ICT Integration to Support Online Learning During The Covid-19 Outbreaks

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ABSTRACT

ICT is considered as one of the main elements in transforming the country to the future development. Moreover, ICT is becoming more increasingly important as Coronavirus (CoV) disease or Covid-19 is triggered by the end of 2019. This paper aims to analyze the integration of ICT to support online learning during the covid-19 outbreaks. The methods being used for this research is questionnaire survey, that was response randomly to the total of 118 total of respondents. However, just 114 of the respondents are qualified to be analyzed. The questionnaire was distributed through the google form application. The results indicate that ICT integration has a great effectiveness for both teachers and the students during the Covid-19 outbreaks, with some improvements needed.

Key words: ICT, technology, effectiveness, teaching and learning, education, Covid-19

1. INTRODUCTION

Coronavirus (CoV) is a virus that attack the respiratory tract and spreads easily. Its infections can cause a spectrum of symptoms from common cold to serve pneumonia (pneumonia). CoV also causes various diseases in mammals, birds ranging from enteritis in cattle, pigs, and chickens [1]. As a result, Movement Control Order (MCO) was issued on 18 Mac 2020 as a precautionary measure by the federal government of Malaysia. Also, many of the other country in the world, were implement MCOs too, for the same purpose. However, because of the new norm and better education, the teaching and learning process continues through the online or virtual learning.

In order to realize the implementations of teaching and learning, technology become an important tool to deliver the knowledge. A good technology can perform better and totally changed the way people do their work. Technology being used at school and education institution will become a

measure in classifying the perception given by students. It also becomes an important tool in applying and ensuring the successful of online learning. Besides that, the technologies also contribute the effectiveness at teaching in the class and encourage the exploration of knowledge in various ways [2]. According to [3], flexible learning were implemented at Philippine Local Colleges and Universities. It refers to a learning modality that can be full-online, blended learning, flipped classroom, and distance learning. Previous research has showed that learning without appropriate equipment and easy access, are quite impossible to implement online learning [4].

With that being said, according to [5], educational institutions supposed to prepare students purposely to consider ICT integration in their curriculum. Implementation of ICT for the mentioned purpose refers to the use of computer-based communication that incorporates into daily classroom instructional process. It was considered as a key element for the improvement and development and also plays as an important tool in applying and ensuring the successful online leaning.

Online learning with the provided of the internet will enable everyone to access education websites from everywhere at any time. For an effective online learning project, a well working internet connection and supplying enough computer for end users would be sufficient. This contribution will help in increasing the knowledge in using the technology available at the institution which will make the studies more interesting and efficient in their studies. Worldwide research also has shown that a better ICT can lead to improve students' learning as well as better pedagogical practices.

A good and updated technology has seen considerable as useful in improving the effectiveness of teaching and learning processes. As in line with Industrial Revolution 4.0 (IR 4.0) which changing the way we live and work. IR 4.0 in education need for high technology especially teaching aids, power point slides, internet access and also updated teaching and learning tools. Even the use the updated technology can improve the effectiveness and facilitate students to understand the teaching better.

Therefore, this paper will discuss the integration of ICT to support online learning during the covid-19 outbreaks. The discussion will also focus on the use of teaching aids that can be applied in teaching and learning. This research will also help to identify the barriers that need to be addressed for the better education phase. The remaining discussion of this paper is organized into several sections. Section 2 presents about the methodology of the research; section 3 highlights the literature review. Meanwhile section 4 discusses about the findings, and lastly section 5 for discussion and conclusion. submission.

2. METHODOLOGY

In this research, quantitative research design was used to collect and analyze the data obtained from all the respondents. Questionnaire was adopted some from [6] and were designed specifically to address the issue of Covid-19 in regard with the effectiveness of ICT in education. Therefore, the questionnaire was distributed to obtain the data from the respondents. The overall total of respondents that participated in this research was 118. However only 114 of them are qualified. The questionnaire was randomly distributed to the respondents at Terengganu regardless of gender, race, occupation as well as highest academic qualification.

A survey questionnaire with a total of 26 items was used as the main instrument in this study to analyze the effectiveness of ICT integration in education. Most of the questionaires were adopted from [6] and were distributed and implemented during the covid-19 outbreaks. All the respondents were asked to read the statements given and choose their answers based on 4-Likert scale ranged from 4= Strongly Disagree, 3= Disagree, 2= Agree and 1= Strongly Agree. The questionnaires consisted of 3 sections. Section A is about the demographic background of the respondents consists of 6 items that includes gender, age, race, highest academic qualification, occupation and ability in using ICT. Sections B focus more perception on ICT integration with 10 items. Meanwhile section C contain 10 items that related to the effectiveness of ICT integration for students learning.

3 LITERATURE REVIEW

3.1 ICT Definition

Information Communication Technologies (ICT) refers to the computer and internet connections used to handle and communicate information for the learning purpose. It has a potential in preparing students in the 21st century and also

lead to improve students' learning. The use of ICT components can help students in developing their skills, increase motivation and also knowledge. ICT is generally accepted to mean all technologies that combined and allowed people to interact. It drastically changed how people work, communicate, learn and live. ICT integration in classroom is becoming more relevant as it helps students strengthen their collaborative learning skills as well as improving transversal skills that promote social skills, problem solving, self-confidence, accountability, and analytical and initiative capacity. It is all are important for the purpose of active teaching and learning environment. Accordingly, the technology lab, internet connection, smart white boards, LCD and other ICT tools and equipment have been upgraded to many schools. And until now, the government is still improving and upgrading the systems to be fully utilizing by ICT.

3.2 MCO limitations

Throughout the duration of MCO, the Prime Minister had instructed home-based learning initiatives as schools nationwide were closed during the period. Teaching and learning process, assessments and examinations for almost all level of programs were cancelled. Also, some of the evaluation were replaced by continuous assessment scores and some were rescheduled to the next period that nobody knows and will be informed later.

According to the question survey "I think the use of ICT in teaching is just waste of my time", 47.4% of the respondent strongly disagree, 22.8% disagree, 11.4% agree and 18.4% strongly agree with the statement. Refer to Figure 1 for the analysis of ICT in teaching.
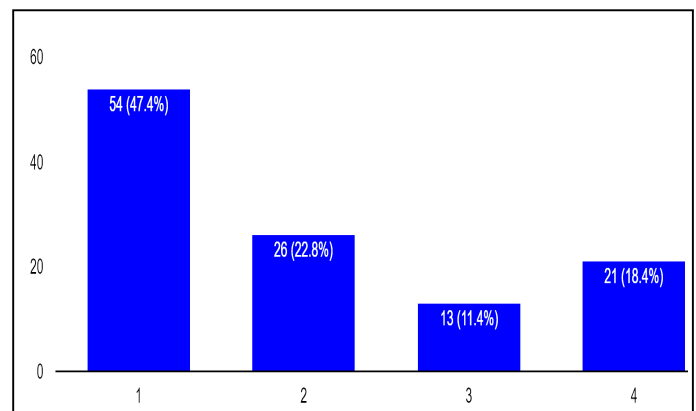

Figure 1: The use of ICT in teaching is a waste of time

3.3 Online Learning

Online learning is a constructivism learning approach that is a powerful model when considering of improving student's learning interest, creativity and learning skills. The advanced multimedia and online technology are very helpful and efficiently collaborate in building constructivism learning environment. It was suggested that teachers and lecturers to

use the most effective methods as an alternative to motivate students in learning. Furthermore, during the MCO, this type of learning approach not just become more important, but become compulsory for people to realize the teaching and learning process.

For example, [7] had applied an online learning class for teaching discrete mathematics. The class emphases to the real scenario to discover the problems and it effect to the students' learning interests, help them to understand the course better and can motivate the collaboration among students. Regarding to [8], constructivism approach through an online learning will improve learning outcome by facilitate with collaboration, communication, interaction and knowledge construction and sharing. Based on limitations that faced during computer programming learning, [9] have proposed a constructivism learning through online learning as a medium for learning. This also effect to the shift from teacher-centered to learner-centered learning, effect to active in creating knowledge and also improve the learning outcomes.

4. RESULT

The findings of this research will give the output needed by the researchers to answer the research questions. The findings are done according to the sections in the questionnaire. Table 1 above show demographic background of respondent. From the overall population (n=114) based on gender, there are 70 female respondents with a percentage of 61.4% as compared to only 44 male respondents with 38.6%. From the overall population based on race, the highest frequency of respondents is Malay with a total 108 (94.7%) followed by others (Chinese and Indian) with 6 (5.3%).

Table 1. Demographic Background of Respondent

Factor		Frequency	Percentage (%)
Gender	Male	44	38.6
	Female	70	61.4
Race	Malay	108	94.7
	Others	6	5.3
Occupation	Student	79	69.3
	Teacher	24	21.2
	Others	11	9.5
Ability of Using ICT	High	39	34.2
	Medium	69	60.5
	Low	6	5.3

Figure 2 below show the overall population based on the ability of using ICT. It was found that most of the respondents believe that they possess medium ability with 69 (60.5%) followed by high ability in handling ICT with 39 (34.2%) and low ability with 6 (5.3%).
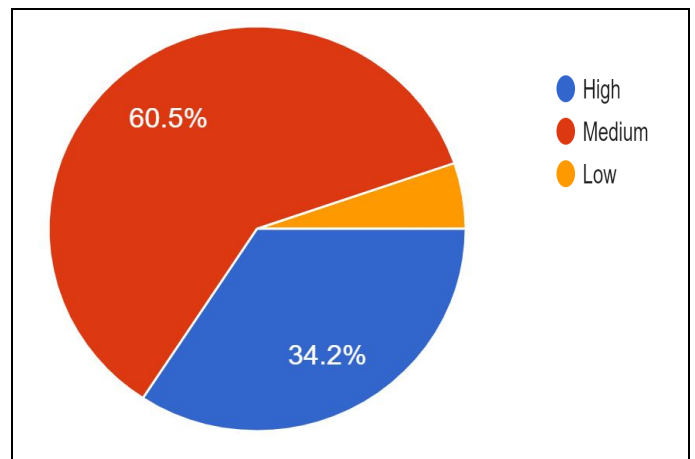
Figure 2: Population based on the ability of using ICT

4.1 Perception On ICT Integration

Table 2 below represent about the perception of ICT for the learning purposes. It shows that most of the respondents are aware of the goodness and usefulness of ICT in education. Most of them realized that the use of ICT helps to improves the quality of teaching with 71 (62.3%) strongly agree.

Table 2. Perception on ICT Integration for the learning purpose

No	Items	Frequency & Percentage (%)	
		Agree	Strongly Agree
1	I feel confident learning new computer skills	46.5	48.2
2	I am aware of the great opportunities that ICT offers for effective learning	43.9	53.5
3	I think that ICT supported teaching makes learning more effective.	36.8	61.4
4	I think the use of ICT improves the quality	34.2	62.3
5	The use of ICT enables the students' to be more active and engaging in the lesson.	41.2	51.8
6	I think the use of ICT is a waste of time.	11.4	18.4
7	I am confident that students learn best without the help of ICT.	23.7	15.8
8	Students' pay less attention when ICT is used.	23.7	20.2
9	Students' makes no effort for their lesson if ICT is used.	29.8	19.3

Besides, most respondents agreed that the use of ICT will definitely provide lots of opportunities for an effective teaching and learning with 61 (53.5%) strongly agrees as well as ICT supported teaching makes learning more effective with 70 (61.4%). This situation shows that respondent view the use of ICT in education process as something positive

where ICT is the aid needed by teachers to ensure the effectiveness of both teaching and learning process. Next, from the data obtained, it also shows that the use of ICT in teaching enable the students to be more active and engaging in the lesson prepared by the teachers with score 59 (51.8%) strongly agree. This is because students are familiar with ICT and they find it easier learning by ICT and allows them to be engage more in the lesson.

On the other hand, most teachers believe that the use of ICT benefits teaching and learning in various ways and saying that ICT integration is not a waste of time with strongly disagree 54 (47.4%) followed by students learn best without the help of ICT with 32 (28.1%) strongly disagree. Refer to figure 3 above. Respondents disagree that classroom management is out of control when ICT is used in teaching with strongly disagree 36 (31.6%), then students make no efforts for their lesson and learning process with 24 (21.1%) strongly disagree and most respondents strongly disagreed that the use of ICT in teaching only cause students' to pay less attention 23 (20.2%) which shows the student's attitude whom being independent on ICT and taking responsibility for their own independent learning.
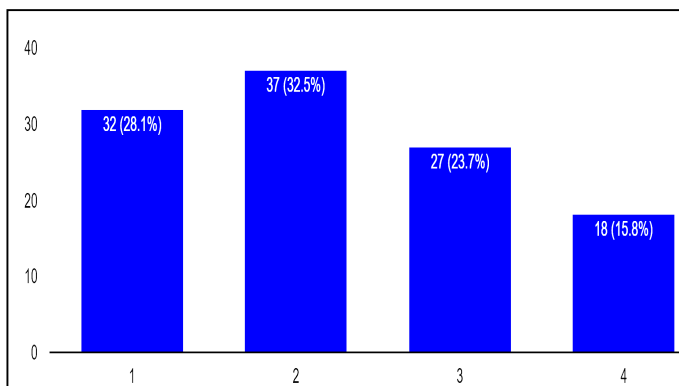

Figure 3: Students learn best without the help of ICT

Refer to figure 4 above. Meanwhile 55 (48.3%) of the respondent strongly agree that they feel confident while they are learning new computer skill.
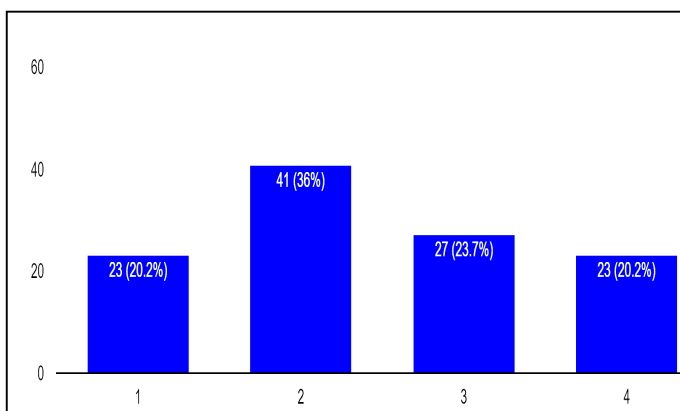

Figure 4: Less attention when ICT is used in teaching

4.2 Effectiveness of ICT Integration for Student Learning

Results shows that the use of ICT promotes active and engaging lesson for students' best learning experience with recorded score of 58 (50.9%). ICT helps to provide latest and current issues where students can obtain it very easily and integrate it into their learning process. Besides, ICT helps students to learn more effectively as well as it helps students to find related knowledge and information for learning with scored 76 (66.7%). The technology always acts as a medium for students to find related knowledge and information for their learning.

The use of ICT also allows students to be more creative and imaginative with mean score of 66 (57.9%) followed by their ability to express their ideas and thoughts better with 53 (46.5%). This shows that the use of ICT enhances students thinking and enables them to think out of the box and make the best use of their learning process. Table 3 also shows that the effectiveness of ICT for students in learning are it encourages students to communicate more with their classmates as well as it increases the student's confidence to participate actively in the class with score 53 (46.5%). Lastly, it shows that students are more behaved and under control with the use of ICT in learning but it is also considered as fewer acceptances by teachers as the score is 45 (39.5%) Agree. Table 3 below show the results that aim to examine the effectiveness of ICT integration to support online learning during the covid-19 outbreaks.

Table 3. Effectiveness of ICT Integration for Student Learning

No	Items	Frequency & Percentage (%)	
		Agree	Strongly Agree
1	ICT allows students' to be more creative and imaginative.	36.8	57.9
2	The use of ICT helps students to find related knowledge and information for learning.	28.9	66.7
3	The use of ICT encourages students to communicate more with their classmates.	28.9	46.5
4	The use of ICT increases students' confidence to participate actively in the class.	38.6	45.6
5	I think students learn more effectively with the use of ICT.	41.2	48.2
6	The students are more behaved and under control with the use of ICT.	39.5	33.3
7	The use of ICT enables students to express their	43.9	46.5

	ideas and thoughts better		
8	The use of ICT promotes active and engaging lesson for students' best learning experience.	43	50.9

5. DISCUSSION AND CONCLUSION

The results of this study showed that ICT become an important tool to support online learning during the covid-19 outbreaks. Most of the respondents agree that ICT able to improve the teaching and learning management. Also, the integrating of ICT can foster students for the purpose of online learning. Study also found that teachers have positive attitude regarding the use of internet with other better technology in teaching and learning. A better ICT also can develop the confidence among students to have better communication and able to express their thoughts and ideas.

According to the question survey "I think the use of ICT in teaching is just waste of my time", 47.4% of the respondent strongly disagree, 22.8% disagree, 11.4% agree and 18.4% strongly agree with the statement. Although more than half of the respondents disagree with the statement ICT just waste the time, some of them are still believe that ICT can bring nothing good for their time.

Technically, during covid-19 outbreaks, all the activities are stuck including the teaching and learning. They are implemented in almost every country, to help stop the spreading of covid-19. All school activities are suspended for a while until a time that will be declared safe to operate. For university and college students from any institution, they are required to return to their hometown as directed by the government. No matter what happens, regular learning activities need to be implemented to ensure achievement as per the syllabus of the subjects that have been set before. However, for the mentioned purpose, some limitations faced are related to the internet connection that unstable at certain area. It was found that some areas in certain locations do not have any good internet access. This situation is particularly affected by the unstable coverage and poor reputation of the learning process among the students in the area.

As technology advances, so does education. As expected, learning is growing through online education. Therefore, for that to happen, the constraints on limited internet access need to be addressed immediately. In future, the internet provider should enlarge the internet coverage to the maximum area, to make sure people, especially students can access the internet anywhere and anytime they intent to. For example, high speed internet is available in all major cities in Malaysia. Whereas for rural areas, it is necessary to ensure that free internet services are provided for community use, especially for student convenience. Among Internet Service Provider (ISP) companies in Malaysia are include TM, UNIFI (under TM company), MAXIS, P1, DIGI and CELCOM.

In times of emergency, it is undeniable that online learning is quite difficult to implement among teachers and students. This may be due to the unavailability factor for the unexpected situation. To enable learning activities to take place even virtually, there is a need for additional tools that can help in the learning process, especially for certain subjects. It includes the subjects of mathematics, programming, drawing and some others that need additional explanation for better students understanding. The tools as mentioned are tablets and writing pads which are very helpful for further explanation. Education institution like schools, colleges and universities also may need to provide mechanism to support this facility for the convenience of students.

With the improvement of the aforementioned weaknesses, the learning process will be improved and streamlined especially for the purpose of online learning. As a conclusion, ICT integration able to support an online learning better during the Covid-19 outbreaks if people able to make the best use of it. Because of the mentioned limitation, the problems and challenges faced by current educational systems suggest improving the teaching and learning process to suit current needs of industry and society. A better ICT integration in schools, colleges or universities will result in a big success for both teachers and students. To make sure that the implementations of online learning are in a good condition and with less error, government, college and school must have an initiative to improve the service better with the better used of tools. It can be an incentive for students to have a good performance of laptop and a high coverage of internet. Also, a need for lecturers or teachers to have a good skill in using ICT. All the mentioned above able to promote effective online learning as well as to meet the demand of the 21st century teaching skills. It is also in line with Industrial Revolution 4.0 (IR 4.0) in which disruptive technologies and trends such as the Internet of Things (IoT), robotics, virtual reality (VR) and artificial intelligence (AI) are changing the way we live and work. This will ideally help the industries to increase productivity, efficiency, quality, and also to develop new skills and talent with the people. This evolution needs new way of education, including Higher Education.

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