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Analyzing Teaching needs to Develop Digital Technology Innovation for Learning Process during the COVID-19 Outbreak

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Abstrak

Penelitian ini bertujuan untuk menganalisis kebutuhan pengajaran dengan teknologi digital sebagai rencana intervensi selama wabah COVID-19. Penelitian ini dimulai pada Maret 2020, ketika wabah COVID-19 dimulai. Untuk mengetahui kesiapan dan kesiapan dosen terhadap teknologi digital di Indonesia. Di masa wabah COVID-19, dosen terabaikan, tidak mau meningkatkan kemampuan dan keterampilannya di bidang teknologi digital. Perencanaan intervensi teknologi dalam pengajaran menantang untuk dikuasai, dan akhirnya dosen merasa bahwa teknologi digital merupakan beban yang berat. Banyak dosen yang enggan menjawab karena tahu bahwa teknologi merupakan alat dalam pendidikan saat ini. Penelitian ini menggunakan metode kuantitatif dan kualitatif semi terstruktur dengan 103 dosen sebagai responden dari dosen IPS pada perguruan tinggi di Tangerang Kota. Kajian ini menganalisis penerapan teknologi dan mengkaji kemampuan dan keterampilan dosen dalam menggunakan teknologi digital di masa wabah COVID 19. Analisis rencana pengembangan teknologi digital menunjukkan bahwa 69 responden mampu dan terampil dalam mengembangkan inovasi teknologi, dan 34 responden lainnya mengalami kesulitan dan disarankan untuk mempelajari kembali perkembangan teknologi inovatif untuk pembelajaran di abad 21.

Abstract

This research aims to analyze teaching needs with digital technology as the intervention plan during the COVID-19 outbreak. This research begins in March 2020, when the COVID-19 outbreak started. It would find out the lecturers' readiness and preparedness of digital technology in Indonesia. During the COVID-19 outbreak, lecturers ignored, they did not want to improve their abilities and skills in digital technology. The planning of technological interventions in teaching is challenging to master, and finally, the lecturer feels that digital technology is a heavy burden. Many lecturers are reluctant to answer because they know that technology is a tool in education today. This research uses a quantitative and semi-structured qualitative method with 103 lecturers as respondents from social science lectures at universities in Tangerang Kota. This study analyzed the application of technology and investigated lecturers' abilities and skills in using digital technology in the COVID 19 outbreaks. The digital technology development plan analysis showed that 69 respondents are capable and skilled in developing technological innovation, and the rest of 34 respondents have difficulty and advised to relearn the development of

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the rest of 34 respondents have difficulty and advised to relearn the development of innovative technology for learning in the 21st century.

INTRODUCTION

During the COVID-19 outbreak, all learning almost all over the world did distance learning. It is because coronavirus spreads to all places, including schools and campuses. As a world health institution, which ordered that all people stay at home, wear masks, keep their distance, and are advised not to leave the house if there is no need (WHO, 2020). The impact of the COVID-19 outbreak in the learning process presents challenges and opportunities. The types of tools and services are focused on students to not miss out on learning.

Moreover, educational technology provides content that engages students and lecturers more closely in collaborative relationships (Zhao, Pugh, Sheldon, & Byers, 2002). Furthermore, all educators, especially teachers and lecturers, must prepare to teach online learning. However, many education systems refuse to change the structure from traditional or face-to-face and force all components from institutions, lecturers, students, employees, staff, and society to change quickly using modern systems and Internet technology (Andrews & Haythornthwaite, 2007). Indeed, technology in learning delivers fundamental structural changes into an integral part of increasing significant productivity. Also, it provides classroom learning with digital learning tools, such as computers and handheld devices, and supports learning 24 hours a day and seven days a week (Costică, 2014).

In analyzing digital technology, students' involvement and motivation refer to the power of teaching change by delivering new teaching models connected to content, resources, and professional systems to instruct learning well (Dept. Edu, 2012). Moreover, online learning opportunities and the use of open educational resources and technology will increase educational productivity, accelerate the pace of learning, reduce costs associated with teaching materials or program delivery, and use the time for lecturers and students (Ciarrusta & Alejandro, 2020). Technological innovation continues to move along with the educational journey wherever coronavirus disturbances lead them to overcome the learning process that suddenly changes (UN Bulletin, 2020; Van Damme, 2016).

Cloete (2017) argued that sophisticated technology has an invisible health impact on its users, resulting in uncontrolled or out-of-control emotional abilities if it uses too much. In addition, researcher Mohammed (2019) stated that people would ignore to do biological activities and more activities in front of a computer screen. This result is no physical socialization to the person and the person becoming selfish and egocentric. Furthermore, this endangers the person. This research discusses the use of technology Internet for the learning process, and it has the time limit to study.

In the present, digital technology creates many institutions or campuses with a lack of financial capacity and human resources to quickly and efficiently develop digital tools that support learning during crises. In addition, the ability of lecturers to adopt technology is exceedingly low. So, learning at the beginning of lockdown only gives assignments to students without any explanation (Lie, 2020). On the other hand, the financial ability of lecturers is also limited. Not all lecturers have internet flow at their homes, plus the difficulty of using learning platforms determined by the institution. Therefore, many failures occur at the start of the lockdown of COVID-19.

Using digital technology is an additional problem, so learning does not work properly and instead becomes a new problem (UN Bulletin, 2020). On the other hand, students are tired by piled up the assignments from the lecturers, and finally, the learning only does the assignment without being preceded by an explanation from the lecturer. While lecturers are expected to integrate technology into the online classroom, the reality can be different (Mardiana & Daniels, 2019).

In the meeting point of learning theory and digital technology identifies that educational institution requires analysis in digital technology. Lecturers must apply digital technology in online learning by using real-time data instructions according to their mastery base. Mastery of digital technology is demonstrated based on evidence that all learning is taken from Internet source (Christensen & Horn, 2011). Lecturers can also integrate the lessons taught with teaching pedagogy. Learning must be following the acceleration of students. In addition, increased access to technology in learning institutions is associated with increased capacity for broad use of technology (Ciarrusta & Alejandro, 2020). Lecturers must have confidence

that digital technology can be presented socially using repeated coding and analytical processes. Technical maintenance of the support administrator plays a key role in analyzing learning needs (Dept. Edu, 2012).

The previous research by Ghavifekr, Junjappan, Ramasamy & Anthony (2016) indicated that many lecturers are dealing with the capabilities and instructions of devices that are different from their students; for example, lecturers use cheap android phones while students use iPad. Furthermore, students have difficulty writing on small devices because many lecturers give instructions. Other research by Mardiana (2020) revealed that meanwhile students regularly use social media tools to play games, text messaging, and e-mail rather than learning, and students can be said to be digital rebels, which means they can wander in cyberspace rather than their lecturers.

According to Van Damme (2016), technology can affect the time and flow of lessons, which are related to students who do not pay attention to learning as long as they are given instructions via the Internet. It takes a long time to adopt Internet technology in learning. Other researchers, Chiasson, Terras, & Smart (2015) said that equitable access to digital infrastructure during the COVID-19 outbreak was significantly important due to the digital divide. So that rapid application of emergency technology is needed to overcome the crisis a new dimension of urgency to overcome them for example, universities and households with limited access to the Internet which ultimately negates distance learning because of prioritizing other options.

Continuing learning while supporting the most vulnerable in technology is that lecturers must be directed to the transition from face-to-face learning to online learning. Not all higher educations in Indonesia have access to the right technology and cannot prove that online learning is effective (Arkorful & Abaidoo, 2014). The problem is the lack of adequate infrastructure in each area and more material when learning online than in the classroom. However, to obtain the full benefits of online learning, a concerted effort is needed to provide a structure that can replicate physical classrooms through the ability to use video in online learning (Li & Lalani, 2020). Mardiana (2020) stated that the absence of guidelines for using internet technology makes it difficult for lecturers to use online learning, in addition to the weak knowledge, abilities, and skills of lecturers in the use of digital technology, making learning slow, plus the lack of adequate infrastructure in each area and much current material learn online rather than in the classroom.

In analyzing the teaching needs of lecturers, educational institutions must provide training, learning the use of digital technology for their lecturers, and provide digital technology infrastructure in the classroom so that online learning can run according to its objectives (Ghavifekr, Kunjappan, Ramasamy, & Anthony, 2016). In addition, to take advantage of online learning, lecturers can use various collaboration tools and involvement methods of lecturers and students or lecturers and lecturers or students and students (Andrews & Haythornthwaite, 2007). There are many ways to utilize Internet technology that supports schools and institutions by building collaborative education and government and world institutions. This coalition will allow learning in every region in Indonesia to use Internet technology (UN Bulletin, 2020; Dept. Edu, 2012). The efforts to ensure continuity of learning through alternative delivery modalities, including online learning, are important and can consider the risk of learning gaps. Because learning and the abilities and skills of lecturers have been tested and can be used (Ghirardini, 2011).

Based on the explanation from other researchers, this research identifies that in order to develop innovative intervention plan of technology Internet for the learning process in institution or campus a proper internet infrastructure is needed as well as the lecturers and students competencies. In this regard, lecturers should be trained on internet technology as a means to teach the students online. Therefore, local governments, regional leaders, and educational institutions provide different solutions. In some places, there are those who use the radio as an introduction to learning, others who use telephone and text messages. This study, limited to places that have Internet facilities and to other places that do not have adequate facilities, will be examined after this research is completed. The purpose of the research is to analyze the development innovation of technology Internet in Tangerang Kota campuses and to seek the teaching needs for the lecturers in the learning process during the COVID-19 outbreak.

METHOD

This research is used the quantitative

method and semi-structured qualitative method to determine analyzing teaching needs to develop innovative intervention plans for the learning process during the covid-19 outbreak. The implementation of analyzing teaching needs to develop innovative intervention plans into the adoption of digital technology impacts the ability and skills to the learning process. Therefore, it provides alternative strategies for the learning process that increasingly adapt to the change of technology due to the demands of teaching.

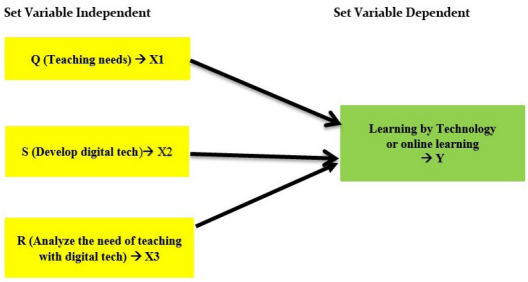
The selection of sampling was applied to 103 lecturers as respondents consisting of lecturers from social science lecturers at the universities in Tangerang Kota spread through Google Form in March-May 2020. Data collection techniques regarding qualitative were collected to be interviewed 2-3 hours in April and May 2020. Data research is taken from the literature review, observation, and descriptive analysis. Questionnaires were developed by the author of a semi-structured interview which the author conducts. Moreover, the research analyzes the application of digital technology and investigates the abilities and skills of lecturers in using digital technology in the COVID-19 outbreak.

This study will analyze the need for teaching in the learning process and how lecturers can develop digital technology in the learning process during the COVID-19 outbreak. Furthermore, this research analyzes the need for teaching by using digital technology in the learning process. Moreover, this study is to discuss three dimensions, 1) Analyzing the needs of teaching during the COVID-19 outbreak. 2) Finding ways for lecturers to develop digital technology innovations in the learning process, and 3) Finding ways for lecturers to analyze teaching needs by using digital technology in the learning process. Hence, this hypothesis uses the canonical formulation, multiple variable analysis techniques to identify and measure the relationship between lecturers' teaching needs and analyze lecturers' teaching using digital technology in learning.

In this regard, Ho: All correlations are zero and H1: At least one non-zero canonical correlation. Criteria of conclusion: The null hypothesis is rejected at the level of significance α (0.05) if the test statistic was >sig. 0.05

The equation model used for the correlation is: X1 + X2 + X3 = Y. Teaching needs+ Develop digital tech + Analyze the teaching need with digital technology = Learning by Technology or online learning.

Figure 1 Conceptual Framework



RESULT AND DISCUSSION

This study analyzes the teaching needs in the learning process and finds out the lecturers who can develop digital technology in the learning process. Therefore, research that uses canonical correlation analysis with a sampling selection of 103 social studies lecturers at universities in Tangerang City, and the interviews for 2-3 hours in April and May 2020.

First, in table 1 the research measure of the reliability and correlation for each category of teaching needs, develop of innovation digital technology, analyze of teaching and learning process.

Table 1 Reliability and Correlation for each category of Teaching Needs, Develop of Innovative Digital Technology, Analyze of teaching and Learning Process

Variables	Reliability	Correlation			
		X1	X2	X3	Y
Q (X1-Y)	0.772	0.944			0.944
S (X2-Y)	0.724		0.758		0.758
R (X3-Y)	0.756			0.921	0.921
L (X1-X2-X3-Y)	0.601	0.107	0.175	0.319	1

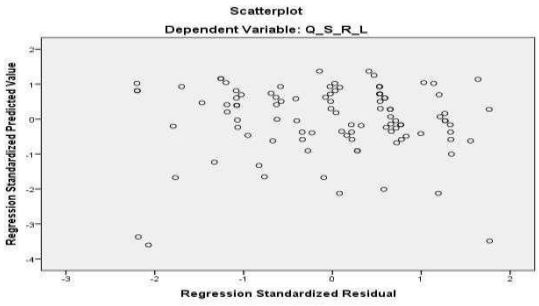
Source: Data Process

From data above it is indicated that reliability for four variables X1, X2, X3, Y. Q (X1-Y) is the teaching needs, α is 0.772 is the highest reliability. It means that the lecturers prepare the teaching needs in online teaching in the learning process. The second highest is R (X3-Y) analyze the teaching need with digital technology, α is 0.756. It means that lecturers analyze the teaching needs in the learning process. The third highest is S (X2-Y) is the develop the digital technology in the learning process, α is 0.724. It means that the lecturers can develop digital technology in the learning process. The fourth highest is L (X1-X2-X3-Y) with α is 0.601.

In correlation of (X1-X2-X3-Y) the highest correlation is Q (X1-Y) 0.944 the correlation between analyzing the teaching need and the learning process has the strongest relationship. The second highest correlation is R (X3-Y) 0.921. It means that the relationship between analyzing teaching need by using digital technology and the learning process is stronger enough. It may be the lecturers analyze the teaching need in the learning process. The third highest correlation is S (X2-Y) 0.758, the development of digital technology for the lecturers is strong enough. The learning process L (X1-X2-X3-Y) is the strongest at all. It concluded that the questionnaire of analyzing the teaching needs to develop digital technology innovation for learning process during the COVID-19 outbreak is reliable and valid.

Next, it is shown the scatterplot to find out the test of multiple regressions which is tested about X1, X2, X3, and Y; the assumption of the test will find out on scatterplot below.

Figure 2 The result of multiple regression scatterplot



The result of the test is on the multiple regression model showed that there is a positive linear relationship between X1, X2, X3, and Y. And the relationship is strong and the points of plot spread above and below the zeros on the Y-axis, it is shown that the scatterplot of multiple regressions is positive and strong. Next is statistical test of frequency to show that the lecturers of using digital technology in the learning process.

From data above, it showed that the average respondents to teach online learning is 69 (67%) respondents with means of 34.84 and std. dev. 3.741. It indicated that most of the lecturers are ready to teach online with digital technology such as Google Classroom, Moodle, Using Zoom, Google Meet or Hangout. It concluded that the lecturers have the ability and skills to adopt the digital technology (Dhawan, 2020); (Li & Lalani, 2020).

According to Almarzooq, Lopes, and Kochar (2020) stated that by having digital technology capabilities and skills, lecturers are able to use digital technology in teaching. So that teaching can occur and students can receive learning well. Another researcher Mardiana (2020); UCLG, Metropolis & UN-Habitat (2020) indicated that in online teaching, there is synchronous teaching and asynchronous teaching. Lecturers can choose the teaching needed. For synchronous teaching is teaching face to face through the Internet and lecturers can do it once a week or fortnight to explain teaching that does require face to face. Like explaining difficult learning, so students can understand.

Table 2 Descriptive Statistics of Frequency of Online Learning or Learning by Technology Learning and Teaching Process

	Means	Std. Dev.	Freq.	%
Teaching Needs	33.34	3.726	72	70.97
Development of Digital Technology	35.62	2.967	60	62.71
Analyze of teaching needs with digital technology	34.89	3.918	75	75.95
Online Teaching	34.84	3.741	69	67

Source: Data Process

For asynchronous teaching, lecturers can do it by giving material using PowerPoint slides or in PDF and explaining the material to students. And students can give a reply after that or within a specified time limit. To reply or answer an assignment, can be via e-mail, or WhatsApps or in the learning. And who do not have Internet access, students can ask the lecturer and sent via WhatsApps or e-mail. Thus, online learning can be achieved well. Then, the research will test with multiple regressions.

From data in table 3, the first is X1 (Teaching Needs) and indicated that the relationship between X1 and Y is 0.944 and showed that the relationship is very strong. The simultaneous contribution of variable X1 and Y is 0.890 or 89% and 11% does not need the improvement of teaching or the lecturers have already understood about the teaching needs in the learning process.

When the interview was done to the lecturers, some of the lecturers has already improved the teaching which they learned from courses,

trainings and followed the learning websites. In F-Change showed 0.820.716>0.05 or in p (Sig. F-Change) showed 0.000<0.05 and both of those indicated that Ho is rejected, and Ha is accepted. The

Table 3 The relationship between X1, X2, X3, and Y[b]

No	Variables	R	R Square	Adjusted R Square	Change Statistics	
					F change	Sig. F change
1	X1 (Teaching Needs)	0.944	0.890	0.889	820.716	0.000
2	X2 (Dev. Digital Tech)	0.758	0.574	0.570	136.051	0.000
3	X3 (Analyzing Teaching needs by using digital tech)	0.944	0.890	0.889	820.716	0.000
4	Y (Learning Process)	1.000a	1.000	1.000	1.486	0.000

1. a. Predictor (Constant), Teaching Needs (X1) 3. a. Predictor (Constant) Analyzing Teach by digital Tech(X3)

2. a. Predictor (Constant), Digital Tech (X2) 4. b. Dependent variable: Learning Process (Y[b])

conclusion, there is relationship between knowledge and the learning process. And the result is accepted.

According to Almarzooq, Lopes, and Kochar (2020) stated that teaching requires material, learning resources and connectivity with the Internet. The learning needed during the COVID-19 and post-COVID-19 periods has integrity with technology. Learning content can be shared anytime 24/7 and anywhere, especially for students. Other researcher Mardiana (2020) mentioned that lecturer confidence, ability, and skills in developing technology can be improved and harmonized with existing programs in institutions or campuses. All lecturers are required to be consistent in providing online learning and can communicate with students, staff, technicians, or employees if there are problems.

The second one is X2 (Development Digital Technology) R is 0.758 and R Squared is 0.570 means that 57% of the development digital technology is adopted by lecturer and other 43% of the lecturers have difficulty in adopted the development of digital technology. In F-change is 136.051>0.05 and Sig. F-Change is 0.000<0.05 means that Ho is rejected and Ha is accepted. The result is there is a relationship between development digital technology and learning process.

When the interview was taken, some of the lecturers said that using digital technology in teaching means to learn a new thing and the lecturers need time to adapt the new technology. And also, according to Christensen & Horn (2011) showed that the ability and skills to adopt and develop digital technology can expedite online learning, in addition it can lead to high interactions between students and lecturers in learning. Therefore, lecturers need to develop the capabilities and skills of digital technology so that it will facilitate the lives of lecturers themselves. In addition, the researchers Andrews & Haythornthwaite, (2017) indicated that teaching that refers to the use of the integration of Information, Communication and Technology (ICT) in education can prepare students in the digital era and lecturers as key players in the development of digital technology so that learning can run smoothly and students can learn more optimally. Moreover, in developing digital technology will help the online learning process.

The third is X3 (Analyzing Teaching needs by using digital technology) showed that R 0.944 and R Squared 0.889. It showed very strong means that 88.9% of the lecturers agreed that teaching by using digital technology. And another 11.1% did not agree that teaching by using digital technology because they have difficulty in technological change. They prefer teaching in the classroom, face to face. In F-Change 820.716>0.05 and Sig. F-Change 0.00<0.05 indicated that Ho is rejected and Ha is accepted, it means that there is relationship between analyzing teaching needs by using technology and the learning process. In the interview showed that most of the lecturers learned and upgrade their ability and skills of digital technology. They learn either by going to the course or having training in the university. But other lecturers have ignored their ability to learn digital technology.

Researcher Dhawan (2020) mentioned that in contributing to the outbreak of COVID-19, technology plays an important role especially in learning. In analyzing the teaching needed and

the development of digital technology illustrates that critical thinking skills and the ability to apply digital technology are needed. And all of these have basic abilities that are important in teaching. Other researcher Ciarrusta, S & Alejandro, I (2020) revealed that teaching not only provides material and exercise, but also has to innovate, and digital technology help the teaching needs. In developing of digital technology, learning is increasingly interesting for the students for example the use of images, draw illustration, mind mapping, the use of graphics. So, the students can easily capture the learning process.

The fourth is Y (the learning process) and showed R is 1.00 and R Squared is 1.00 which are very strong. It indicated that the learning is going well and by having teaching needs, the development of digital technology, and the analyzing teaching needs, and digital technology make the learning has run smoothly (UNESCO, 2020). In F-Change 1.486>0.05 and Sig. F-Change 0.00<0.05 indicated that Ho is rejected, and Ha is accepted. It means that there is a relationship between learning process and teaching needs, development of digital technology and the analyzing teaching needs of digital technology.

According to UNESCO (2020) in the time of COVID-19 outbreak, the biggest obstacle was the lack of internet access and electronic devices. So, parents, the local government focus on bonds to support student learning at home. The need for Internet access and digital technology development for college students, teaching is needed via email, Google Classroom and text messaging. The development of digital technology is used in learning Google Classroom once a week to access the Internet in the town halls or village halls. In a conference held by Universitas Gadjah Mada (Revealing the Challenges, 2020) most of the speakers suggested that the best solution due to reduction and cancellation of teaching and learning activities on campus is considered as precise decision to reduce contact during the COVID-19 outbreak. And the learning activities have made various adjustments such as via Zoom, Webex, and Hangout. With the solution of online learning process, lecturers and students are able to have online learning process.

Moreover, it is described that the teaching needs is important to the lecturers especially teaching online. Even though not all Indonesia region have the access of the Internet, the lecturers should have the ability and skills of digital technology and if the lecturers have the teaching needs, it is easier use digital technology that can assist lecturers in teaching online so that learning becomes smooth and enjoyable (Means & Olson, 1994). Each lecturers understand their strength and weakness, and they will have a training or courses or supplements or upgrade when they think they need improvement in teaching (Christensen & Horn, 2011). However, teaching needs must be able to integrate with the knowledge, abilities and skills of lecturers in teaching.

Knowledge, ability to adopt digital technology and skills to use digital technology are the main requirements in teaching, so that the campus as a provider of facilities can optimize the presence of online learning (Ghirardini, 2011). At the university level the use of digital education technology offers an increase in the position of lecturers in developing learning. Thus online learning can be a solution so that education continues to run during the outbreak COVID-19 (Digital Technologies and the Covid-19 Pandemic, 2020; Dhawan, 2020).

The primary mission of online learning is to increase student access to the University's academic programs. And this online learning helps students acquire important technical skills and online learning strategies in achieving students' educational goals (UNESCO, 2020; Reimers, Schleicher, Saavedra, & Tuominen, 2020). Developing digital technology in teaching will gain professional growth and development for students and the campus so that the commitment of students, lecturers and the campus as the institution becomes a clear goal for future education (Dept. Edu, 2012). Although students have access using digital devices and the Internet, not all students can learn by using online learning. Lecturers can teach students who do not have Internet access in other ways, such as by using the radio, or via WhatsApp or text messages and the assignment from students can be sent a week later (UN Bulletin, 2020).

The lecturers must have the knowledge, abilities, and digital technology skills. By having all the components, lecturers can create learning designs that are suitable for their teaching (Costică, 2014). The learning design does not have to be the same as other lecturers, but must be in accordance with online teaching needs. According to Ciarrusta and Alejandro (2020) and (Cloete (2017) the learning design is made in accordance with the online curriculum provided and requires lecturers to activate their learning from the beginning of learning. Learning using

digital technology teaches students how to learn with technology while also telling that in one semester there are 2 ways of learning namely synchronous and asynchronous learning. Synchronous learning is carried out at the beginning of lectures where lecturers and students meet online. This meeting discussed the learning design and course outline for one semester. So that the next stage will be easily followed by students and lecturers, because the system has been created.

In contrast to my research, Reimers, et al., (2020) stated that online learning is supported by institutions or campuses, lecturers and students as well as parents and government and education leaders to continue student education during the COVID-19 outbreak. So, the design of education must improve the continuity of education by increasing the teaching of lecturers needed in online learning. And digital technology innovation can continue as a teaching plan in the future.

Although in Indonesia many students cannot access digital devices and the Internet, learning must continue and cannot be stopped because they do not have Internet access. Government and educational institutions, community leaders can help provide this learning tool so that all learning can take place effectively (Kementerian Pendidikan dan Kebudayaan, 2020). Lecturers as key holders of teaching can provide solutions to governments, community leaders, educational institutions such as not needing to use digital technology, but using radio, e-mail, WhatsApps or short messages can be used for learning. And the result of learning can be sent via e-mail, WhatsApps (Kasih, 2020). Learning like this is called asynchronous and can be done for areas that are difficult to reach by the Internet. This online education resource choice is intended for students, teachers and parents who aim to support the government as a way to continue student education during the COVID-19 outbreak. All of this is designed and designed to improve education continuity plans and is used as a model for developing online learning materials (Dept. Edu, 2012; De, 2018).

Finally, online learning is future education in 21st century. Students do not need to come to the class to learn, they may be staying in their home or everywhere and they choose what to learn, where to learn, when to learn and how to learn (Gee, 2012). The most important thing that lecturers as the key in teaching needs to have the knowledge, ability and skill to teach especially teaching online. The lecturers must improve the knowledge, the ability to adopt digital technology and the skill of technology in line with technological developments (Ghirardini, 2011). Because education will come to change in accordance with the times. In addition to educational institutions, the campus must continue to update and upgrade the technology used for learning even though at certain times this technology is not used (Lanauer & Rowlands, 2001; Cloete, 2017; UNESCO, 2020). So, the learning is ready for 21st century future education.

CONCLUSION

Lecturers are the spearhead of learning. They must continue to update and upgrade their knowledge, abilities, and digital technology skills in line with technological developments. In addition, lecturers must be creative and know whether or not the technology is needed. For remote areas, lecturers know the technology used and most importantly must collaborate with students, parents or local government or community leaders in using technology. Because the use of different technologies is used depending on the place to be taught. So that learning will continue in accordance with the established education. Local governments must pay attention to public education and immediately provide learning tools and devices. Because it will trigger regional progress if the local government is slow in providing learning tools used by students and lecturers. Hence, learning will be smooth and enjoyable.

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