



Student Digital Literacy in Online Learning Before and After the Covid Pandemic

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Abstract

Learning at the Universitas Terbuka that applies Open and Distance Learning (ODL) requires students to study independently using various learning materials and services that have been prepared. During the covid pandemic, almost all self-study materials and services were converted into an online form to break the chain of covid spread. This condition forces students to develop digital literacy that will be used both in learning and in everyday life. The early childhood education (ECE) program student had the status of an early childhood teacher before becoming a student. During the covid pandemic, they also have to do Learning from Home (LFH) which relies heavily on digital literacy. This study aims to look at the digital literacy that exists in ECE students at the Universitas Terbuka, Indonesia. The research was conducted in 2021 using a survey method with an instrument in the form of a questionnaire on 550 students spread across several areas of Indonesia. The results of the study found that: (1) most students had their first experience of online learning since the covid pandemic, (2) mastery of certain applications increased rapidly due to the challenges of assignments during online learning (3) the majority of students have email but it is not used optimally, (4) most students think that online learning can be applied as a variation or combination with offline learning in the post-pandemic period. The suggestion from this research is that further research is needed to improve students' digital literacy in online learning.

Keywords: Digital literacy, online learning, open and distance learning

1. Introduction

The Covid-19 pandemic that has hit almost all countries in the world demands rapid adjustments in various fields. One of them is in the field of education. Study assistance services at the Universitas Terbuka, which can usually be provided in the form of face-to-face tutorials, during the pandemic must be carried out online both synchronously and asynchronously. The change in this tutorial service also requires readiness from students, especially in mastering digital literacy.

One of the study programs at the Universitas Terbuka is the Early Childhood Education (ECE) department. ECE-UT students are all already Early Childhood Care and Education (ECCE) teachers when they will register as ECE-UT students. This means that they study at ECE-UT as a form of in-service training to improve competencies according to the demands of ECCE teacher competency standards. During the pandemic, they must also carry out Learning from Home (LFH) as an implementation of policies from the Indonesian government to break the chain of the spread of Covid 19 for their students. This LFH also demands mastery of digital literacy. So at the same time, during the pandemic, ECE-UT students as teachers had to do online learning for their

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students in kindergarten, and also take part in online learning for themselves as ECE-UT students. This study aims to determine digital literacy in ECE students at the Open University, Indonesia.

1.1. Digital Literacy

Digital literacy is defined as an individual's ability to search, find, evaluate, and compose clear information through typing, writing, tapping, and using other mediums (e.g., multimedia videos, video calling, and messaging) on various digital platforms, which requires a basic level of computer competency (Bawden, 2008). Belshaw (2011) stated that there are eight elements of digital literacy, namely: (1) Cultural, namely understanding the various contexts of users of the digital world; (2) Cognitive, that is, thinking power in assessing content; (3) Constructive, that is, the creation of something expert and actual; (4) Communicative, that is, understanding the performance of networks and communications in the digital world; (5) Responsible self-confidence; (6) Creative, doing new things in new ways; (7) Critical in responding to content; and (8) Be socially responsible. Meanwhile, another expert state that there are eight components of digital literacy, including creativity, critical thinking and evaluation, cultural and social understanding, collaboration, finding, and selecting information, effective communication, e-safety, and functional skills (Hague & Payton, 2010).

1.2. Online Learning

Online learning is defined as the experience of learning in synchronous or asynchronous surroundings using distinct gadgets (e.g. cellular telephones, laptops, and so on) with net access. In these surroundings, students may be anywhere (impartial) to examine and interact with teachers and other students (Singh & Thurman, 2019). Online learning is a way to learn that uses the internet and other important technologies to develop material for educational purposes, instructional delivery, and program management (Adedoyin & Soykan, 2020). One interesting thing, judging by its effectiveness, is the research that shows that online learning is as effective as or more effective than face-to-face learning (Soffer & Nachmias, 2018). In terms of safety and protection of human lives, the online learning process can help reduce parental concerns about children who go to school, but it's important to manage the process well with materials that are easily accessible, easy to understand, and simple (Agarwal & Kaushik, 2020).

1.3. Open and Distance Education

The definition of Open Education by The European Commission refers to "a way of carrying out education, often using digital technologies. It aims to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customizable for all. It offers multiple ways of teaching and learning, building and sharing knowledge. It also provides a variety of access routes to formal and non-formal education and connects" (Rolfe, 2017). The concept of open education emphasizes the importance of system flexibility, especially in eliminating constraints of place, time, and aspects caused by student characteristics such as economic conditions (Belawati, 2010).

Wedemeyer in Simonson, Smaldino, & Zvacek presents several important characteristics of distance education, namely: (1) children and teachers are separated; (2) the learning process is carried out in writing or through other media; (3) learning is individual; (4) learning takes place through children's activities; (5) learning is making it comfortable for students in their environment; (6) students are responsible for the pace of their progress, with the freedom to start and stop at any time (Santo, 2011). In adult education, the use of interactive learning environments in ODE contributes to the development of self-direction (Rurato & Gouveia, 2014).

The importance of distance education in the context of equity access to education for all citizens is not only been suggested by developed countries but also has long become an important concern and program in countries growing, including Indonesia (Darojat, 2020). The implementation of distance education in developed and developing countries is usually quite different. In developed countries, distance education is usually done to train human resources in the face of economic growth. Distance education is also used to offer enrichment to the curriculum within the scope of non-traditional education. While distance education in developing countries is usually carried out as an alternative to the implementation of traditional education, degree education programs and even used to overcome illiteracy problems. The distance education program is essentially done to overcome problems related to limited capacity or access for the community to obtain education (Murphy, 2018).

In Indonesia, open and distance education is implemented by UT. UT students are expected to be able to implement learning activities independently. Independent learning requires students to carry out the learning process on their initiative. Independent learning in many ways is determined by the ability to learn effectively and efficiently. (Afshar, Mohammad Afshin; Jafari, Alireza; Heshmati, Fariba; Movahedzadeh, Farahnaz; Cherif, 2019). Learning ability depends on the speed of reading and the ability to understand the contents of the reading material.

To be able to carry out self-learning activities effectively and efficiently, UT students are required to have self-discipline, initiative, and strong learning motivation. In addition, students are also required to be able to manage their time efficiently. Independent learning can be done alone or in groups, both in study groups and tutorial groups.

2. Method

This research was carried out in the second semester, from July to December 2021 using a survey method using a questionnaire instrument. The aspects studied include the tools used in accessing online learning, the ownership and utilization of email, mastery of social media applications in online learning, and online learning opportunities in the post-Covid-19 pandemic period. Respondents were ECE-UT students from semesters 1 to 9. There were 550 respondents from various UT branches in Indonesia who were netted online by accidental sampling.

3. Findings

3.1. Respondents' Profile

According to the island of the region of his residence, the respondents can be described as follows

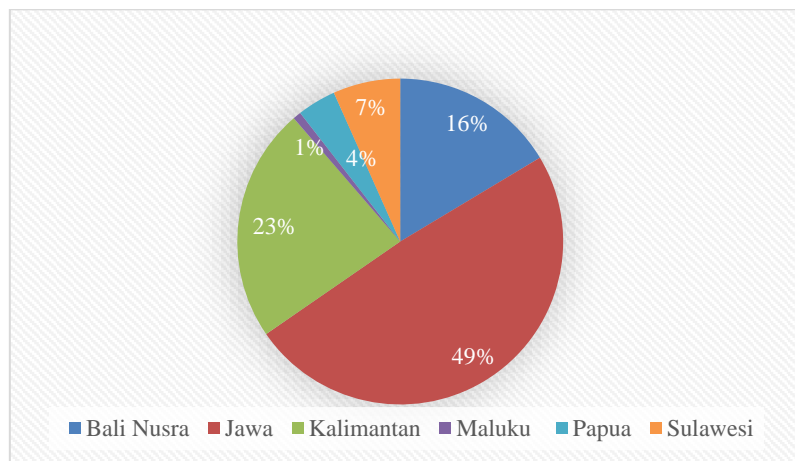


Chart 1. Respondents' Area of Residence

Based on Chart 1, it can be seen that the majority of respondents on the island of Java (49%), are almost half of the overall respondents. This is natural because the majority of ECE-UT students are indeed from the island of Java, and represent western Indonesia. Interestingly, quite a lot of students from the central part of Indonesia, namely Bali and Nusa Tenggara (16%), Kalimantan (23%), and Sulawesi (7%). Meanwhile, the Maluku region (1%) and Papua (4%) can be considered to represent ECE-UT students in the eastern part of Indonesia.

Judging by age, it can be described in the following table.

Table 1. Age of Respondents

Current age	Percentage
Under 20 years old	1
20 - <25 years old	21
25 - < 30 years	16
30 - < 35 years old	25
35 - < 40 years old	18
40 - < 45 years old	11
45 - < 50 years	6
Over 50 years old	2

Based on Table 1 it can be seen that most of the respondents were aged 20-40 years. While respondents over the age of 50 are only 2% and under the age of 20 years are only 1%. This is related to the status of ECE-UT students who are required to have become teachers at ECCE institutions first before becoming ECE-UT students, with at least 1 year of teaching experience.



If the average age of high school graduates is 18-19 years old, in the next year (19-20 years) and have taught at an ECCE institution, he/she can become an ECE-UT student. The scarcity of respondents at the age of more than 50 years also corresponds to the age of ECE-UT students who are rarely over 50 years old. The majority of ECCE teachers in Indonesia are also aged 20 to 45. It is very rare for ECCE teachers in Indonesia aged 50 years and over to be active, except for civil servant teachers who have a retirement age of 60 years according to government regulations.

Regarding the experience in online learning since the COVID-19 pandemic and the internet access used, ECE-UT students have a variety of experiences as follows.

Table 2. *Experience in Online Learning and Internet Access used*

Access to Online Learning	Online learning experience									
	Inexperienced		First experience		Ever a few times		a Lot of times		Other	
	Sum	%	Sum	%	Sum	%	Sum	%	Sum	%
Mobile phone	5	1%	320	58%	74	13%	42	8%	6	1%
Wifi at home	1	0%	48	9%	12	2%	8	1%	0	0%
ECCE institutions where to teach	1	0%	11	2%	1	0%	0	0%	0	0%
Internet Cafe	0	0%	4	1%	0	0%	1	0%	0	0%
Free wifi in the public area	0	0%	9	2%	1	0%	1	0%	0	0%
Other	0	0%	1	0%	1	0%	2	0%	1	0%
Sum	7	1%	393	71%	89	16%	54	10%	7	1%

Based on Table 2, it can be seen that the majority of students (71%) stated that online learning during the pandemic was the first experience of those who had previously studied through face-to-face or teaching material books. Of these, 320 out of 393 students access online learning from smartphones.

An interesting finding still found that 1% of respondents stated they did not have an online learning experience. This may happen because the student concerned feels not digitally literate so when he has to take part in online learning, both synchronous meetings, asynchronous meetings, and uploading assignments will ask for help from the closest person who is considered more capable of adjusting the necessary tools. Usually, students who feel that they are not digitally literate are those who are 45 years old and above.

When viewed the mastery of social media applications before and after the pandemic, can be seen in the following table.

Table 3. *Social Media Applications that Have Been Mastered and Just Mastered During Online Learning*

No.	Applications	Pre-Mastered (n)	Mastered Since Online Learning (n)
1.	Google Classroom	64	117
2.	Whatsapp	402	93
3.	Zoom	27	106
4.	Google Forms	46	46
5.	Hang Out	3	1
6.	Google Meet	19	39

7.	Webex	19	35
8.	Youtube	195	70
9.	Skype	11	7
10.	Facebook	231	39
11.	Instagram	150	25
12.	Microsoft Teams	80	324
13.	Other	23	24

Based on Table 3, it can be seen that the most mastered applications before participating in online learning are Whatsapp, Facebook, Youtube, and Instagram. This is the following survey data that the four applications above are widely used by the Indonesian population in 2020 (Jayani, 2020). Meanwhile, applications that experienced a fairly high increase in usage by ECE-UT students during the Covid pandemic were the Zoom and Microsoft teams applications.

Regarding the use of email as a means of communication, you can see the following table.

Table 4. Utilization of Email by Students

No.	Aspects of Email utilization	n (%)
1.	I don't know my email address	1%
2.	I've never sent or received an email	3%
3.	I know I have an email but I don't know how to use it	11%
4.	I'm often using email to send or receive digital data	20%
5.	I have an email but only sometimes use it	46%
6.	I can upload or download attachments via email	16%
7.	Other	2%
Total		100%

Based on Table 4, it can be seen that there are still 11% to 14% of students who do not know their email address, have never sent or received an email, or do not know how to use email.

Relating to the opinion that online learning can also be applied as a variation during ordinary lectures, not only during a pandemic; then the student's answer is as follows.

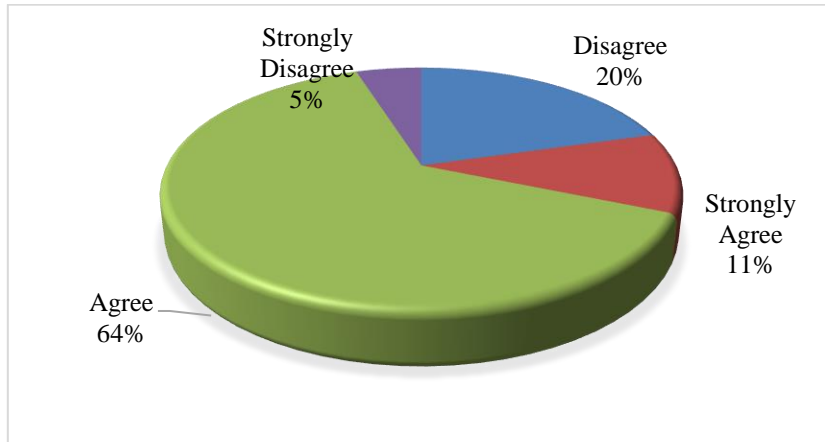


Chart 2. Opinions About Implementation of Online Learning in the Future

Based on Chart 2, it can be seen that most of the students believe online learning can be implemented even though the covid 19 pandemic is over, but there are still about a quarter of students are still unsure about the implementation of online learning after the covid 19 pandemic.

4. Discussion and Conclusion

4.1. Discussion

Intensive online learning was implemented at all levels of education in Indonesia when the covid-19 outbreak began. This online learning is also applied to ECE-UT students who work as ECCE teachers daily. This learning requires digital literacy from its users. The findings of this study show that 71% of students get their first experience of online learning during the Covid-19 pandemic. Of the 71% of students, more than 81% of students use smartphones to access the internet. This shows that ECE-UT students at this time already have smartphones that can be used to access various online services including learning.

Another internet access option that is widely used apart from mobile phones is the use of paid internet which is subscribed to by the ECCE institution where they teach (Nurhadi et al., 2018). This is natural because their daily job is to teach in the place, so while setting up the teaching administration they can also simultaneously access the internet to complete coursework or to follow web tutorials. Usually, the owners of ECCE institutions already understand this and they allow their teachers to use the internet at these ECCE institutions to increase their knowledge as well. However, there are still around 1% of students who state that they do not have an online learning experience. This seems to be related to the low digital literacy of students so they still have to be helped a lot by those closest to them when participating in online learning. As a result, students do not feel the atmosphere of online learning directly (Karakis, 2022).

Internet access facilities that are very rarely used by students today are through internet cafes (Powell, 2021). The existence of internet cafes is also not much longer as it used to be along with the increasingly sophisticated cellphones and the cheaper internet subscription fees. Free wifi in public places is also rarely used by students although now many are provided in various public places such as shopping centers, stations, office lobbies, and others. This is because to access the

wifi, students certainly have to come to a location that is affordable wifi, so in terms of time and cost it is inefficient (Haryanto et al., 2018).

Survey data conducted in early 2021 shows that the number of internet users in Indonesia reached 202.6 million or 73.7 percent of the total population of 274.9 million people. Almost all internet users in Indonesia (98.3 percent) have mobile phone devices, both smartphones and feature phones (Pertiwi, 2021).

Meanwhile, social media applications that are widely used by students before and after the Covid 19 pandemic in a row are Whatsapp, Facebook, Youtube, and Instagram. ECE-UT students who are also ECCE teachers do use Whatsapp a lot. The results of observations in several ECCE institutions show that the Whatsapp group application is most widely used by ECCE teachers in Indonesia as a bridge of communication between teachers and children and parents. ECCE teachers in Indonesia also use this Whatsapp group to manage parental involvement in the care of their children (Amini, 2018). Currently, printed communication books are still used by teachers, but for information that is urgent and immediate, the Whatsapp application is an option (Wasserman & Zwebner, 2017). This situation is increasing during the covid pandemic as physical contact is minimized. The other three applications, namely Facebook, Youtube, and Instagram, are widely used by ECCE teachers to socialize their activities that will or have been carried out in kindergarten. Meanwhile, the three applications that are most rarely used by students are HangOut, Skype, Google meet, and Webex. Not only by students, but these four applications are indeed not among the top 10 social media applications that are most often used by the Indonesian population (Jayani, 2020).

One interesting thing is the increased use of the Zoom and Microsoft Teams applications after students take part in online learning. The Zoom application is indeed very widely used during the Covid-19 pandemic at almost all educational levels in Indonesia. Zoom is widely used by teachers in ECCE institutions to bridge synchronous meetings between teachers and children or parents (Wickett, 2019). The Microsoft Teams application has also increased rapidly because during the COVID-19 pandemic UT changed its face-to-face tutorial learning service to a web tutorial based on the Microsoft Teams application (Al-Adwani and Al-Fadley 2022).

When viewed from the use of email, almost half of students know that they have an email account but rarely use the email. This can happen because it seems that the Whatsapp application on the smartphone owned by students is equipped with facilities for sending various media and documents (Shahid, 2018). So Whatsapp is still a favorite application by students for transferring data. The email is usually only used for sending a large enough capacity data that is difficult to send with Whatsapp. UT implements a policy that every student gets a campus email as a supporting facility in learning (Sembiring, 2018). The email is created based on the student's ID number. But after several semesters as the students, it turns out that there are still many students who do not understand this facility. This is an input for the ECE-UT department to socialize about email facilities since students are officially registered (Hardini & Andriani, 2018).

There are still about a quarter of respondents who are unsure about the implementation of online learning after the covid 19 pandemic. This may happen because during the pandemic students have not been carefully prepared in advance to take part in online learning. They are

immediately asked to participate actively in online learning related to conditions that do not allow physical contact. As a result, some students find it difficult to take part in online learning, including collecting various assignments, all of which must be done and collected digitally. For example, for a simulated teaching practice assignment, ECE-UT students must practice the simulation, make a video recording, edit the video, upload it to their youtube accounts and then send a youtube link to be assessed for the assignment by the tutor. This kind of thing is certainly not easy for beginners who are just learning to be digitally literate. This is what causes some students to doubt their own ability to be able to follow online learning well if it is to be implemented on an ongoing basis. Especially for ECE-UT students who have many practical courses, and have been accustomed to getting study assistance services in the form of face-to-face tutorials for these practical courses (Amini, 2020). ECE-UT students are asked to do 3 kinds of tutorial assignments for each course at ECE-UT. Assigning all the course assignments at once demotivates the students and incites them to search for alternative ways to finish their assignments rather than improving their performance (Yassin, M.; Buddharat, C.; Singhasuwan, 2022).

Most of the students believe online learning can be implemented even though the covid 19 pandemic is over. This means that most students are ready that in the future, learning will not be purely face-to-face anymore but at least it is carried out in blended learning. This is following the trend of education during the new normal period. Armed with the experience of online learning during the pandemic, many educational institutions have decided to carry out blended learning in the future, not returning completely to face-to-face learning as it was before covid 19 (Sofroniou & Premnath, 2022). Meanwhile, UT as an open and distance education has implemented online learning as one of the learning services for a long time before there was covid 19 (Broto, 2019). The online learning that UT has done so far has been largely carried out asynchronously, with several slippages of synchronous meetings. Since covid 19, synchronous learning through the tutorial web as an alternative to face-to-face tutorials has also been intensely carried out by UT.

4.2. Conclusion

Based on the discussion above, several things can be included, namely: (1) most students get the first experience of online learning since the Covid pandemic, (2) mastery of certain social media applications has increased rapidly due to the demands of assignments during online learning, and the applications most widely known by students are Whatsapp, Facebook, Youtube, and Instagram, (3) the majority of students have email but are not used optimally, and (4) most students argue that online learning can be applied as a variation or combination with offline learning in the post-covid 19 pandemic period.

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