

Thematic Analysis for Classifying the E-Learning Challenges and the Suggested Solutions: The Unusual Era of the COVID-19

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Abstract

Electronic learning (e-learning) empowers the higher education in providing sustainable instruction during the infrequent circumstance when the wide-spreading disastrous challenge of the COVID-19 results in the closure of various sectors in the society. During this time, e-learning serves the levels of the education sector such as higher education well by delivering and receiving materials from distance with respect to movement restrictions imposed by the government, for example the Movement Control Order (MCO) in Malaysia. In this qualitative survey, the existing e-learning challenges and the recommended solutions to the problems from the senior lecturers' perspectives were collected through an online open-ended questionnaire. A number of five senior lecturers out of eight at the Universiti Teknologi Malaysia (UTM) answered the questionnaire. The UTM has been capable of providing e-learning courses for all of its lecturers and students during the closure of higher education institutions owing to the pernicious health conditions stemmed from the crisis of the COVID-19. The major existing challenges found in the e-learning program at the UTM and the suggested solutions to address them are listed and the main themes are illustrated in the word cloud format using the NVivo software. In the end, the conclusion is paragraphed and the future work is proposed. Overall, the purpose of this study is to address the e-learning challenges and to prepare a list of recommendations that can serve as solutions from the standpoint of the UTM senior lecturers during the MCO in Malaysia.

Keywords: *E-Learning, E-Learning success, E-Learning Challenges, Higher Education, Thematic Analysis, COVID-19*

1. INTRODUCTION

The large city of Wuhan which accommodates a population of 11 million people in China has encountered more and more cases who were afflicted with the novel Coronavirus (2019-nCoV) since December 2019. On

the last days of the same date, December 29th, the first four cases were diagnosed [1]. The COVID-19 outbreak in China was announced as a Public Health Emergency of International Concern placing vulnerable countries in jeopardy by the World Health Organization (WHO) [2]. This pandemic is widespread in many parts of Asia as well as the other parts of the world [3].

Since January 25, 2020, on which the first cases of the COVID-19 were reported in Malaysia [4], the cases have increased in number, particularly in March [5]. The increase in the number of cases has made taking some measures inevitable to break the infection chain. One of the prominent measures taken by the Malaysian government has been the execution of the Movement Control Order (MCO) to slow down and finally to stop the infection transmission.

The global recent issue has brought about various challenges within the case of the Malaysian context. Thus, the government imposed the MCO with relying on the Control and Prevention of Infectious Diseases Act 1988 and the Police Act 1967 which involves the closure of all private and public schools of higher education in Malaysia [6].

Higher education is suffering from strangely new challenges which literally have unmerited consequences in the 21st century [7]. Hence, studies and researches tend to orbit these challenges to equip the future investigation of the same scope with recommendations to tackle the potential issues caused by the factors and variables which have been either unseen or new to date.

At issue is the closure of higher education via the MCO in Malaysia. Applying Information and Communication Technologies (ICTs) in higher education makes instruction sustainable even in newly emerged unusual states because it could keep the remained possible paths of education open. In the same breath, the electronic learning (e-learning) success can be challenged by factors that block its academic plan. Thereby, this study tries to find and remove the barriers in e-learning use in the age of the Coronavirus in Malaysian higher education.

2. E-LEARNING

A lot of terms are used to refer to applying ICTs for education which can be cover by the umbrella term of e-learning [8]. Although these terms like computer-mediated communication, Web-based learning, online instruction etc. and any sorts of education via ICTs are covered by the e-learning term, they are not necessarily the same. As a fairly new term, e-learning is dealing with the Internet and computer application in the domain of education despite encompassing the other educational technologies [9].

In one of its definitions, e-learning is “the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services, as well as remote exchange and collaboration” [10]. In another definition e-learning is “the use of network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere.” [11]. Al-Azawei [12] listed the benefits of e-learning extracted from the previous studies by reviewing the literature as availability of information, compatibility and ‘adaptivity’, effective communication, working together and ‘cooperation’, asynchronous or synchronous education, expenses reduction, improving pedagogy standards, simplicity in monitoring students’ performance, and learner-centered instruction.

In this rapid age of communication, ICTs have developed which definitely provide the higher education with a large number of opportunities for new ways of presenting learning programs [13], [14]. As an example of these sorts of pedagogical innovations, e-learning has modified the learning path via offering many kinds of possibilities to learners [15].

It is not too long that e-learning which supports learning by digital technology has emerged. E-learning is related to a type of learning facilitated by learning content delivery [16]. E-learning unique traits have

influenced the learners' potential to obtain and promulgate knowledge with the help of knowledge management (KM) whenever and wherever possible [17].

3. BACKGROUND

Since people are pursuing their studies from home these days, it is worth investigating the success of higher education online system of instruction during the MCO in Malaysia to highlight its effectiveness and specify the challenges it may be faced with. This research peruses the most recent challenge which higher education has confronted since the last days of 2019. The COVID-19 is deemed to result in the most challenging situation by which Malaysian higher education could have been suspended due to the closure of academics centers during the MCO. Rajab [18] believes that e-learning is an available and fitting option to support higher education facing natural forces, urgency, and 'civil war'. To be on par with this idea, the present study reckons that e-learning is a successful alternative to the closure of universities or any other academic schools in the zones where students and lecturers are not allowed to commute and are supposed to stay inside wherever they live because they do not have to attend their classes anymore by simply participating in online programs of instruction. Moreover, Rajab [18] conceives that learners do not have to be inside the walls of educational structures to risk their lives because of imminent and potential perils of bombs, missiles, floods, and earthquakes. In the case of the outbreaks of biologically complicated viruses like the Coronavirus, e-learning serves its real and ultimate users, students and instructors, well by helping them feel completely at ease with their education. The online platform also enables collaborative and assisted learning by assuring both lecturers and students of their safety and health. Therefore, e-learning can empower higher education when they are suspended and shut by social, national, or international tragedies such as rampant diseases, viruses, forces of nature, war, civil war, and terrorist missions.

The studies found in distance learning literature have ignored the use of e-learning in uncommon contexts like 'war zones'[18] and zones quarantined by the MCO, as in Malaysia. This study examines the e-learning success in contexts where an increasing number of people are afflicted with the infectious and contagious virus, the lethal Coronavirus. It is supposed that a successful e-learning program paves the way for higher education to help distance learning be used by its users who have to avoid attending their classes at educational settings when the country is rife with the virus. The e-learning success, failure, and challenges in the existing era of the COVID-19 are completely new and have never been investigated to the time the present paper is jotted down. For that reason, e-learning within the mentioned specific time entails much research.

E-learning has introduced its immense power in education, so various studies have been done to investigate the e-learning implementation in teaching and learning and to recognize its fundamentals which accelerate its acceptance [19]. Compared to conventional learning systems, e-learning has absorbed leading attention for being convenient, pliable, and economical [13]. Moreover, as the Internet develops, Internet-based computerized learning (e-learning) has attracted educators' attention [10].

The e-learning success depends on various factors which need to be taken into consideration to establish an effectual and prosperous learning environment. These elements can influence learners' preparedness and decision toward the e-learning adoption over a long period of time. Accordingly, when a newly established environment of e-learning or ICT tool is introduced, academic centers and teachers should significantly demonstrate their tendency toward using it to inspire the learners to accept and use it in every respect [15]. In the systems of e-learning, success [20] pertains to the level to which learners accept and apply the systems [21]. In spite of having the advantages mentioned, the e-learning courses have been noticed to suffer from a high rate of drop-out, nearly 90 percent [22], which emphasizes that the e-learning success is restricted by

many factors which should be tackled [12]

The area of teaching and learning is targeted as an interesting field to apply new technologies to [23]. With the help of the Internet, computer-assisted teaching has meaningfully transformed instruction [10]. Academic centers have various ICT users who need support in transferring and acquiring knowledge. In these settings, a question raised about the reason behind the users' decision to adopt specific technology on the one hand and to reject it on the other. It is not for a long time that research on technology acceptance within the field of teaching and learning has been noticed as an inviting direction [24], [25] and the urgency for synthesizing technology in pedagogy has been emphasized [26]. Naturally, despite the fact that ICT potential to augment the process of teaching and learning is absorbing [27], the acceptance or refusal of instructional technology could be of great importance [23]. Confronting issues in the e-learning acceptance and application, especially in developing countries [28], a need for more investigation is felt to accelerate and facilitate the e-learning success in higher education in Malaysia. Extracting the factors which influence the e-learning success is the cornerstone to gain from its latent uses.

E-learning has not been yet applied or completed satisfactorily inasmuch as its adoption, to a small or a large extent, has been unsuccessful in developing countries [29]. One reason can be unidentified factors in view of the fact that the previous researches studied the e-learning according to specific factors. As claimed by [15], factors are not usually the same in each study for various context and people. Previous studies in the literature focused on the e-learning in an everyday situation. However, to the best of the researchers' knowledge, the e-learning has not been examined in an unusual era of universal calamities like the one people all over the world have been dealing with since the end of 2019, the COVID-19. Previous problems affected people in just some special countries like countries in the Middle-East who are always in war. Therefore, what discussed in the previous part as the key issues of the study is the initial background to aim at the e-learning challenges in a completely different state when people are quarantined due to the MCO caused by the Coronavirus in Malaysia.

4. CASE STUDY DESCRIPTION

Some studies done at a Malaysian context recommend that further studies should be conducted to examine the factors (like satisfaction with the technology, students' competency, technology infrastructure) which are effective in removing the obstacles of integrating technology into higher education [30]. However, it is not obvious if students are pleased with the e-learning system or not [31]. Additionally, as mentioned, enough studies have been devoted to e-learning in order to pave the way for the e-learning acceptance but no study can be traced for the hindrances to e-learning especially in the Malaysian higher education and more specifically in a circumstance like the MCO zones. Therefore, a comprehensive investigation to address the impediments to e-learning is needed.

In Malaysia, a two-week MCO from March 18 to March 31 (the original phase) was imposed to cease the outbreak of the COVID-19. Overall, the MCO has had many phases and has been extended many times up to now. On the 54th day of the curbs, two days before the end of phase four, the Conditional Movement Control Order (CMCO) was declared on May 10, 2020 in spite of satisfactory result. The first MCO phases and extensions are presented in Table 1. There have been more and more CMCOs and some MCOs after one year from the first phases.

Table1. MCO Phases and Extensions Based on Date and Duration in 2020

Phase No.	Extension No.	Starting Date	Ending Date	Duration
Phase 1	Original MCO	March 18	March 30	2 Weeks
Phase 2	1 st Extension	April 1	April 14	2 Weeks
Phase 3	2 nd Extension	April 15	April 28	2 Weeks
Phase 4	3 rd Extension	April 29	May 12	2 Weeks
Phase 5	4 th Extension (CMCO)	May 13	Jun 9	4 Weeks

Established in 1972, Universiti Teknologi Malaysia (UTM) is a leading research-based university where the main focus is on innovation and research. The UTM main campus is situated in Johor Bahru and its other campus is located in Kuala Lumpur. It has a wide range of graduate and research-based postgraduate programs with various modes of Ph.D. programs [32]. The UTM performance is nationally and internationally realized and it is globally at 217th in the Quacquarelly Symonds (QS) World University Rankings 2020 [33].

A number of 23,476 students were reported to study at the UTM in March 2020, with 14,565 undergraduate and 8,911 postgraduate students. Among them, 4,495 students are international. The UTM also has a number of 1,416 academic staff [34]. Comparing to December 2015, 485 more students study at the UTM in 2020 which shows an increase in the number of students over a period of five years.

The UTM students are provided with an online learning system empowered by accessible platforms like Moodle. The e-learning program suggests synchronous, asynchronous, and task-based learning. Regarding the Malaysian government announcement on the first MCO extension, the UTM has implemented online instruction from April 1, 2020.

5. METHODOLOGY

As mentioned, the research purpose is to determine the possible existing challenges that higher education face in the use of e-learning which have been long ignored within previously done researches. Thus, the necessary information from the senior lecturers in higher education in a Malaysian context was collected and is elucidated in the present paper.

The research methodology framework of this study consists of three main steps. Firstly, an open-ended questionnaire was administrated online to gather the necessary data from the senior lecturers. Secondly, thematic analysis was applied in order to identify and classify the e-learning challenges. Similarly, the same analysis was carried out to identify and classify their suggestions to address the challenges. Finally, the main challenges and suggestions were collected and determined according to the Word Frequency Query (WFQ) using thematic analysis via NVivo software.

5.1 DATA COLLECTION

A qualitative survey was conducted to gather and analyze the data. To come to an in-depth recognition of the present state of e-learning at the UTM and the possible existing obstacles in using e-learning during the MCO in Malaysia, an open-ended questionnaire was administrated online to gather the necessary data. The following questions were adapted from previous studies because they could successfully clarify the obstacles to the e-learning [28].

- What obstacles do students and senior lecturers of higher education face in Malaysia that may impede the successful e-learning?
- What suggestions do you have to address these obstacles?

5.2 PARTICIPANTS

This investigation targeted 8 information systems (IS) senior lecturers affiliated with Azman Hashim International Business School (AHIBS) at the UTM where higher education has already applied the e-learning program.

6. DATA ANALYSIS

Five out of the eight participants answered and sent back the questionnaire on WhatsApp as they were guided and provided with some clarification on the questions. The collected qualitative data were fed into the NVivo software in order to apply the thematic analysis technique. The WFQ was used to generate the main themes for the most reported e-learning challenges in the word cloud format as illustrated in Figure 1.



Figure 1. Word cloud format of the themes for the e-learning challenges

The findings of the thematic analysis identified the main e-learning challenges based on WFQ in which the Internet speed and the learners' week interaction weighed the most among the e-learning challenges. The list of the main challenges is illustrated in Table 2.

Table 2. The list of the main challenges

Challenges	Frequency	Weighted Percentage (%)
Internet Speed	5	19.23
Weak Interaction	4	15.38
Crowded Classroom	3	11.54
Weak Engagement	3	11.54
Diverse Time Zones, Cultures, Religions	2	7.69
Weak Motivation	2	7.69

Challenges	Frequency	Weighted Percentage (%)
Anxiety	1	3.85
Assessment	1	3.85
Connectivity	1	3.85
Device Problems	1	3.85
English Proficiency	1	3.85
Facilities Accessibility	1	3.85
Stress	1	3.85

On the other hand, the main themes for the most reported solutions to address the e-learning challenges are depicted in the word cloud format in Figure 2.



Figure 2. Word cloud format of the themes for the suggested solutions

The findings of the thematic analysis identified designing more interactive e-learning courses and investment in the Internet infrastructure as the most frequent themes among the suggested solutions to address the e-learning challenges. The list of the main suggestions is illustrated in Table 3.

Table 3. The list of the main suggested solutions

Suggestions	Frequency	Weighted Percentage (%)
Designing more interactive e-learning courses	5	21.74
Investment in the Internet infrastructure	4	17.39
Conducting asynchronous teaching	3	13.04
Augmenting the arrangement of system interface	3	13.04

Suggestions	Frequency	Weighted Percentage (%)
Splitting up the class capacity	3	13.04
Conducting synchronous teaching	3	13.04
Setting some free English classes	1	4.35
Using the principles of new learning theories	1	4.35

7. THEMATIC FINDINGS

This section elaborates on the thematic findings which identified the main e-learning challenges as well as the provided suggestions to aim at solving the issues. As shown in Table 2, the main challenges to the e-learning success are categorized based on their weighted percentage into 13 main categories (the Internet speed %19.23, students' weak interaction %15.38, the number of students in crowded classes %11.54, students' weak engagement % 11.54, diversity in time zones, cultures, and religions %7.69, students' weak motivation %7.69, students' anxiety %3.85, the assessment of the e-learning courses %3.85, the Internet connectivity %3.85, the problems with the devices used %3.85, English proficiency %3.85, students' inaccessibility to some facilities %3.85, and students' stress %3.85).

The senior lecturers accounted approximately the same issues in the heart of the e-learning program applied. To be more specific, they reported that the problems with the Internet were much more noticeable when the students who lived on campus were allowed to return to their home by seriously following the MCO rules. The senior lecturers added that internet speed is not the same in the parts and cities where students live. In some parts, the speed lags and the Internet is slow which can be such a pain for the students who are supposed to participate in their online classes via e-learning. The lectures referred to the reason that not all students have access to the home network and they have to obtain internet access by turning on their smartphones' mobile hotspot. Based on their experience, the Internet speed provided by their smartphones is too volatile and fluctuates from time to time. They added that learners' weak interaction, motivation, and engagement could be the consequence of the other problems such as the stressful and unsafe situation that the students have experienced. They also pointed out that the number of students participating in e-classes was another problem since some of the classes hosted more than 10 students and managing crowded online classes is not as simple as traditional classes when both the teacher and the students attend physically. Monitoring and checking students' class activities in crowded online classes seemed to be problematic as well. Additionally, they maintained that the diversity in time zones makes it quite difficult for international students who already returned to their homeland to attend their online courses easily which could be a reason for their weak motivation and interaction. The students' various culture and religions were also thought to be the sources of weak motivation, interaction, and involvement. Their English proficiency was also reported as a main challenge which caused stress, anxiety, and weak interaction. Some few students reported problems with their devices to their lecturers, in some cases their devices were broken down which made them stressful. Finally, the inaccessibility to some facilities was reckoned to be an extra challenge for few students.

To overcome the mentioned reported problems, the senior lecturers offered some recommendations as solutions. As shown in Table 3, the main suggestions to overcome the e-learning challenges are categorized based on their weighted percentage into 8 main categories (designing more interactive e-learning courses %21.74, investment in the Internet infrastructure %17.39, conducting asynchronous teaching %13.04, augmenting the arrangement of system interface %13.04, splitting up the class capacity %13.04, conducting synchronous teaching %13.04, setting some free English classes %4.35, using the principles of new learning

theories %4.35).

The lecturer believed that interaction in online classes should be emphasize and that could be done by applying the principles of the most related learning theories appropriate for the digital age. They noted that conducting both synchronous and asynchronous e-learning courses would suit the needs of those students whose time zones, cultures and religions are diverse and as the result the problems with their motivation, stress, anxiety, and even interaction might be reduced. Satisfactory investment packages to engineer the Internet infrastructure was recommended to cope with the similar future situations like the MCO to promote the Internet speed not only for higher education but also for all the other levels of education and even the other sectors in society. On top of that, along with the investment action point, they offered that augmenting the arrangement of system interface and setting a limited capacity of at most 10 students in online classes would end in more meaningful student-teacher and student-student interaction. The fewer the learners attending in each class are, the more effective the result will be. For the classes containing more students, they recommended that the classes be split up into two or even three standard classes instead of teaching a too crowded class which is surely ineffective. The senior lecturers thought that the students' motivation and engagement could be promoted through more interactive e-learning courses with respect to students' interests and goals. Finally, setting free English courses for students with different language proficiency was considered to be supportive to their motivation, interaction, and stress.

8. CONCLUSION AND FUTURE WORK

To date, not enough empirical studies have investigated the e-learning success and effectiveness in the era of the pandemic outbreak. Relying on the findings of this work, it can be concluded that the COVID-19 can have significant effects on the e-learning success in Malaysia where the MCO is set or in any other countries with similar rules. People all around the world are victims of the disastrous conditions like war, terrorist actions, natural phenomenon, diseases, and biologically complicated viruses which can either close or badly affect different sectors of societies such as the education sector. Therefore, it matters a great deal to higher education to take the necessary precaution in order to be prepared for any possible future evil events which may be lurking around.

This research opens the door for further survey about e-learning success and challenges in uncommon circumstances. Besides, it can trigger more investigations on continuous e-learning use and satisfaction in various educational levels. The findings of the present investigation can be applied by Malaysian universities and departments to pick out the factors which need to be accentuated in the e-learning success and to clarify the ones which can be barriers in the e-learning success through the lenses of any specific e-learning model in a quarantined society. This can extend the prior models in a completely novel way. This research can be a strong step to help universities increase the e-learning use and success among their learners and lecturers. Eventually, it also contributes to the higher education to be accessible in a sustainable way, especially at the time of universal crises.

This study is a noted measure in highlighting the e-learning obstacles and providing solutions to the related problems in higher education these days. However, in order to improve the e-learning status, some further research studies are suggested to be conducted to evaluate the success, effectiveness, and failure of e-learning among the senior lecturers and the students of higher education specifically since the outbreak of the COVID-19. Likewise, more work should be centered on lecturers and students' use of e-learning and on pinpointing the effective factors in the e-learning success or the challenges in the e-learning failure during the MCO. Future studies can also aim at a larger number of participants at various higher education faculties.

Last but not least, technological-based instruction, computer-assisted learning, online learning, and e-

learning should be updated and engineered by applying the features of the related learning theory.

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