

The World of Digital Education: A Solution for Today's Challenges?

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KEYWORDS	ABSTRACT
Digital Learning Digital Education Covid-19 Online Learning MCO UTAUT RMK-12 IoT IR 4.0	Digital education is increasingly influencing and leads to new designs for teaching and learning. It makes use of a variety of technology gadgets, including smartphones, tablets, computers, and other similar devices which have the potential to solve complex problems and effective for the learning purposes. Yet throughout the Covid-19 pandemic that hit the world, the learning sessions experienced much complexity from the implementation aspect. It includes teaching methods, student's attitude, technical issues, learning tools, learners' skill, learning environment and last but not least assessment in learning. Digital platform may become the solution to the constraints of face-to-face learning. The purpose of this research was to find out more about the role of digital based learning in Malaysia and the challenges faced by students. Based on the UTAUT model, this study also discusses 6 constructs that help success of digital usage in the education sector during the MCO (Movement Control Order). A quantitative and qualitative study was conducted and a set of questionnaires by Google form have been randomly distributed. These studies also use SPSS (Statistical Package for the Social Sciences) software to analyse the data collected. The results of this study show that digitization is a solution to the constraints of face-to-face learning nowadays. However, there are still needs to be improved to ensure the smooth and quality of education in Malaysia in particular. The findings of this study may provide useful information for future improvements in the national education system.

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1.0 Introduction

Today's technological advances are very useful and beneficial in making the teaching and learning process more effective. It is also important for a more systematic and effective teaching and learning process for educators and students. The importance of the education sector has been set out in the 12th Malaysia Plan (RMK-12) including the rehabilitation of the country's post-pandemic education system; empowering digital education and strengthening faculty training [1]. Besides, in line with Industrial Revolution 4.0 (IR 4.0), and IoT, education sector also needs high technology especially updated teaching and learning (t&l) tools, facilities, internet access, effective T&L methods, assessment and service ability [2]. Even the usage of modern technologies can help pupils better understand what they are learning [3][4].

The rapid changes in the world today have brought about changes and improvements in today's educational environment, which includes digital learning. Digital-based learning looks to create new opportunities for educational work through the availability of high accuracy and great speed in providing information to students. It is capable of improving the skills, experience, motivation and better performance among students. It also has a high potential to enhance the interaction between both teachers and students. Digital based learning also becomes important in ensuring the success of online learning and capable of contributing to effectiveness knowledge exploration [5]. According to [6], learning without appropriate equipment and easy access may complicate the implementation of online learning. Thus [7] argue that educational institutions should prepare pupils by incorporating technology into their curriculum in an acceptable manner. It is regarded as a critical component for growth and development, as well as a crucial instrument for implementing and assuring the effectiveness of online learning. The use of digital technologies for the purpose of teaching and learning (T&L) is not just shifting from traditional lectures to digital screen. More than that, the importance of having digital technology in education can benefit students and educators for a better learning style, spread of knowledge, improving motivation, being flexible learning time and this also will benefit audiences worldwide [8][9]. In organizations, digital transformation is critical to the potential of social learning in content design and delivery processes, including knowledge sharing [10].

At the end of 2019, the presence of a dangerous virus called Coronavirus (CoV) has shocked the world. The MCO (Movement Control Order) was issued by the Malaysian federal government on 18 March 2020 as a precautionary measure. Impact from that, all teaching and learning (t&l) activities were transformed into online learning forms. Figure 1 below shows Covid outbreak statistics in Malaysia until 25 August 2020. The diagram shows the new positive cases that have reached 12,541 per day with total cases of 893,323 people.

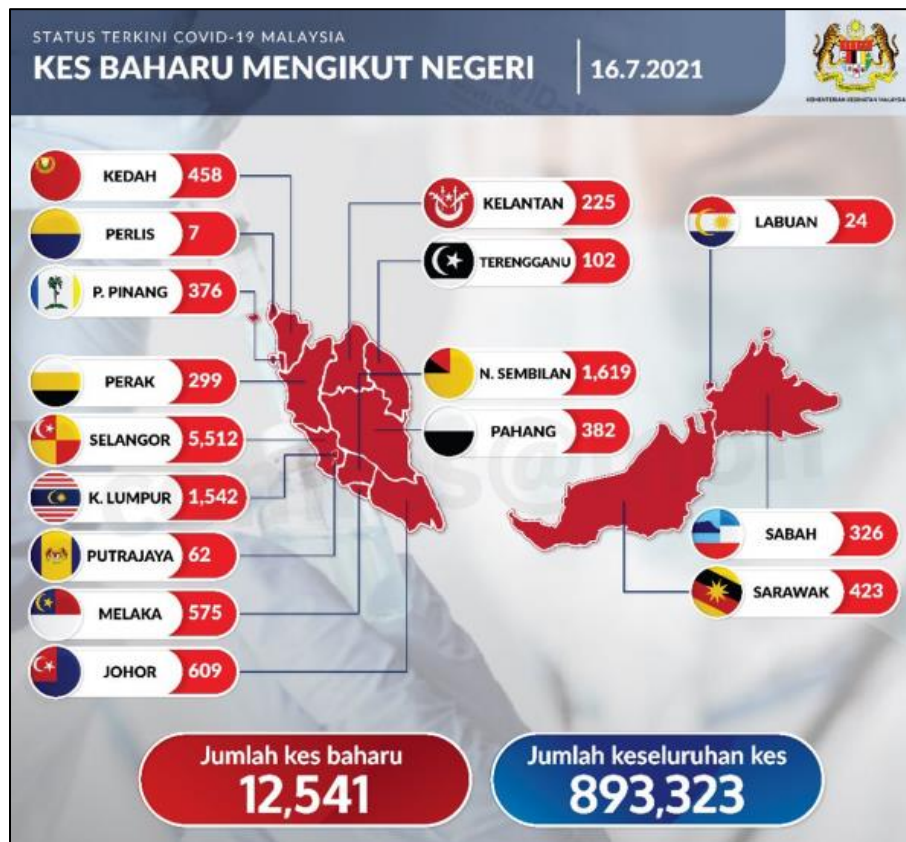


Figure 1: New Covid-19 Cases by State in Malaysia
 Source: Facebook Ministry of Health Malaysia (16 July 2021)

This study was conducted to investigate the role of digital based learning during pandemic. This research is also expected to identify challenges that need to be addressed for a better level of education. The discussions in this study are divided into 5 sections. Section 1 - introduction; section 2 on related issues; section 3 deals with research methodologies; section 4 discusses the result and discussion; finally section 5 is on conclusion.

2.0 Related Issues

2.1 Online Learning Tools

Online learning is frequently associated with areas where technology is used to deliver learning. It can be defined as teaching and learning that takes place over the internet using network technology [11]. Since the worldwide spread of the Covid-19 pandemic, many employees have been compelled to work from home and hold meetings solely online. Schooling sessions are also done at home, online with parental monitoring. The same goes to educational institutions and universities that are forced to implement online learning sessions [12]. As a result, various online learning platforms, such as Google Classroom, Cisco Webex, Zoom, Skype, and Google Meet, have emerged as viable options for delivering educational information. The use of the tools mentioned, learning was different depending on the subject and profile of the training [13]. Each of the tools also has its own uniqueness and weaknesses based on their respective needs.

Apart from the applications that has been discussed, learning also often uses methods through social networks. Social networking service is a service that focuses on the construction and validation of online social networks for a community that shares interests and activities, or to

those who are interested in knowing the interest and activities of others in the learning process. Most social networking services are web-based and offer a variety of ways to interact between users. These include online conversations, exchanging messages, emails, videos, voice chat, file sharing, blogs, discussion groups, and others. Among the popular social networking services nowadays are facebook, instagram, twitter and whatsapp. A research by [14] found that students who use social networks as learning media are very beneficial in the educational curriculum. However according to [15], the development of online learning applications must meet the student's needs, through the study of student behaviour and by including the motivational components. Furthermore, another form of hybrid learning and appropriate interactive printed materials need to be implemented to bridge the barriers and meet the needs and capacities of different students [16].

2.2 Digital Platform

Digital transformation is a digital process required to complete the transformation process by applying digital technology optimally which requires good strategy, preparation and collaboration within an organization [17] [18]. For educational purposes, it is necessary for students and educators to have an appropriately equipped and accessible online environment, to engage in meaningful conversation [19]. It is not only able to cultivate students' interest to deepen knowledge, but also able to increase student satisfaction in learning.

2.3 UTAUT Theory

In this study, the Unified Theory of Acceptance and Use of Technology (Unified Theory of Acceptance and Use of Technology) or UTAUT is used to examine the immediate implications of online learning during MCO. The four direct predictors of user acceptance in UTAUT are as follows: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC). While the other two are dependent variables namely Behavioural Intention (BI) and Use Behaviour (UB)[20]. Meanwhile gender, age, experience, and willingness to use were employed as moderators. However, for the sake of this study, the same four independent factors were used, but the dependent variables were changed namely Behavioral Intention (BI) and Learning Impact were the two dependent variables (LI). All items used in this study were processed based on digital based learning issues throughout the MCO period.

3.0 Methodology

This study is a combination of quantitative and qualitative study, namely by obtaining student and parents survey information in Peninsular Malaysia, regarding online learning during pandemic. These survey questions were distributed randomly, to a total number of to 211 respondents through online survey, regardless of gender, race, occupation and even academic qualifications. For the purpose of data analysis, Statistical Package for the Social Sciences (SPSS) software was used.

For the purpose of the study, two sets of survey questions were developed to represent parents and students, and they were distributed separately. A total of 32 items were used as the main instrument with the aim to investigate the role of digital based learning in Malaysia and the challenges faced by students. Both sets of questions consisted of 3 sections. The first section dealt with the respondents' demographic background, which consisted of six items: gender, age, race, highest academic qualifications, employment, and ICT competence. The second half consisted of 24 items, 22 of which were based on the 6 constructs form UTAUT model. Effort Expectancy (EE), Performance Expectancy (PE), Facilitating Condition (FC), Social Influence (SI), Behavioral Intention (BI), and Learning Impact (LI) are the six constructs which processed based on learning issues during the MCO. All 22 questions were developed with 4-Likert scale questionnaire, with the items of choice being: 4 = Strongly Disagree, 3 = Disagree, 2 = Agree and 1 = Strongly Agree.

Table 1 show among the items used in section 2. While the third section contained items in relation to the respondents' opinion on factors of failure in an online learning classroom.

Table 1: Questions survey that based on 6 constructs form UTAUT model.

Items
1. The effect of Covid-19 I found online learning to be appropriate.
2. Online learning helps to learn effectively.
3. Online learning can help improve knowledge.
4. Online learning will be more mind-blowing.
5. Interactions in online learning are clearer and easier to understand.
6. Online learning can help add skills in the use of technology.
7. Learning online is very easy.
8. Online learning is very flexible.
9. There are reference resources for learning online.
10. Learning is faster online.
11. Online learning is not the same as previous learning.
12. Help or referrals are need to start learning online
13. Online learning is influenced by those around you.
14. Online learning is an instruction from the Ministry of Education
15. Teachers are very helpful in the online learning process.
16. Friends and acquaintances always provide encouragement and assistance in online learning efforts.
17. I support the implementation of online learning in the future.
18. I predict that I will use online learning in the future.
19. I support using online learning in the future.
20. Online learning during the MCO affected my time management.
21. Online learning during the MCO outbreak affected the way I learned.
22. Online learning during the MCO outbreak affected my academic performance.

4.0 Result and Discussion

In relation to the first section of questionnaires, Table 2 shows the demographic information of respondents who participated in this survey. It can be seen that there are two types of respondents who took part in this study: students and parents.

Table 2: Demographic Information

Parents Demographic Information		Frequency	Percentage
Gender	Male	20	19.4
	Female	83	80.6
Age	30 – 39	43	41.7
	40 – 49	37	35.9
	50 – 59	19	18.4
	60 and above	4	3.9
Education Level	Diploma	17	16.5
	Doctor of Philosophy	8	7.8
	Masters	13	12.6
	Degree	27	26.2
	Certificate	9	8.7
	SPM	29	28.2
Students Demographic Information		Frequency	Percentage
Gender	Male	38	35.2
	Female	70	64.8
Age	18 – 20	53	49.1
	20 – 29	48	44.4
	30 – 39	3	2.8
	40 years and above	4	3.7
Education Level	Diploma	29	26.9
	Masters	2	1.9
	Degree	43	39.8
	Certificate	17	15.7
	SPM	17	15.7

In relation to section 2 of the questionnaires, Table 3 shows Cronbach Alpha for the six main constructs involved in this study. Overall value of Cronbach's Alpha is 0.856, where the questions used in all six constructs are reliable and consistent.

Table 3: Cronbach's Alpha Construct

Construct	Cronbach's Alpha
Effort Expectancy (EE)	0.795
Performance Expectancy (PE)	0.804
Facilitating Condition (FC)	0.835
Social Influence (SI)	0.814
Behavioural Intention (BI)	0.819
Learning Impact (LI)	0.896
Total	0.856

Table 4 shows the regression model which is insignificant. The model equation is as follows, $y = 1.566 + 0.0244(SI)$. Referring to the Cronbach's Alpha construct table for the parent shows the strength of the factors and the expected effect of Effort Expectancy (EE), expected performance of Performance Expectancy (PE), Facilitating Condition (FC), social influence Influence (SI), intention and behavior Behavioral Intention (BI) and the learning impact of Learning Impact (LI). All these are predictors of online learning success. The results show that the correlation of all independent variables with dependent variables is as high.

Table 4: Regression Model

Model	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	1.566	.201	7.782	.000
EE	-.052	.090	-.579	.564
PE	-.102	.113	-.900	.371
FC	.110	.125	.881	.380
SI	.244	.113	2.156	.034

Thus the results of this study indicate that the independent variable is positively connected. Beta (Effort Expectancy EE = -.052, Performance Expectancy PE = -.102, Facilitating Condition FC = .110, Social Influence SI = .244). Beta values indicate that the correlation for Social Influence (SI) condition facilities is the highest while Effort Expectancy (EE) is the lowest at -.052. This demonstrates how important Social Influence (SI) is for successful online learning. While Effort Expectancy (EE) is concerned with how pupils should deal with new learning situations and improve their academic performance. As a result, facilities, motivation, and teamwork should all be cultivated in order to further strengthen positive qualities and ensure that future student performance is unaffected.

From the survey, it was found that there are three types of learning tools used by the students to perform an online learning. Reference to figure 2 it shows that most of the students or specifically, 62% use computer/laptop as learning tool and 29% use mobile phone or hand phone. In addition, 9 % of students shared learning tools to continue an online learning. Throughout the pandemic, there have been many challenges and obstacles found in the implementation of online learning. From the respondents' perspectives, among factors that cause an online learning during pandemic Covid-19 to be unsuccessful are: student's attitude, technical issues, barriers to learning tools especially those who share learning tools with parents and siblings, learner's skill, and lastly is the factor of learning assessment. Challenges in digital-based learning implementations can be seen as Figure 3.

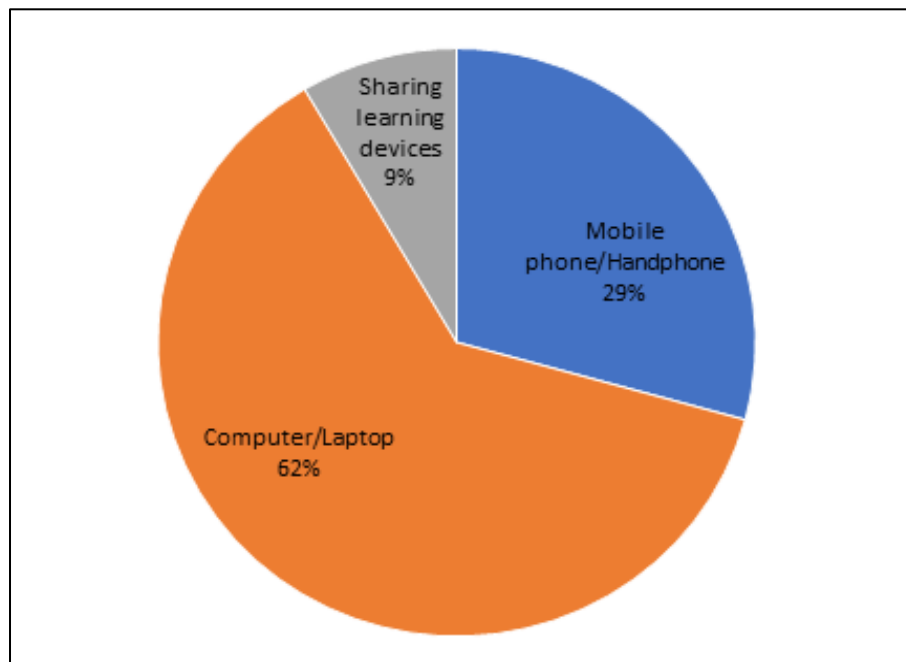


Figure 2: The use of online learning tools

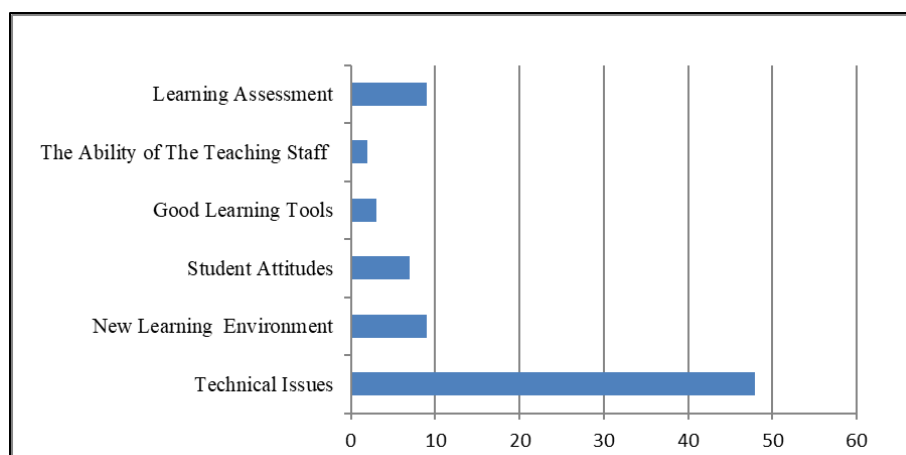


Figure 3: Challenges in digital-based learning implementations

While the third section in the questionnaire survey contains an item related to the factors of failure in an online learning. Among the respondents' opinions come from the following factors: student's attitude, technical issues, learning tools, learners skill, new learning environment and finally, learning assessment. Further details are as follows:

4.1 Student's Attitude

Given that throughout the pandemic learning is done entirely at the student's residence, the students' attitudes in meeting online learning can be closely observed by their respective parents. From parents' perspectives, the attitude of the students themselves shapes the effectiveness of the virtual learning journey. Throughout the home learning done since a year ago, it was found that some students are less interested in virtual learning. It is also likely to be driven by lack of internal motivational factors among students. This is acknowledged by parents who notice that their children's behaviour is more likely to play games, compared to participating in online learning. This research is supported by a survey conducted on students themselves. It acknowledged that some of them were more interested in playing games when compared to taking an online class.

4.2 Technical Issues

The existence of the covid-19 virus has entered its second year but the implementation of online learning still shows weaknesses. There are some issues that take quite a long time to resolve as they are influenced by external factors. For example, the factor of "internet line" is difficult to obtain in some rural areas. The uneven terrain has made it difficult to install internet lines, as well as the requirement of high costs due to the volatile population density in some areas. Undoubtedly, many improvements have been made by government agencies, private and individuals to address this problem. This includes increasing broadband users in some high-density areas as well as providing free internet top-up lines to students. Besides, an initiative by the Ministry of Higher Education in collaboration with several leading communication companies has prepared data plan and device packages for HE (Higher Education) students [26]. Facility of the internet, mostly used to satisfy the necessity of information in the education sector has also been provided [9]. Research by [12] found that most of the students mutually agree to use online learning mode because of bad coverage on internet facility. It is one of the challenges faced by students during online learning. It is also supported by studies from [21][22][23] which stated that poor internet connection is a barrier for a good teaching and learning process between students and instructors.

4.3 Barriers to good learning tools

For primary school, home learning requires a high level of commitment by parents. It is not only for monitoring purposes but also to educate children about a subject. This is not an easy task for some parents. For most working parents, especially those who share learning tools with parents and siblings will certainly face problems in this assignment. Providing access for the purchase of home learning equipment for some children who are still in school can sometimes be a little complicated when it comes to financial issues. This is also related to unstable economic matters due to pandemics affecting layoffs and unemployment.

4.4 Learners skill

The implementation of virtual learning will become more effective with the availability of instructors who are skilled in the aspect of technology. With the very rapid development of technology nowadays, it is possible to have a parallel increase in the education sector. However, there is no denying that the ability of each teacher varies to some extent to affect the quality of learning at home. The first year of the existence of the corona saw the implementation of learning at home which was quite chaotic with various obstacles. This includes the lack of skills of instructors in applying technology in the virtual world. There is no doubt that many of them are less prepared for this situation. Lack of virtual technology application skills in learning has limits the smoothness and educational progress of students. Currently, it was found that the most active application for learning in the classroom is whatsapp. This tool is the main intermediary for the lecturer to convey knowledge due to the factor of familiarity, and being easy to use.

Although Google Classroom has begun to be seriously used in 2020, the limited skills of students, parents and educators have limited its use. In contrast to the second year of the pandemic, it was found that many improvements have been made by individuals and the government to ensure the continuity of the learning process. Currently, there are many educational TV programs specifically for major subjects for primary and secondary schools. This to some extent helps students who have constraints on the use of tools for learning. There are also many private tuition centers that offer learning services for primary and secondary school students. There are respondents who requested that lecturers and instructors increase the number of slides, notes and modules for student reference in the future. Not forgetting the one who suggested that video recordings be made by the instructors. This is because the current delivery method of a virtual class is not the same as a physical class. It is therefore very important for educators to be more creative in the preparation of learning materials.

4.5 New Learning Environment

Surveys conducted show that factors of new learning environment also contribute to the failure of online learning. Conditions throughout the MCO compel for teaching and learning sessions to be conducted at home, regardless of student comfort. This affects the student's focus to be more focused while the class is running. Initiatives from HEIs to allow students to come early to campus based on the current situation should be done. This initiative is great as it provides an opportunity for a priority category of students to come to campus.

4.6 Learning Assessment

During pandemic, there are suggestions for instructors to provide solid assessments from the beginning of the learning session. This is because less clear and often changing instructions are seen as the cause of the deterioration of student performance in learning. Online assessment is often limited to the monitoring of student behaviour during tests or examinations so that it is quite impossible to prevent any imitation [21][24]. It is supported by [25] which states that student achievement through online learning is debatable because there is no face -to -face relationship between students and instructors.

5.0 Conclusion

This paper reveals the important of digital based learning during pandemic. In addition, there are still some challenges faced by students and educators as some of them are still struggling to explore new technologies and techniques for the mentioned purpose. Learning, particularly with the used of suitable tools may improve learning motivation, thus creating impact for better learning performance. Integrating digital tools in learning does not simply benefit students, but teachers or educators would also have different gains. Learning motivation and student achievement can be affected by the use of proper tools. To realize the use of digital platforms as an effective and efficient learning tool in online learning, all the challenges mentioned need to be lived with and to be overcome.

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