

An Exploration on Online Learning Challenges in Malaysian Higher Education: The Post COVID-19 Pandemic Outbreak

Ramlan Mustapha¹
Akademi Pengajian Islam Kontemporari
Universiti Teknologi MARA Pahang
Raub Campus, Malaysia

Hapini Awang⁴
School of Computing, College of Art and Science,
Universiti Utara Malaysia, Malaysia

Maziah Mahmud², Norhapizah Mohd Burhan³
Akademi Pengajian Islam Kontemporari
Universiti Teknologi MARA Pahang
Jengka Campus,
Malaysia

Ponmalar Buddatti Sannagy⁵
Othman Yeop Abdullah Graduate School of Business
(OYAGSB) Universiti Utara Malaysia, Malaysia

Mohd Fairuz Jafar⁶
School of Education, College of Art and Science, Universiti
Utara Malaysia, Malaysia

Abstract—Flexible online programmes and learning are gaining popularity as a means of educating students. It can also facilitate the delivery of knowledge to pupils, as well as facilitating the learning process. The purpose of this study was to investigate Online Learning Challenges following the Covid-19 pandemic outbreak in Malaysia. This study employs the qualitative and Fuzzy Delphi Method in collecting the data. In the qualitative research phase, open-ended questions were distributed to 118 participants, while in the Fuzzy Delphi phase, expert questionnaires were distributed to 7 experts in the field of study. Qualitative data were analysed using Atlas-ti software, whereas Fuzzy Delphi data was analysed using Fudelo 1.0 software. The qualitative study discovered that students confront seven significant challenges: internet coverage, mental fatigue, learning devices, environmental disturbance, pedagogical challenges, lack of motivation, and social interaction. Meanwhile, the fuzzy Delphi analysis of the expert consensus of the theme is at a reasonable level. The overall expert consensus agreement findings exceed 75%, the overall value of the threshold (d) is 0.2, and the α -cut exceeds 0.5. The study provides important insights into online learning issues and the fields for further improvement. This study also discusses the avenue for future research by future researchers for more significant benefits and contributions to knowledge in general.

Keywords—Online learning; COVID-19; outbreak; fuzzy delphi method; expert consensus

I. INTRODUCTION

The transition from the non-digital period to the digital era occurs at a frenetic pace in this century. Digital changes are not a new phenomenon; they have been a constant presence in universities for several years [1]. With current changes, the demand for technical components is increasing and pervading numerous sectors, most notably in the higher education sector. Whether we like it or not, adapting to online technology, the

Internet, and new media is regarded as a critical prerequisite of this current era. The digital transformation of higher education institutions is an issue that must be dealt with by various stakeholders in education. It is incumbent on universities to equip potential professionals to address difficulties and propose solutions to apply ICT in every field of life [2]. Digital transformation can be perceived as a summary of all the digital processes needed for the transformation, equipping universities with the opportunity to implement digital technology optimally [1-3]. This process includes adequate strategic preparation, trust creation, process reflection, merging and strengthening all participating parties, mutual collaborative and organisational knowledge [3]. In light of this, researchers believe that technological mastery, readiness, preparedness, and expertise are all essential when dealing with technology-centered learning. However, as service providers, certain parties, such as educational institutions, must consider a number of factors in its implementation. The purpose of learning is to equalise knowledge, but if technology is the cause of knowledge delivery dropouts, then technology's function in higher education is underutilised.

II. RELATED WORK

A. Online Learning

Today's new generation, lives in a sophisticated and rapidly expanding technological community that is in sync with current technology. The current generation expects a new set of learning standards based on technology, new learning styles, and new modern ways [4-5]. After the Covid-19 outbreak, educational institutions throughout the world have felt startled. This leads most schools to turn to alternate teaching instead of halting learning sessions. Based on the current situation, online learning is the best option to continue learning.

Online learning refers to online learning where teachers and learners teach and learn, using suitable learning platforms [6]. Online learning includes online training, e-learning, web learning, cyber learning, computer education or network-based instruction [7]-[4]. In 2010, about 30% of higher education registration was expected to be done online. [8]-[4]. By providing opportunities for working parents, adult learners, and students who are unable to attend classrooms, online education produces a diverse student population. This means that online learning is essential for student achievement today, and higher education institutions should provide programmes that meet their students' needs [9].

B. Online Learning Challenge in Post Covid Outbreak in Malaysia

The global outbreak of covid-19 had a tremendous influence on all sectors of the world. The economy and education are two significant sectors that have been severely impacted by the pandemic. Following the spread of this pandemic, many educational institutions were closed, and teaching and learning activities were halted immediately. Many universities around the world have digitalized their activities in order to completely comprehend the critical requirements for this current condition [10]. Even if the educational institution is closed to physical learning activities, this approach should be implemented for continuous educational institutions. When compared to the previous concentration on face-to-face and physical learning, the integration of virtual learning activities began to be fostered consistently. To some extent, social distance instruction is detrimental to the learning process. From this point on, all educational institutions began to explore for alternatives in continuing teaching and learning activities. Online learning is one of the options that can be adopted [10].

Malaysia is also among those hit by the pandemic. Following the outbreak of the pandemic, the entire school system was shut down. Many institutes of higher learning continue to engage in online teaching and learning activities today. However, in today's world, many educators prefer face-to-face learning activities [11]. In Malaysia, which has a diverse demographic, there are various challenges in the implementation of this OLL. The hilly terrain, remote areas, villages, and no internet coverage is a daunting challenge in the implementation of OLL [11]. Similarly, [12] it's been discovered that face-to-face classroom instructions were perceived as an obstructive pupil environment, and that its structure could be stressful and daunting.

Many studies have been conducted in Malaysia related to the challenges in implementing online learning in Malaysia. Meanwhile, [13], it's noted that in Malaysia, there is a significant disparity in internet coverage between urban and rural areas. At the same time, the data shows that users in the city account for 70% of all users. This disparity reflects a disparity in learning styles between urban and rural residents, since students in urban regions are more likely to use the Internet for learning than students in rural areas. This creates conflict because rural people miss out on information as a result of limited internet connectivity [14]-[15]. [16] stated that most Malaysian universities embrace blended learning in tandem with face-to-face learning. This provides students with

reassurance because it is vital to combine face-to-face teaching approaches with online learning. However, the shift to more online-focused teaching techniques causes students to feel apprehensive and overwhelmed by abrupt shifts, a lack of preparation, and hasty implementation.

Furthermore, for people who are poor and who reside in rural areas, the learning environment at home to conduct OLL is an issue [17]. Fast access, electronic learning tools, internet data, and a conducive environment are all essential for OLL sessions [18]. This, however, makes it difficult for those living in rural and isolated places to gain access to educational information. Students and professors face considerable challenges as a result of OLL. According to the head of the University of Malaya Association of New Youth, most students struggle and are frustrated with online learning because professors tend to provide more assignments than lectures [19]. If there are any concerns or questions, students are unable to interact actively and directly with the professor [20].

III. METHODOLOGY

The research used a qualitative descriptive approach to understand the challenges in online learning among higher education students in Malaysia. Qualitative research employs a subjective, systematic approach to exploring and describing student barriers, which might highlight new themes [21]. Researchers employed this approach to explore and describe in depth the phenomena, obstacles, and challenges encountered by students when conducting online learning activities during the Covid pandemic 19. Furthermore, using the Fuzzy Delphi method, the researchers triangulated the data with expert agreement analysis to confirm the factors and challenges of students adopting online learning. The Fuzzy Delphi technique is ideal for reaching agreement on an issue or study [22].

A. Data Collection

The data collection process in this study used an open-ended questionnaire distributed to 118 students of higher learning institutions in Malaysia. All these questions are distributed using google Forms. The distribution of questions to participants were conducted via online. Before the researcher distributed the questionnaire, the researcher contacted the study participants to obtain their consent. Once the study participants agreed, the researcher provided a link to the study questions for them to answer. Most of the study participants answered the questions well, and the researcher analysed the answers based on the feedback sheet obtained.

B. Participants

The study participants involved in this study were undergraduate students from several public universities in Malaysia. A total of 118 undergraduate students in public universities were distributed links containing open-ended questions. The selection of study participants was made by purposive sampling. All participants provided excellent cooperation, and answers were received from participants in the shortest possible time using electronic media to facilitate participants to answer the research questions. Meanwhile, for the phase of obtaining expert agreement, the researcher distributed expert questionnaires to nine experts skilled in this field of study (refer to Table I).

TABLE I. LIST OF EXPERTS

Expert list	Field of expertise	Institution
2 Professors	• Higher education	• Public University
2 Asst. Professor	• Educational multimedia	
3 Senior lecturers	• Information Technology	
2 Lecturer	• ICT	• Private university

C. Data Analysis

The data analysis of this study is divided into three parts. The first part was descriptive data analysis to collect participants profiling data. Data were analysed using SPSS version 20. Analysis of participants profiling such as gender, university and field of specialisation were collected. The second part contains data analysis of open-ended questions to obtain feedback and comments from study participants. Content analysis was then carried out on open-ended questionnaires to assess student comments and identify common patterns among written answers [23]. Content analysis involves the process of coding written answers (open-ended) into the form of patent categorisation obtained from participants' responses [24]. The last section covers the data triangulation phase through expert agreement on elements or themes extracted from open-ended questions. Fuzzy Delphi data were analysed using Fudelo 1.0 software in obtaining expert agreement.

Meanwhile, for Fuzzy Delphi analysis, the researcher used the Fuzzy Delphi method analysis by using the following formula, which contains some specific steps: The first step is in determining the linguistic scale by transforming all linguistic variables into fuzzy triangles (fuzzy triangular numbers). This stage also entails translating the language variables by adding fuzzy numbers [25]. The Fuzzy triangular number reflects m1, m2 and m3 (m1, m2, m3). The m1 value is the lowest value, the m2 value is the acceptable value, and the m3 value is the maximum value. The second step involved the Determination of Linguistic Variables and Average Responses. This method is known as the identification of each fuzzy number's constant answer [26]. The third step involved the determination of the threshold value "d". Distance is measured using the formula for each fuzzy number m = (m1, m2, m3) and n = (m1, m2, m3):

$$d(\bar{m}, \bar{n}) = \sqrt{\frac{1}{3} [(m1 - n1)^2 + (m2 - n2)^2 + (m3 - n3)^2]}$$

The fourth step involved identifying the alpha-cut aggregate level of fuzzy assessment. It is involved by adding a fuzzy number for each item. The calculation and determination of fuzzy values are using the formula: $A_{max} = (1)/4 (m1 + 2m2 + m3)$. The fifth process known as defuzzification process, by uses the formula $A_{max} = (1) / 4 (a1 + 2am + a3)$. If the researcher uses Average Fuzzy Numbers or average responses, the resulting score number is a number that is in the range of 0 to 1 [27]. In this process, there are three formulas, namely: i. $A = 1/3 * (m1 + m2 + m3)$, or; ii. $A = 1/4 * (m1 + 2m2 + m3)$, or; iii. $A = 1/6 * (m1 + 4m2 + m3)$. A-cut value = median value for '0' and '1', where α -cut = $(0 + 1) / 2 = 0.5$. If the resulting A value is less than the α -cut value = 0.5. According to [28], the alpha cut value should exceed 0.5. It is supported by [29],

who stated that the α -cut value should be more than 0.5. The last step is the ranking process by selecting defuzzification values based on an expert consensus, where the most significant position is the one with the highest value [30].

IV. STUDY'S FINDINGS

In this section, the researcher will describe the study's findings based on three phases of data analysis. Phase one is the descriptive analysis of participants who participated in this study. The second phase is the qualitative data analysis (Open-ended question) and the third phase is the data triangulation phase using Fuzzy Delphi Method.

A. First Phase Finding (Descriptive Analysis)

Table II shows the distribution of participants' gender data. 57% (50) of respondents were male, while 43% (68) were female.

B. Second Phase Finding (Qualitative)

In this section, the researcher will describe the qualitative findings (open-ended). In the results of the analysis, several themes can be inferred by the researcher based on the responses received from the participants. The themes are summarised in the Table III.

TABLE II. PARTICIPANTS

Gender	Total participants	Percentage
Male	50	43%
Female	68	57%

TABLE III. THEME AND PARTICIPANTS RESPONSE SUMMARY

Theme	Participants response
Internet coverage	<ul style="list-style-type: none"> "I don't really care about the class, my only problem is the internet coverage is very bad in my place" (P1, 19,29,90) "It's a bit difficult for me to join this ODL class, because in my house the internet coverage is not very good" (P18) "This covid ge class is quite challenging, because it is made online. My problem is that the internet is not very good in my area" (P28,29) "I hope that covid 19 ends soon, I can't stand this OLL class anymore, because the internet problem in my place is very critical, know that I am in the village, not on campus" (P60, 17,35,67) "I prefer face -to -face classes, because it's easier. If I don't like online classes, because internet coverage often bothers me. Sometimes it's ok and sometimes it's bad, it's hard" (P87, 78,89,79)
Mental fatigue	<ul style="list-style-type: none"> "Sometimes I feel tired with this online class, because I sit in front of the screen without doing anything for a long time, boring" (P46, 67, 89, 93) "My brain is tired, because I prefer face to face. When sitting online in front of the screen, it feels like it's useless and tiring. as if we were talking alone" (P98, 17.6,90) "If the class is ok, it's ok. sometimes the class is not ok, I will feel tired, boring". (P20,P68, 75,99) I feel uncomfortable and sometimes feel tired, exhausted. more comfortable face to face (P112, P92)
Learning Device	<ul style="list-style-type: none"> "I share the device with other siblings. It's a bit difficult to manage my class" (P8,9,17.26) "This device is also a problem, because I need an ok device. But I have a laptop, but when I'm at home I

	<p>have to share it with my siblings sometimes." (P74,98,101,102)</p> <ul style="list-style-type: none"> "During class, I had to use a mobile phone because I could access it outside the house because at home I had access to it was a bit poor. (P22,16,81,90)
Environmental disturbances	<ul style="list-style-type: none"> "During Covid, I studied at home, so there were a lot of disturbances, noisy, sometimes my younger siblings bothered me, I had to do my homework and so on" (P15,17, 28, 29, 65) "My biggest challenge is the environment because I sit at home around the campus. When I am at home, there are many challenges, siblings, noise and so on. (P1, 16, 90, 87, 102) "I can study anywhere, only if there is a disturbance that is a bit difficult for me. Noise disturbance, environmental disturbance bothers me (P18,19, 35, 78, 98) "It's really challenging to use this OLL, because when we don't study on campus, the atmosphere will be different. If there is a lot of disturbance at home, it's noisy, not conducive and so on" (P15,19,76,87,90,94)
Pedagogical Challenge	<ul style="list-style-type: none"> "Learning online is ok for me, only if the lecturer doesn't teach using fun lessons, I'm so boring" (P16, 78, 87,65, 90) "The challenge for me is if the class is not interesting, I'm lazy to join the class, sometimes I'm silent and I don't pay much attention to lectures" (P1, 16, 45, 54,67) "I will join the class and give help if the class is interesting" (P90,101, 67, 57) "If the lecturer does not provide interesting materials and presentations during the lecture session, it is difficult for me to give full concentration. I really want to concentrate if the class is not interesting". (P13, 25, 17, 47,39) "I hope the lecturers prepare well for teaching, add activities online. Most lecturers only use one method, so it's hard for me to pay attention" (P78,89,95)
Lack of Motivation	<ul style="list-style-type: none"> "It's really challenging when it's OLL. Since covid happened suddenly, I initially lost weight and motivation because it happened suddenly" (P16,18,90,104) "I will lose motivation and interest if the class is not interesting even more when it is this covid season" (P15,18,78,67,90) "I'm very tense right now, because studying online. Actually online is ok because it's flexible, but when there are distractions and troubles I lose motivation and interest in learning" (P15,18,26,58,89,90)
Social interaction	<ul style="list-style-type: none"> "The challenge I feel is to interact with my friends because we live in different places, so it's hard to talk" (P67,78, 90, 100, 107) "When there are group assignments, it's a bit difficult to discuss, everything is online. Sometimes there are those who can't cooperate for various reasons. It's difficult for me" (P17, 26,57,89) "I really lose motivation when there are distractions and obstacles. I am frustrated because when online class, it requires a device, good Internet. I live in the village, coverage problems, gadgets and others make my mood disappear. Sometimes I feel depressed" (P13, 47, 78, 89) "I'm ok with this online class. It's just that sometimes I lose my mood and motivation when there are unavoidable interruptions such as internet coverage, insufficient data, etc. All this makes me stress" (P4, 9, 17, 78, 91)

The bolded threshold value is over 0.2 (> 0.2) as a result of the data analysis (refer to Table IV). This indicates that there are opinions of experts which are either inconsistent or inconsistent on some issues only. However, all themes average values.

suggest a threshold value (d) < 0.2 , which is 0.06456. If the average threshold value of (d) is less than 0.2, the item is agreed upon by the experts [31]-[32]. Meanwhile, the total percentage of the expert agreement is 93% greater than ($> 75\%$) for the fulfilment of the expert agreement terms of this item. Furthermore, all defuzzification value of Alpha-cut value exceeds α -cut $= > 0.5$ (average fuzzy responses). The alpha cut value should be higher than 0.5 [33]-[34] and discarded if less than 0.5. The analysis results demonstrate that all of the OLL challenges have been agreed upon by the qualified experts. The elements approved by the agreement of the experts are prioritised, as indicated in Table V.

TABLE IV. FUZZY DELPHI ANALYSIS RESULT

Results	Item1	Item2	Item3	Item4	Item5	Item6	Item7
Expert 1	0.05132	0.07698	0.12189	0.00642	0.01283	0.01283	0.10906
Expert 2	0.12189	0.01925	0.00642	0.06415	0.07057	0.07057	0.06415
Expert 3	0.05132	0.2117	0.05132	0.06415	0.07057	0.01283	0.10906
Expert 4	0.05132	0.01925	0.00642	0.10906	0.01283	0.01283	0.06415
Expert 5	0.12189	0.07698	0.00642	0.06415	0.01283	0.10264	0.06415
Expert 6	0.06415	0.01925	0.00642	0.00642	0.21811	0.07057	0.00642
Expert 7	0.05132	0.07698	0.00642	0.06415	0.01283	0.21811	0.06415
Expert 8	0.06415	0.01925	0.05132	0.22453	0.01283	0.07057	0.10906
Expert 9	0.16679	0.09623	0.05132	0.06415	0.01283	0.07057	0.06415

TABLE V. FUZZY SUMMARY

Statistics	Item 1	Item2	Item3	Item4	Item5	Item6	Item 7
Value of the item	0.08268	0.06843	0.03422	0.07413	0.04847	0.07128	0.0727
Value of the "D" construct	0.06456						
Item < 0.2	9	8	9	8	8	8	9
% of item < 0.2	100%	88%	100%	88%	88%	88%	100%
Average of % consensus	93%						
Defuzzification	0.928889	0.86667	0.92111	0.87889	0.87778	0.87778	0.88889
Rank	1	6	2	4	5	5	3
Status	Accept	Accept	Accept	Accept	Accept	Accept	Accept

V. DETAILED FINDING

In this section, the researcher will describe in detail the findings of the study of both phases of the study, namely the qualitative phase and data triangulation phase using expert consensus (Fuzzy Delphi). After analyzing the qualitative data (open-ended), the researcher summarized the findings to seven main themes based on the responses from the participants of this study, as stated in Table III. Then the researcher triangulated the data by obtaining expert consensus using the Fuzzy Delphi method. The results show that the main factor of the OLL challenge theme based on expert rankings (see Table V) as follow:

A. Internet Coverage Factor

As we know, the implementation of OLL requires good and robust internet coverage. If coverage cannot be adequately provided, the OLL teaching implementation process cannot be carried out well and effectively because the primary medium of OLL is the Internet. In Malaysia, not all students during Covid 19 have good (internet access). Most students are in rural areas where internet coverage is not as good as in urban areas. This shows the imbalance of the digital divide between urban and rural areas [35]-[11]. [13] Reported that in Malaysia, there is a huge gap between urban and rural areas pertaining to the issue of internet coverage. Concurrently, the data shows that users in the city account for 70% of all users. This gap reflects a disparity in learning styles between urban and rural residents, since students in urban areas are more likely to use the Internet for learning than students in rural areas. This creates conflict as rural communities miss out on information due to poor internet access problems [35] As [36] stated in his study in South Africa, it shows an unbalanced gap between urban and rural (undemocratic citizenry). In addition, [37]-[38], the response as socio-demographic inequalities raised by rural students lags compared to urban students who are more comfortable with better internet access. In addition, the absence of inadequate facilities for high-performance internet technology has also contributed to a significant problem [39]. This is a difficult challenge because the internet facilities in some places are unstable, problems with internet quota, and a lack of smartphones [39]. There are also difficulties pertaining to streaming or downloading huge size video lecture files with Internet connections and insufficient bandwidth. Rural students commonly complain about difficulties with live streaming of conferences and attending virtual conferences [40]. Students with little or no socio-economic potential to buy broadband connections are more prone to fall behind or face extra obstacles to meet others during Online Learning [41]. Based on the descriptions and findings, some respondents stated that internet coverage was the biggest challenge for them in following OLL classes. Apart from that, the experts also acknowledged that internet coverage is an issue in the Malaysian context, especially in rural areas.

B. Learning Device

One of the requirements in the implementation of online learning is a learning device. Most lecturers or teachers will use laptops, mobile phones, tablets, and other gadgets as the main medium, so electronic gadgets become mandatory in OLL. Based on the researcher's findings, the learning device is

a constraint among students (see Table III). They face problems such as lack of devices, sharing devices with siblings and devices that do not support certain applications. "I share the device with other siblings. It's a bit difficult to manage my class" (P8, 9, 17.26), "This device is also a problem, because I need an ok device. But I have a laptop, but when I'm at home I have to share it with my siblings sometimes." (P74.98, 101,102). In the context of Malaysia, not all individuals in society can own electronic gadgets in large numbers. Some families with many children need to share electronic gadgets with their children to join OLL—as such, owning gadgets for learning is indeed a big challenge in some societies. This is supported by the opinion [42] that online learning entirely depends on technological equipment and the Internet. Lecturers, teachers and students with bad Internet connectivity are subject to access denial of internet learning. The reliance on online learning and the supply of technology equipment was a major problem for institutions, lecturers and students.

C. Social Interaction

In implementing this OLL, many challenges will be faced by both lecturers and students. In the context of students, it must be more challenging because the lecturer only teaches and gives input, assignments and others. Hence, in the context of students, OLL has a significant impact on social interaction between students and other friends in the class. Students usually need to interact with others at the tertiary level, especially when creating assignments and presentations. To complete assignments and presentations, they need to interact and discuss with each other. However, the constraints in terms of the Internet and the difficulty of face-to-face discussions present a significant barrier to students. As a result of the analysis, the researcher found that students expressed such problems "The challenge I feel is to interact with my friends because we live in different places, so it's hard to talk" (P67,78, 90, 100, 107), "When there are group assignments, it's a bit difficult to discuss, everything is online. Sometimes there are those who can't cooperate for various reasons. It's difficult for me" (P17, 26, 57, 89), "I really lose motivation when there are distractions and obstacles. I am frustrated because when online class, it requires a device, good Internet. I live in the village, coverage problems, gadgets and others make my mood disappear. Sometimes I feel depressed" (P13, 47, 78, 89), "I'm ok with this online class. It's just that sometimes I lose my mood and motivation when there are unavoidable interruptions such as internet coverage, insufficient data, etc. All this makes me stress" (P4, 9, 17, 78, 91). This data shows that aspects of social interaction have an impact on students. As [43]-[44] agreed that in the online course, it was emphasized that students are physically far from college, as these often influence student success and experience so that students cannot utilize or consider the resources and interactions available to them. A lack of social interaction with peers makes students feel isolated and online learning seem impersonal [44]. The researcher also has concluded that online interaction could reduce the extent of communication asynchronously; however, those who take traditional classes can be assessed successfully, with substantial delays in receiving answers. Likewise, the absence of face-to-face and social interaction found the online teaching as a disadvantage in the classroom environment.

D. Environmental Disturbance

Environmental challenges will exist if the surrounding environment presents disturbances and threats to individuals. In implementing OLL, students and lecturers will be at home or certain designated places while implementing teaching and learning sessions. Most of the students during their MCO will be in their respective homes along with other siblings. They will face a tight schedule of implementation of their respective cells. Environmental disturbances such as noise disturbances, siblings, homework and the learning environment become a threat and constraint. As a result of the analysis, the researchers found that the environmental aspect is also a major challenge in students undergoing the OLL process. They admit, "During Covid-19, I studied at home, so there were many disturbances, noisy, sometimes my younger siblings bothered me, I had to do my homework and so on" (P15, 17, 28, 29, 65), "My biggest challenge is the environment because I sit at home around the campus. When I am at home, there are many challenges, siblings, and noise and so on." (P1, 16, 90, 87, 102), "I can study anywhere, only if there is a disturbance that is a bit difficult for me. Noise disturbance, environmental disturbance bothers me" (P18, 19, 35, 78, 98), "It is challenging to use this OLL because when we do not study on campus, the atmosphere will be different. If there is much disturbance at home, it is noisy, not conducive and so on" (P15, 19, 76, 87, 90, 94). However, [45] acknowledges that students will feel disturbed by noisy noise, and locations with a bad environment disturb students' emotions. Disruptions and disturbances, however, are not only problematic to understand. Although orientation away from study activities may have implications for student learning, it can also be helpful to prevent cognitive overload of working memory [46].

E. Pedagogical Challenge

To get a quality teaching session, good pedagogy and andragogy aspects need to be given attention. If this aspect is not given special and robust attention and preparation, the teaching sessions are conducted without focus or attention and attraction from the students. Lecturers who teach also need to be prepared to present a good style and pedagogy to attract students' attention. Not only technology issues are related to innovation, but new educational pedagogy also arises. Online learning means the methods utilized for one-to-one classes are revised [47]. As a result of the shortcomings shown in the teaching methods, it makes students to become bored and not interested in following the teaching classes. The results of the analysis made by the researcher, the study participants admitted as follows, "Learning online is ok for me, only if the lecturer does not teach using fun lessons, I am so boring" (P16, 78, 87, 65, 90) "The challenge for me is if the class is not interesting, I am lazy to join the class, sometimes I am silent and I do not pay much attention to lectures" (P1, 16, 45, 54, 67), "I will join the class and give help if the class is interesting" (P90, 101, 67, 57), "If the lecturer does not provide interesting materials and presentations during the lecture session, it is difficult for me to give full concentration", "I want to concentrate if the class is not interesting". (P13, 25, 17, 47, 39) & "I hope the lecturers prepare well for teaching, add activities online. Most lecturers only use one method, so it is hard for me to pay attention". Many students admit that one thing that

makes it a challenge for them to join the classes is that the learning taught is not interesting. In addition, the class is conducted online, so this aspect becomes a turning point for those who are not interested in participating in the class. The provision of unattractive teaching materials, poor pedagogy causes this problem to occur in online classrooms. Indeed, [48] stated that online learning requires lecturers to change their mindset from face to face learning to learning technology. [49] Said that "as online learning continues to grow, a lot of us recommend that we think differently about our pedagogy and move beyond face-to-face imitation". Based on this data, a good and solid pedagogical aspect is essential to attract students. Students acknowledge that if the teaching methods are not good and interesting, it causes them to be less interested and become a big challenge for them to stay and join the class consistently.

F. Lack of Motivation

Motivation is a natural thing that human beings need to do. If there is no motivation and less in oneself, it leads to human reluctance to do something. Things involving this motivation are also a big challenge among students to participate in online learning classes (OLL). In the context of students in Malaysia, lack of motivation is a matter of cause and challenge; this is related to their confession such as "It's really challenging when it's OLL. Since Covid-19 happened, I initially lost weight and motivation because it happened suddenly" (P16, 18, 90, 104), "I will lose motivation and interest if the class is not interesting even more when it is this Covid-19 season" (P15, 18, 78, 67, 90), "I'm very tense right now, because studying online. Actually online is ok because it's flexible, but when there are distractions and troubles I lose motivation and interest in learning" (P15, 18, 26, 58, 89, 90). Participants admitted that one of the reasons for the lack of motivation was that online classes had to be conducted in a hurry due to the outbreak of Covid-19. In addition to the rush and lack of careful planning towards OLL, it was causing students to feel less motivated and less enthusiastic. In addition, external disturbances and problems involving OLL are also a cause of loss of motivation among students. [50] Stated that one of the things that can motivate students towards OLL is to design exciting learning. However, [51] declared that online learning requires interaction between students and lecturers online without face-to-face interaction. So, student content must be rigorous, exciting and able to motivate students. If this does not happen, then the class will not be able to be implemented properly and will not motivate the students. Meanwhile, [52] [53] highlighted motivation and engagement for an online learning environment as the contextual interest and activities and information that maintain students' attention depend on the situational interest. However [54] further recommended that students must get help suited to their requirements in order to reduce their worry and uncertainty. The literature and the support of previous researchers' opinions show that the lack of motivation acknowledged by higher education students in Malaysia is supported by previous literature. Based on this description and theme, the researcher concluded that the lack of motivation is one of the main challenges in implementing OLL among higher education students in Malaysia.

G. Mental Fatigue

Mental health needs to be taken into account in creating an excellent emotional atmosphere during the teaching and learning process. Mental health needs to be taken into account in forming an excellent emotional atmosphere during the teaching and learning process. Mental fatigue will lead to difficulties in shaping situations, emotions and catalysts to the learning mood. This study's data revealed a great challenge among students in dealing with OLL, i.e. mental fatigue for some reason. Their confession is recorded as follows: "Sometimes I feel tired with this online class, because I sit in front of the screen without doing anything for a long time, boring" (P46, 67, 89, 93) "My brain is tired, because I prefer face to face. When sitting online in front of the screen, it feels like its useless and tiring. As if we were talking alone" (P98, 17.6, 90), "If the class is ok, it's ok. Sometimes the class is not ok, I will feel tired, boring". (P20, P68, 75, 99) & I feel uncomfortable, and sometimes feel tired, exhausted. More comfortable face to face (P112, P92). This acknowledgement indicates that they acknowledge being tired, useless and exhausted of interacting online. In the view of researchers, online learning should be fun and easy. However, these external things and disturbances cannot be controlled and sometimes burden students who cause mental fatigue. The average student admits being tired and exhausted with online classes is not due to that online, but due to things that bother them, such as internet data, environmental disruption, other assignments, etc. In addition, in Malaysia, not all students have good internet access, especially in rural areas, so it is a factor of mental fatigue and a big challenge.

VI. CONCLUSION

To conclude, this study aimed to explore the online learning challenge in the Malaysian Higher education setting. The open-ended question was given to students who were undergoing online learning during the Covid-19 MCO. As a result of the responses received from them, the researchers analysed and formed specific themes in identifying the challenges faced by students in undergoing online learning in Malaysia. The responses received by the researcher were internet coverage factor, mental fatigue, learning device, environmental disturbance, pedagogical challenge, lack of motivation and social interaction. These challenges become an essential contribution of the study that will consider certain parties in formulating online learning policy, then try to overcome them to maximize learning better. In addition, with this disclosure, those who provide teaching input, such as lecturers in institutions of higher educations, need to pay attention to the existing weaknesses and improve them so that the learning system and knowledge transfer can be done better.

VII. GUIDELINE FOR FURTHER RESEARCH

This study has certain limitations. This study focuses on students in public universities in Malaysia. Future studies could focus on private universities in Malaysia as well as elsewhere. In addition, this study uses qualitative methods and data triangulated with the Fuzzy Delphi Method, and future studies can be conducted using quantitative methods by testing the variables produced in this study. In addition, this study used open-ended questions and distributed online because there

were certain constraints to meet face to face with participants. Future studies can be explored in more detail, using interviews in-depth, and data can be obtained in more depth and interesting. Other aspects of teaching methodologies, institutional capabilities and lecturer efficacy can be studied in more depth in future studies.

ACKNOWLEDGMENT

The author would like to thank Universiti Teknologi MARA Pahang (UiTM) for providing research facilities when conducting this study.

REFERENCES

- [1] Kopp, M., Gröbinger, O., & Adams, S. (2019). Five common assumptions that prevent digital transformation at Higher Education Institutions. *INTED2019 Proceedings*, 1448-1457.
- [2] Bond, M., Marin, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. (2018). Digital transformation in German higher education: student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, 15(1), 1-20.
- [3] Adedoyin, O. B., & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments*, 1-13.
- [4] Mustapha, R. (2021). Development of e-xtvt guidelines in promoting active online learning in higher education: the fuzzy delphi approach. *Psychology and Education Journal*, 58(1), 5681-5696.
- [5] Arghode, V., Brieger, E. W., & McLean, G. N. (2017). Adult learning theories: implications for online instruction. *European Journal of Training and Development*.
- [6] Kanuka, H., & Anderson, T. (2007). Ethical issues in qualitative e-learning research. *International Journal of Qualitative Methods*, 6(2), 20-39.
- [7] Urdan, T. A., & Weggen, C. C. (2000). Corporate elearning: Exploring a new frontier.
- [8] Moloney, J. F., & Oakley, B. (2010). Scaling online education: Increasing access to higher education. *Journal of Asynchronous Learning Networks*, 14(1), 55-70.
- [9] Dhawan, S. (2020). Online learning: A panacea in the time of COVID-19 crisis. *Journal of Educational Technology Systems*, 49(1), 5-22.
- [10] Rieley, J. B. (2020). Corona Virus and its impact on higher education. *Research Gate*.
- [11] Tukiman, N., Khalid, A. K., Onn, M., Foong, N. S., & Amran, M. A. M. (2020). Online Learning Challenges and Students' Preference on Mode of Learning during COVID-19 Pandemic. *International Journal of Advanced Research in Education and Society*, 2(3), 72-79.
- [12] Arumugam, T. (2020). Covid19: Education sector grapple with technology virtual online classrooms. In *New StraitsTimes*. New Straits Times Press (M) Bhd.
- [13] Pui Yee, "COVID-19: (2020) Impact on the tertiary education sector in Malaysia," 'Crisis Assessment,' Penang Institute, Pulau Pinang, Malaysia, Tech. Rep., 2020. [Online]. Available: <https://penanginstitute.org/wpcontent/uploads/2020/05/IMPACT-ON-THE-TERTIARY-EDUCATIONSECTOR-IN-MALAYSIA.pdf>.
- [14] Nassr, R. M., Aborujilah, A., Aldossary, D. A., & Aldossary, A. A. A. (2020). Understanding Education Difficulty During COVID-19 Lockdown: Reports on Malaysian University Students' Experience. *IEEE Access*, 8, 186939-186950.
- [15] Aliyyah, R. R., Rachmadtullah, R., Samsudin, A., Syaodih, E., Nurtanto, M., & Tambunan, A. R. S. (2020). The perceptions of primary school teachers of online learning during the COVID-19 pandemic period: A case study in Indonesia. *Journal of Ethnic and Cultural Studies*, 7(2), 90-109.
- [16] Lim, I. (2020). Reality for Malaysia's university students: Online learning challenges, stress, workload; possible solutions for fully digital future until Dec. *Malay Mail*, 16.
- [17] Lau, J. (2020). Will Online Education Widen Asia's Digital Divide. In *The World University Rankings*. Times Higher Education.

- [18] Arumugam, T. (2020). Covid19: Education sector grapple with technology virtual online classrooms. In *New StraitsTimes*. New Straits Times Press (M) Bhd.
- [19] Sia, J. K. M., & Adamu, A. A. (2020). Facing the unknown: pandemic and higher education in Malaysia. *Asian Education and Development Studies*.
- [20] Rafidi, R. (2020). Address e-learning challenges, students urge. *New Straits Times*.
- [21] Burn, N., & Grove, S. K. (2010). *Understanding nursing research: Building an evidence based practice*. Elsevier Health Science, Maryland Height.
- [22] Mustapha, R., & Darusalam, G. (2018). *Aplikasi kaedah Fuzzy Delphi dalam penyelidikan sains sosial*. Penerbit Universiti Malaya. Kuala Lumpur
- [23] Chambers, T., & Chiang, C. H. (2012). Understanding undergraduate students' experience: a content analysis using NSSE open-ended comments as an example. *Quality & Quantity*, 46(4), 1113-1123.
- [24] Moretti, F., van Vliet, L., Bensing, J., Deledda, G., Mazzi, M., Rimondini, M., ... & Fletcher, I. (2011). A standardised approach to qualitative content analysis of focus group discussions from different countries. *Patient education and counseling*, 82(3), 420-428.
- [25] Hsieh, T. Y., Lu, S. T., & Tzeng, G. H. (2004). Fuzzy MCDM approach for planning and design tenders selection in public office buildings. *International journal of project management*, 22(7), 573-584.
- [26] Benitez, J. M., Martín, J. C., & Román, C. (2007). Using fuzzy number for measuring quality of service in the hotel industry. *Tourism management*, 28(2), 544-555.
- [27] Said, S., Cheng, L. S., Ridhuan, M., Jamil, M., Yusop, Y. M., Azeez, M. I. K., & Ni, N. P. (2014). Analisis masalah dan keperluan guru Pendidikan Khas integrasi (masalah pembelajaran) peringkat sekolah rendah tentang pendidikan seksualiti. *Jurnal Pendidikan Bitara Universiti Pendidikan Sultan Idris*, 7, 1-9.
- [28] Bodjanova, S. (2006). Median alpha-levels of a fuzzy number. *Fuzzy Sets and Systems*, 157(7), 879-891. doi: 10.1016/j.fss.2005.10.015.
- [29] Tang, C.W. and , Wu, C.T. (2010). *Obtaining a picture of undergraduate education quality: a voice from inside the university*, Springer. Higher Education, 60, 269-286.
- [30] Fortemps, P., & Roubens, M. (1996). Ranking and defuzzification methods based on area compensation. *Fuzzy sets and systems*, 82(3), 319-330.
- [31] Lin, W. S., & Chen, C. S. (2002). Robust adaptive sliding mode control using fuzzy modelling for a class of uncertain MIMO nonlinear systems. *IEEE Proceedings-Control Theory and Applications*, 149(3), 193-202.
- [32] Jani, N. M., Zakaria, M. H., Maksom, Z., Haniff, M. S., & Mustapha, R. (2018). Validating antecedents of customer engagement in Social Networking Sites using fuzzy delphi analysis. *International Journal of Advanced Computer Science and Applications*, 9(9), 294-304.
- [33] Tang, C.W. and , Wu, C.T. (2010). *Obtaining a picture of undergraduate education quality: a voice from inside the university*, Springer. Higher Education, 60, 269-286.
- [34] Bodjanova, S. (2006). Median alpha-levels of a fuzzy number. *Fuzzy Sets and Systems*, 157(7), 879-891. doi: 10.1016/j.fss.2005.10.015.
- [35] Nassr, R. M., Aborujilah, A., Aldossary, D. A., & Aldossary, A. A. A. (2020). Understanding Education Difficulty During COVID-19 Lockdown: Reports on Malaysian University Students' Experience. *IEEE Access*, 8, 186939-186950.
- [36] Du Preez, P., & Le Grange, L. (2020). The COVID-19 pandemic, online teaching/learning, the digital divide and epistemological access. Unpublished paper.
- [37] Mbodila, M. (2020). Online learning—the pandemic cannot change reality. *University World News: Africa Edition*.
- [38] Friemel, T. N. (2016). The digital divide has grown old: Determinants of a digital divide among seniors. *New media & society*, 18(2), 313-331.
- [39] Atmojo, A. E. P., & Nugroho, A. (2020). EFL classes must go online! Teaching activities and challenges during COVID-19 pandemic in Indonesia. *Register Journal*, 13(1), 49-76.
- [40] Farooq, F., Rathore, F. A., & Mansoor, S. N. (2020). Challenges of online medical education in Pakistan during COVID-19 pandemic. *J Coll Physicians Surg Pak*, 30(6), 67-9.
- [41] Fishbane, L., & Tomer, A. (2020). As classes move online during COVID-19, what are disconnected students to do? *Brookings*.
- [42] Adedoyin, O. B., & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. *Interactive Learning Environments*, 1-13.
- [43] Tareen, H., & Haand, M. T. (2020). A case study of UiTM post-graduate students' perceptions on online learning: Benefits & challenges. *International Journal of Advanced Research and Publications*, 4(6), 86-94.
- [44] Appana, S. (2008). A review of benefits and limitations of online learning in the context of the student, the instructor and the tenured faculty. *International Journal on E-learning*, 7(1), 5-22.
- [45] Braat-Eggen, P. E., van Heijst, A., Hornikx, M., & Kohlrausch, A. (2017). Noise disturbance in open-plan study environments: A field study on noise sources, student tasks and room acoustic parameters. *Ergonomics*, 60(9), 1297-1314.
- [46] Dau, S., & Ryberg, T. (2014, October). Disruptions and Disturbance as Challenges in a Blended Learning (BL) Environment and the Role of Embodied Habit Orientation. In *European Conference on E-Learning* (p. 156). Academic Conferences International Limited.
- [47] Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies*, 10(4), 86.
- [48] Devlin, M., & McKay, J. (2016). Teaching students using technology: Facilitating success for students from low socio-economic status backgrounds in Australian universities. *Australasian Journal of Educational Technology*, 32(1).
- [49] Shearer, R., Aldemirb L., Hitchcock T., Resig, J.J., Driver, J. and Kohler, M. (2019), "What students want: a vision of a future online learning experience grounded in distance education theory", *American Journal of Distance Education*, Vol. 34 No. 1, pp. 36-52.
- [50] Kim, K. J., & Frick, T. W. (2011). Changes in student motivation during online learning. *Journal of Educational Computing Research*, 44(1), 1-23.
- [51] Knowles, E., & Kerkman, D. (2007). An Investigation of Students Attitude and Motivation toward Online Learning. *InSight: A Collection of Faculty Scholarship*, 2, 70-80.
- [52] De Barba, P. G., Kennedy, G. E., & Ainley, M. D. (2016). The role of students' motivation and participation in predicting performance in a MOOC. *Journal of Computer Assisted Learning*, 32(3), 218-231.
- [53] Meşe, E. & Sevilen, Ç. (2021). Factors influencing EFL students' motivation in online learning: A qualitative case study. *Journal of Educational Technology & Online Learning*, 4(1), 11-22.
- [54] Chambers, T., & Chiang, C. H. (2012). Understanding undergraduate students' experience: a content analysis using NSSE open-ended comments as an example. *Quality & Quantity*, 46(4), 1113-1123.