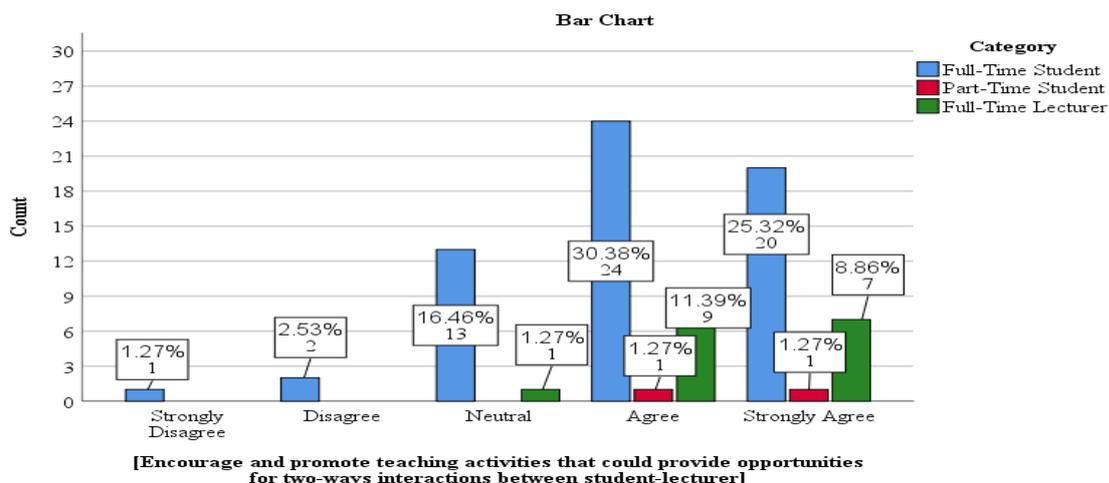


Figure 3 : Bar Chart on the factor of Student-Lecturer Interaction

4.4.4 Student-Content Interaction

The cross-tabulation between the category group of respondents and the factor on student-content interaction are shown in Table 18 below. The frequency table (as shown in Table 18 and 19) also has been generated to show the number and percentage of the level of agreement chosen by the respondents. While Figure 4 showed the bar chart based on percentage and count that generated from the level of agreement on Likert-scale which was chosen by the respondents towards the factor on student-content interaction according to the category of respondents.

Based on the cross-tabulation, frequency table and bar chart show for this factor, it shows that the major number of respondents chosen 'agree' with 50.6% as their level of agreement towards this factor should be taken into consideration when designing an e-learning environment. There are a total 40 numbers of respondents have chosen 'agree' and the majority of them come from the category of full-time student with 30 numbers. There are also 9 numbers of full-time lecturers and a part-time student chosen to 'agree' on this factor. This finding is supported by Martin and Bolliger (2018) whereby it mentioned that student-content interaction is one of the engagement strategies that would affect the student satisfaction, motivation to learn and improves their performance in online courses.

In addition, 23 number of the respondents (29.1%) have chosen 'strongly agree' as their level of agreement towards this factor. In this 29.1% of responses, 14 number of them are full-time students, 8 number of them are full-time lecturers and one of them is a part-time student. Moreover, 12 numbers of the respondents (15.2%) have chosen 'neutral' on this factor. All of the responses came from the full-time students. However, there are 4 number of respondents (5.1%) that have chosen 'disagree' on this factor should be taken into consideration when designing an e-learning environment which all of them are full-time students.

Table 18: Cross-tabulation between the category group of respondents and the factor on student-content interaction

		Category			Total
		Full-Time Student	Part-Time Student	Full-Time Lecturer	
[Designing the course content in an alive and interesting way]	Disagree	4	0	0	4
	Neutral	12	0	0	12
	Agree	30	1	9	40
	Strongly Agree	14	1	8	23
Total		60	2	17	79

Table 19 : Frequency table on the factor of student-content interaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	5.1	5.1	5.1
	Neutral	12	15.2	15.2	20.3
	Agree	40	50.6	50.6	70.9
	Strongly Agree	23	29.1	29.1	100.0
	Total	79	100.0	100.0	

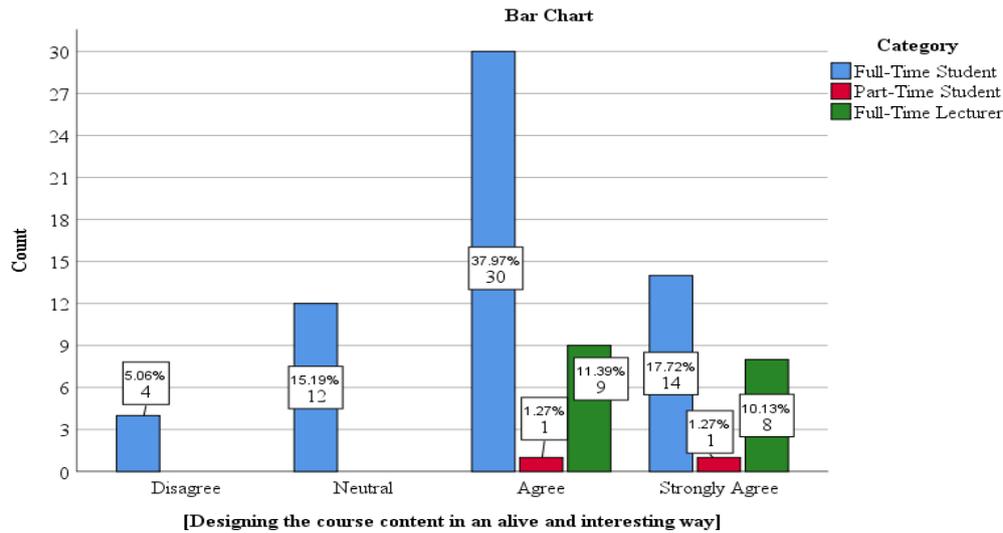


Figure 4: Bar Chart on the factor of Student-Content Interaction

4.4.5 Fits Diverse Characteristics and Abilities of Students

The cross-tabulation between the category group of respondents and the factor on fits diverse characteristics and abilities of students are shown in Table 20 below. The frequency table (as shown in Table 20 and 21) below also has been generated to show the number and percentage of the level of agreement chosen by the respondents. While Figure 5 showed the bar chart based on percentage and count that generated from the level of agreement on Likert-scale which chosen by the respondents towards the factor fits diverse characteristics and abilities of students according to the category of respondents.

Based on the cross-tabulation, frequency table and bar chart shown for this factor, it shows that the major number of respondents have chosen ‘agree’ with 50.6% as their level of agreement towards this factor should be taken into consideration when designing an e-learning environment. There are a total 40 numbers of respondents that have chosen ‘agree’ and the majority of them come from the category of full-time student with 28 numbers and 12 numbers of full-time lecturer. As mentioned by Nehme (2010), the one size fit all approach should not be encouraged to be used in designing an online class as each student shares different characteristics, abilities and is motivated in different ways.

Besides, there are 19 number of the respondents (24.1%) that have chosen ‘neutral’ on this factor. 17 number of the responses came from the full-time students and each response came from the part-time student and full-time student. Other than that, there are 17 number of the respondents (21.5%) chosen ‘strongly agree’ as their level of agreement towards this factor. In this 21.5% of responses, 12 number of them are full-time students, 4 number of them are full-time lecturers and one of them is the part-time student.

However, there are 2 numbers of respondents (2.5%) that have chosen ‘disagree’ on this factor should be taken into consideration when designing an e-learning environment which all of them are full-time students. There are also a number of respondents (1.3%) chosen ‘strongly disagree’ which it is received from a full-time student.

Table 20: Cross-tabulation between the category group of respondents and the factor on fits diverse characteristics and abilities of students

		Category			Total
		Full-Time Student	Part-Time Student	Full-Time Lecturer	
The classes are design in a way which could fits diverse characteristics and abilities of students]	Strongly Disagree	1	0	0	1
	Disagree	2	0	0	2
	Neutral	17	1	1	19
	Agree	28	0	12	40
	Strongly Agree	12	1	4	17
Total		60	2	17	79

Table 21: Frequency table on the factor of fits diverse characteristics and abilities of students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.3	1.3	1.3
	Disagree	2	2.5	2.5	3.8
	Neutral	19	24.1	24.1	27.8
	Agree	40	50.6	50.6	78.5
	Strongly Agree	17	21.5	21.5	100.0
	Total	79	100.0	100.0	

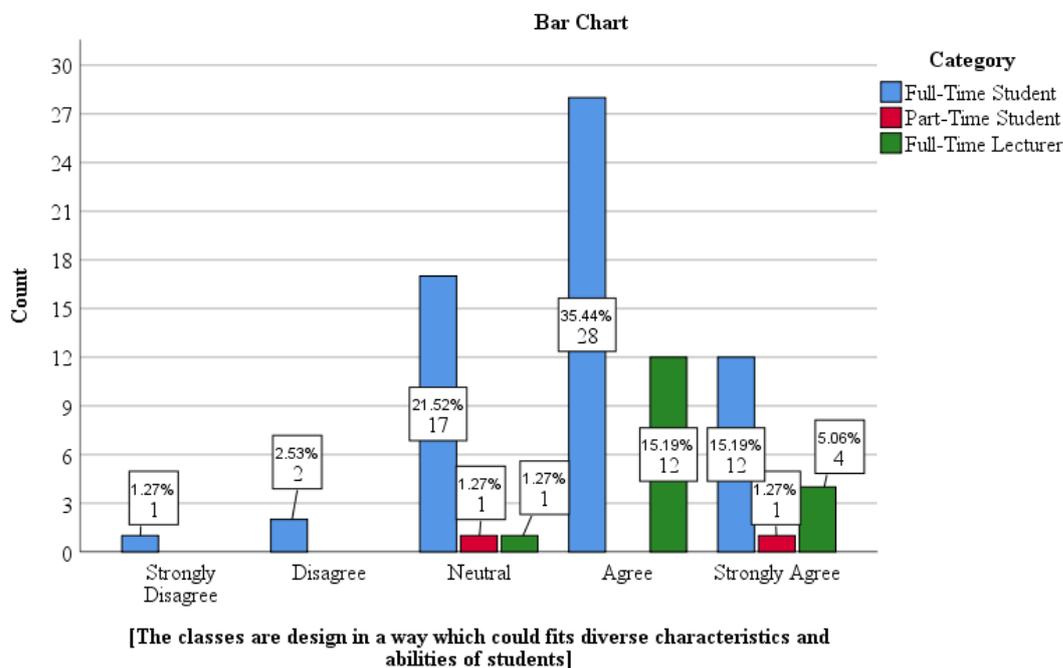


Figure 5: Bar Chart on the factor of fits diverse characteristics and abilities of students

4. Conclusion

Based on the quantitative data collected from the questionnaire, it is shown that the elements on two-ways interaction between a student and a lecturer, a clear course structure and organisation and designing the course content in a lively and interesting way were placed in the first three ranking for all groups of respondents. The findings on both research method is supported by Martin and Bolliger (2018) which mentioned that the students valued the

interaction between student and lecturer, which contributed higher satisfaction and better learning experiences compared with student-student and student-content interactions. Apart from that, the previous study conducted by Gray and Diloreto (2016) also stated that the more organized and logical the course layout is, the more likely the student will be satisfied with their learning in the e-learning course. Further suggestions have been pointed out to improve this situation namely (i) A uniform system and course structure establish by the lecturers on each subject, (ii) Increase the interaction between peers through the encouragement of the lecturers, (iii) Increase the two-sides interaction between lecturer-student and improvement in the technologies used in e-learning environment, (iv) Clear course structure is required, teaching and learning method should not be standardised and more interaction needed between lecturer and students, (v) Lecturer shall put more attention on the feedbacks given by the students, (vi) To have live session of lecture class instead of pre-recorded session, and (vii) The lecturer can give a briefing to the students who are the first-time user regarding on how the e-learning will be conducted.

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