

Lecturer's digital literacy ability in the pandemic

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Suggested Citation:

Fauzan, F., Arifin, F., Lubis, M. A. & Firdaus, F. M., (2022). Lecturer's digital literacy ability in the pandemic. *Cypriot Journal of Educational Science*. 17(4), 1130-1142. <https://doi.org/10.18844/cjes.v17i4.7122>

Received from January 10, 2022; revised from March 12, 2022; accepted from April 20, 2022.

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Abstract

This study aimed to determine the adaptation of lecturers and students to using technology as a learning medium. The research method used is descriptive qualitative research. The instrument used is a questionnaire. The population in this study were all Madrasah Ibtidaiyah Teacher Education (PGMI) students in Indonesia, and the sample was more than 40 Madrasah Ibtidaiyah Teacher Education (PGMI) Study Programs at public university (PTN) and private university (PTS) in Indonesia involving 1294 students. The study results found that the effectiveness of the application of distance learning methods in the pandemic era was usually responded to by most students; some even responded less and very poorly. Mastery of lecturers in distance learning media is good; some dominant lecturers use google classroom, zoom, and WhatsApp.

Keywords: digital literacy, media technology, *online learning*, pandemic, lecturers PGMI

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1. Introduction

The situation of the COVID-19 pandemic as of March 25, 2022 is at 5,986,830 cases and 154,343 people have died (COVID-19 Handling Task Force, 2022). The majority of Indonesian people would experience anxiety during the COVID-19 pandemic (Santosa et al., 2021). Anxiety that arises comes from the education sector, including from universities. Based on the emergence of a pandemic, the government took a policy, namely changing the teaching and learning system (Arora & Srinivasan, 2020). This also affects the sudden closure of educational institutions, which forced the digitisation of learning. As a result, lecturers would face an unexpected challenge, namely teaching online (Daumiller et al., 2021).

The implementation of the online teaching and learning system is carried out remotely; this is carried out to minimise the spread of the virus. In addition, distance learning positively affects student satisfaction (Abdullah, 2022). Online distance learning makes it easy to transfer information in various situations and conditions (Herliandry et al., 2020). Research conducted by Sadikin and Hamidah (2020) shows that efficient learning is carried out in a virtual classroom, so that it can be accessed anywhere and anytime. Learning carried out online can make students learn independently and increase their motivation.

Distance learning certainly relies on technology as a way to facilitate communication and obtain information. Because technology is very important for human life (Kazaz et al., 2022), it can help in various educational processes (Mary & Hlaing, 2021). As long as distance learning is implemented on average across countries, about 88% of the students have an Internet connection at home and a computer that they can use for schoolwork, as determined in programme for international student assessment (PISA) 2018 (OECD average-31: 89%) – 28 percentage points more than in programme for international student assessment (PISA) 2003 (Organisation for economic Co-operation and Development, average-31). Half or less number of students have access to an Internet connection at home and a computer that they can use for schoolwork in the Dominican Republic, Indonesia, Malaysia, Mexico, Morocco, Peru, Philippines, Thailand and Vietnam (Organisation for economic Co-operation and Development, 2021). However, the thing that is feared by students when learning during the COVID-19 period is that there is a sense of confusion when the Internet breaks during the exam process (AlKhamaiseh, 2022).

During distance learning, the Indonesian government provides eight free web applications to students, educators, parents and anyone who wants to find and share online learning materials, such as Rumah Belajar, Google G Suites for Education, Kelas Pintar, Microsoft Office 365, Quipper School, Ruangguru, Sekolahmu and Genius. In addition, videoconferencing is used to support synchronous virtual face-to-face events from different venues, available via Skype, Cisco Webex Meetings, Microsoft Teams, Google Meet or Google Hangouts Meet and Zoom (Butarbutar et al., 2021).

Research results of Sutiah et al. (2020) proved that during the COVID-19 pandemic, lectures were conducted remotely using digital tools or technology in the form of platforms. The most widely used learning platform for distance learning is Google Classroom, followed by Google Meet, Google Hangout and Jitsi Meet. In addition, the Zoom, Microsoft Teams and Moodle platforms are also widely used by students during online learning (Moreira Bastos et al., 2021). Based on research results of Danurahman and Arif (2021), it turns out that Google Classroom can improve students' critical thinking skills.

The development of information and communication technology (ICT) has become the world of education (Saripudin et al., 2022). Today, technology has an essential role in learning (Ambarwati et al., 2021). Technology in learning is able to provide facilities in the form of easy access to information that supports learning for students. As for educators, technology provides learning media equipment facilities so as to improve pedagogical abilities in teaching and create interactive and active learning (Mahsus & Latipah, 2021). The findings of Fathoni et al.'s (2021) study show that technology is an important key during the COVID-19 pandemic. The use of technology increases student involvement and makes learning possible anywhere and anytime. So, through learning, media educators are required to be able to create a pleasant learning atmosphere and provide a meaningful learning experience for students. Thus, educators' innovation in compiling learning tools is needed (Syaharuddina et al., 2021).

Transformation and performance demand the development of the competence of educators and students to be closer to technology (Rini & Cholifah, 2020). Digital transformation is a learning experience and creativity development (Rumahlatu et al., 2021). The COVID-19 crisis spurs the acceleration and deepening of digitalisation in teaching and learning (Alves dos Reis et al., 2021). Digital transformation in universities requires digitally competent educators. Educators are faced with challenges regarding ICT skills and the ability to adapt to modern teaching methods, including designing materials and content for online lectures (Newlin & Grasiab, 2021).

Lecturers are educators who play an important role in the development of digital literacy in universities (Akayoglu et al., 2020; Arono et al., 2022). Creative lecturers will utilise a learning support system using ICT. The progress of the times is closely related to technological progress. This challenge forces us as educators to play an important role in using ICT media in all aspects of life (Triana & Nugroho, 2021). Lecturers must be involved in lifelong learning to keep up with the rapid development of science and technology, must know where, when, how to use information and what information they need and why they need it, how to get and use it (Tezer & Aynas, 2018).

Rusman stated that an educator does not only master academic, pedagogic and social knowledge, but also must be able to master IT to both prepare lesson plans and apply various technology-based learning models in learning activities, such as the use of interactive multimedia or e-learning, mobile learning, blended learning or other electronic-based learning (Melinda & Ningrum, 2020). So lecturers must be strong in digital literacy because the stronger the digital literate lecturer, the more comfortable the teaching process will be (Pratolo & Solikhati, 2020). The involvement of digital literacy is very important in learning during the COVID-19 pandemic (Ningsih et al., 2021).

Digital literacy is reading, writing or using digital technology. Digital literacy is described as the ability to reflect the process of using digital tools (Sukarno & El Widdah, 2020) effectively and efficiently (De La Cruz, 2019; Suwanto et al., 2022). Digital literacy competencies consist of using, understanding, accessing, managing, collecting, coordinating, estimating (Purnama et al., 2021), providing information (Yildiz, 2020), and evaluating information from ICT-based sources (Rusydiyah et al., 2020). Digital literacy is seen as a technical skill to operate digital devices, such as computers, smartphones, smartboards, projectors, social media and website or blog design.

Digital literacy must be owned by a lecturer, especially in the current digital era that requires lecturers and students to master technology as a tool for teaching and learning. Media or tools that can be used by lecturers and students for academic purposes are shown in Table 1.

Table 1. Purpose of using digital tools for lecturers and students

No.	Destination	Description
1.	Research/assignments	Search e-books, journal articles and literature in journal databases, such as Google Scholar, ResearchGate, Taylor & Francis, Wiley, Emerald, WoS, Scopus, Arxiv by Cornell, Ulrich's Web, Science Direct, DOAJ, JSTOR, Icite, PubMed, INSPIRE-HEP, IEEEExplore, IMech, SciELO and ERIC.
2.	Culture of teaching and learning online	Lecturers create content related to courses on YouTube. Meanwhile, students listen to content posted by lecturers and look for more detailed theoretical/concept explanations through YouTube videos (expert/professor explanations). Presentation with PowerPoint, Google Slides and Prezi.
3.	Collaboration in online learning	Discuss assignments via WhatsApp groups and Telegram.
4.	Online class	Synchronous online learning via Zoom and Google Meet, Skype, Cisco Webex Meeting, Jitsi Meet and Microsoft Teams. Asynchronous online learning via Google Classrooms, Moodle, Edmodo, Schoology, blackboard courseSites, SEVIMA EdLink and Kizoa
5.	Assessment	Kahoot and Quizizz
6.	Personal communication	Contacting lecturers and students via WhatsApp. Search for the latest news through social media such as Facebook, Twitter,

Instagram, YouTube and TikTok.

Platforms which are often used by lecturers and students in Indonesia in the West Java region include Zoom Meeting (82%), WhatsApp (55.3%), Microsoft Teams (50.7%), Google Meeting (45.8%), Line (26%), YouTube (15.4%), Webex (7.4%), Jitsi (4.4%) and Telegram (1.7%) (Saragih et al., 2021). Influential WhatsApp makes it easier for students to communicate, coordinate and discuss before making a presentation without having to meet in person (Utomo & Ubaidillah, 2018). In addition, Kahoot can also be used by lecturers in learning. This issue has been researched by Djannah et al. (2021), and the results of the research concluded that the Kahoot application as a medium for the learning process was categorised as efficient and suitable for use in the teaching and learning process, because the Kahoot application allows students to increase their interest and motivation by focussing more on the learning process in order to get better learning outcomes. *Kahoot* is a leading digital tool used for assessment purposes (Pfirman et al., 2021).

Digital technology media must be mastered by lecturers. Triawang and Kurniawan (2021) explained four criteria or levels of people who can be categorised as digital literacy experts. These indicators include Internet search, hypertextual navigation, content evaluation and assembly knowledge. The success of digital literacy in the classroom is often associated with the key role of the lecturer as a facilitator in the teaching and learning process (Kurniawati et al., 2018). This is because digital literacy can affect the output of learning outcomes on student academic achievement (Yustika & Iswati, 2020).

Creating content (Siagian & Yuliarti, 2021), organising and sharing content, reusing content, filtering and selecting material and self-broadcasting in social networks are important elements in the world of digital literacy (Sagitaa et al., 2019). A lecturer, in creating content for lectures, must be ensured not only to be read or listened to by students, but also include instructions or assignments to listen and recall (ask to remember), follow the tutorial examples shown, practice the skills or knowledge they have learned (ask to demonstrate) and create it in different situations and conditions (Ridha, 2021).

Online learning during the pandemic has a positive response, and it turns out that there are gaps based on research results. Al-Ramamneh (2021) proves that online learning services are still underutilised practically during the COVID-19 pandemic, so students experience learning difficulties and stress (du Plessis, 2019). Similar findings also came from Annur and Hermansyah (2020) that some Indonesian students experience difficulties, which are classified into technical difficulties, difficulties in adapting and unpreparedness of teachers. Similar findings also come from Hermanto et al.'s (2021) research results that many students do not enjoy online classes because there are limited opportunities for discussion with educators and the learning system does not help them acquire adequate knowledge and skills.

In addition, the research results of Cahyawati and Gunarto (2021) shows that students still feel hampered in participating in online learning. Students think that their workload is more than that of direct face-to-face learning; they still find it difficult to accept material that is only delivered in text, are still very interested in the presence of lecturers to meet and get material explanations from lecturers. Narratively, students wrote down some of the obstacles they experienced during online learning, namely difficulty in understanding the material, unable to interact directly with lecturers, deadlines for collecting assignments that were too short and being hampered due to unsupported network problems. This is possible because many lecturers only focus on giving assignments and do

not complete them with material and discussion (García-González et al., 2020) and the lack of digital literacy competence possessed by lecturers is an age factor (Saripudin et al., 2021).

Based on the problem, the chancellor also needs to provide various trainings to improve lecturers' technological literacy, such as training on the use of online learning software and preparation of online application-based learning materials (Setyaningsih and Sukono, 2022) applied to students so that there is no overlap. There are four things that make universities produce quality graduates, namely competency-based education, the use of Internet of Things, the use of virtual or augmented reality and the use of Artificial Intelligence (Nastiti & Abdu, 2020). Digital literacy is the most effective step in preparing individuals to adapt, compete (Brata et al., 2022) and survive in the digital era (Mudra, 2020).

From the gaps seen and based on the arguments and previous studies, it is necessary to do a review. The questions for this research are how are students' perceptions of the implementation of lectures during the COVID-19 pandemic? and How is the digital literacy competence of the lecturers?

2. Method

2.1. Research methods

This research is a descriptive study where researchers want to know about social phenomena related to the digital literacy of lecturers in learning during the COVID-19 pandemic. The instrument used in this study was a questionnaire with Likert scale answers. The data obtained were then described, explained and validated based on the data or findings from the research. The main focus of this research is the lecturer's digital literacy in learning.

2.2. Research subject

This research was conducted in the Madrasah Ibtidaiyah Teacher Education Study Programme (PGMI) at state and private Islamic universities. The subjects of this study were Madrasah Ibtidaiyah Teacher Education (PGMI) students; the selection of subjects and locations were carried out randomly based on the distribution of questionnaires spread using Google Forms.

2.3. Data collection technique

Research data were collected based on the type of component to be measured. This research data collection was carried out using a questionnaire with the following stages: 1) distributing data to students; 2) data description; 3) data explanation; and 4) validation of research findings.

2.4. Data analysis technique

The data analysis technique used in this research is descriptive analysis. The data are obtained from the field, and then the researchers analyse, describe and summarise various conditions and situations from the field in the form of questionnaire results. In addition, to strengthen the data obtained, the researchers used interviews as supporting data regarding lecturers' digital literacy. Furthermore, from the questionnaire data and interview results, it can be concluded that the findings were obtained.

3. Results and discussion

This study aims to determine student responses to the use of teaching media by lecturers during the distance learning (PJJ) period. This data was taken from a sample of Madrasah Ibtidaiyah Teacher Education (PGMI) students in Indonesia, at both state Islamic public university (PTKIN) and Islamic private university (PTKIS). The total number of respondents who responded to the

questionnaire that the researchers distributed via Google Forms was 1293 students, of which 947 respondents were from islamic public university (PTKIN) and 346 from islamic private university (PTKIS). Table 2 presents the data of respondents involved in this study:

Table 2. Respondent's university status

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Negeri	947	73.2	73.2	73.2
	Swasta	346	26.7	26.8	100.0
	Total	1293	99.9	100.0	
Missing	System	1	.1		
Total		1294	100.0		

The questions given by the researchers in the questionnaire included How did the lecturer master the use of learning media?; What media were often used as the sources in the distance learning (PJJ) process ?; and What media were used during the assessment? During the distance learning process, it is not only knowledge competence that educators must possess (lecturers), but digital literacy skills must also be mastered.

Table 3. Media controlled by lecturers in distance learning

		Frequency	Percent	Valid percent	Cumulative percent	
Valid	Google Classroom	609	47.1	47.1	47.1	
	Edmodo	11	.9	.9	47.9	
	Zoom	132	10.2	10.2	58.1	
	Google Meet	21	1.6	1.6	59.7	
	WhatsApp (WA)	458	35.4	35.4	95.1	
	Email	14	1.1	1.1	96.2	
	Messenger	1	.1	.1	96.3	
	YouTube	14	1.1	1.1	97.4	
	Microsoft Team	3	.2	.2	97.6	
	Kahoot	6	.5	.5	98.1	
	Quizizz	13	1.0	1.0	99.1	
	Telegram	12	.9	.9	100.0	
	Total		1294	100.0	100.0	

Table 3 presents the results from responses from students who carry out distance learning with lecturers. The results show that most lecturers use Google Classroom in learning, with as many as 609 respondents (47.1%). We know that Google Classroom is an e-learning medium that is relatively easy to use, in which there are several features to share material and provide ratings and comments. Google Classroom is relatively easy to learn for lecturers with low digital literacy because not many features are provided. Google Classroom is asynchronous learning, where e-learning does not require students to meet face-to-face and can be carried out anytime.

Furthermore, learning through WhatsApp groups (WAG) was preferred by 458 respondents (35.4%). WA is one of the social media that is widely used by the world community, one of which is Indonesia. Kominfo Statista data explains that Indonesia ranks third in the world in using WhatsApp. In

June 2021, 84.8 out of 171 active Internet users were in Indonesia. From the data, all lecturers certainly use WhatsApp as a medium to help the learning process. However, only few lecturers use WhatsApp media as a medium for learning.

Zoom is the most used choice by lecturers, with 132 respondents (10.2%). Zoom Meetings have become widely known since the COVID-19 pandemic had spread worldwide. Its attractive and simple features have become one of the widely used platforms in online meeting activities. However, a good Internet network is one of the requirements for Zoom to run smoothly. This may be why lecturers in the regions prefer using Google Classroom and WhatsApp groups in learning. If Google Classroom and WhatsApp are asynchronous learning, then Zoom is included in synchronous learning. Students must be at the same time and in different places. There are still very few lecturers who use Kahoot, Quizzes and YouTube in learning, even though lecturers can vary distance learning with these media so that students do not get bored.

Learning resources are not limited to printed books and electronic books provided by publishers in the current digital era but can be obtained from various sources. The existence of Google Scholar, academia.edu, ResearchGate and Google for education makes it easier for students and lecturers to find reading sources.

Table 4. Choice of learning resources used by lecturers

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Google for Education	479	37.0	37.0	37.0
	Google Scholar	518	40.0	40.1	77.1
	Academia.edu	277	21.4	21.4	98.5
	RINarxiv	18	1.4	1.4	99.9
	ResearchGate	1	.1	.1	100.0
	Total	1293	99.9	100.0	
Missing	System	1	.1		
Total		1294	100.0		

Table 4 shows that during distance learning (PJJ), lecturers use a lot of electronic sources in lectures. Of all the respondents who gave responses, as many as 518 respondents (40%) were directed by lecturers to find learning resources from Google Scholar. Google Scholar is a website provided by Google to index someone's works in the form of journals, books and Google Scholar published online. Therefore, on Google Scholar, students can get scientific learning resources that are relevant to the lecture material. Next, as many as 479 (37%) respondents responded that the lecturer recommended looking for learning resources on Google for Education. Google for Education is comprehensive in scope; students must be able to choose sources that are scientific and by the lecture material. Here the lecturer does not provide specific choices for the choice of electronic learning resources. Academia.edu is a website that provides a variety of scientific articles; the results show that lecturers recommend looking for sources on academia.edu still quite a lot, namely 277 (21.4%) respondents. It is just that one cannot access academia.edu freely; there needs to be approval from the author. Unlike Google Scholar and Google for Education, everyone can freely read and download published scientific articles. Other learning resources, such as RINarxiv and ResearchGate, are still very few lecturers recommend because the authors' analysis of these two sources is still not familiar to most students and lecturers. Assessment in learning is part of the learning process. Educators can make use of the use synchronous and asynchronous media in conducting assessments. Table 5 presents the results from the respondents.

Table 5. Media used by lecturers in conducting assessments

		Frequency	Percent	Valid percent	Cumulative percent
Valid	Email	777	60.0	60.0	60.0
	Google Forms	316	24.4	24.4	84.5
	Video/YouTube	201	15.5	15.5	100.0
	Total	1294	100.0	100.0	

The response given by students is that during distance lectures, lecturers often conduct assessments using three platforms, namely email, Google Forms and Video/YouTube. Of the three platforms, email is often used by lecturers in conducting assessments, namely 777 (60%) respondents. The use of email is the first alternative because it is simple and often used by lecturers who have low and high digital skills. Furthermore, the response from most students was that the assessment carried out by lecturers used Google Forms, namely 316 (24.4%) respondents. Google Forms are easy to access and can be used as surveys or assessments. However, there needs to be a good understanding of using Google Forms because the features provided are pretty complicated if not studied. Finally, YouTube, this social media, is widely known by many people because it can also be used as a medium to earn income apart from being a learning medium. YouTube can have negative implications if parents do not control it, but YouTube can be put to good use.

The use of learning media, electronic learning resources and electronic media in conducting assessments, of course, need good digital literacy and skills. For some lecturers already familiar with the use of email, website and learning management system provided by the campus, there may be no problem in distance learning which demands creativity and innovation in using e-learning. However, for lecturers who are used to face-to-face lectures and printed learning resources, this is certainly a problem because they have to learn and understand first. From the research above, the researchers analysed as a whole that most of the lecturers at Madrasah Ibtidaiyah Teacher Education (PGMI) are technology literate and have good digital literacy. So, at the time of distance learning, they are not a big problem. What needs to be considered is that a small number of lecturers who are not accustomed to using electronic learning (online) need special assistance and training to be accustomed to using it.

The above research results show that the level of digital literacy of PGMI lecturers in Indonesia is in the good category. The results are certainly different from the level of digital literacy of lecturers in Russia, which reached a high of 88% (Liu et al., 2020). Therefore, PGMI lecturers and all lecturers in Indonesia must always learn to improve digital literacy skills in learning in the COVID-19 era. Lecturers and students should be accustomed to having soft skills in managing digital information that includes the act of finding, understanding, evaluating, creating and sharing. Then, students should be able to use digital tools and experience directly in digital literacy development activities such as creating digital content, evaluating online resources, virtually sharing information and avoiding digital plagiarism to maintain the security of accessing online resources (Rinekso et al., 2021).

Learning in the era of pandemic COVID-19 should be carried out through learning assisted by digital technology because digital education will play an essential role in providing affordable, accessible and, at the same time, education will be of high quality (Abrosimova, 2020). The improvement of lecturers' digital literacy must be made continuously with the development of attitudes, technical, cognitive and social lecturers in developing digital learning (Ata & Yildirim, 2019). This is in line with the results of previous studies (Gómez-Trigueros et al., 2019; Kearney & Maakrun, 2020), which show the need to change teaching qualifications to fit the development of technology that integrates appropriately between the educational context with digital learning models in order to recognise the challenges inherent in the development of digital technology.

The research results show that lecturers' mastery in the use of distance learning media is good enough but still needs to be improved again. Learning that only uses Google Classroom, Zoom, WhatsApp and email should be given digital learning innovations that can improve the quality of learning to achieve effective and efficient

learning goals. Of course, higher education institutions must also support this, providing learning technology facilities in initiating academic development (Cutajar, 2019).

Pedagogical and technical competences in using digital technology for lecturers are essential. A management programme with strict quality and continuous improvement becomes critical to the success of online learning and prepares people for various situations, including during the COVID-19 pandemic (Dhawan, 2020). The ability of digital literacy lecturers in creating a digital learning environment is indispensable in the 21st century because the digital learning environment can develop students mentally and allows applying the knowledge gained with perceived lower mental efforts (Melo, 2018). The development of this digital learning environment must be collaborative between lecturers and students. Lecturers and students must have good digital literacy skills, and students must have a high level of trust and learning benefits (Sharp, 2018).

Digital literacy skills among students can be developed through the use of various digital platforms and digital devices to create or evaluate information that can be accounted for (Ayhan, 2017). In addition, critical skills in students' digital literacy are also essential if carried out with hands-on learning approaches and practices, ranging from not promoting critical digital literacy to planned learning activities and spontaneous discussions that encourage critical reflection on digital media (Martinez, 2019).

4. Conclusion

Learning during the pandemic has shown several responses by students related to curriculum planning, implementation, lecture processes and assessment. Of the three aspects of learning, the response of most students is good on average. This shows that learning during the pandemic is carried out remotely, but lecturers still carry out their duties well to prepare, conduct and evaluate lectures. In addition, the level of digital literacy ability of lecturers in Indonesia belongs to the good category. This study recommends that lecturers be more creative in designing and implementing learning using various digital media.

Acknowledgements

The authors express their deepest gratitude to the association of Indonesian PGMI lecturers who assisted in the completion of this research and to the research respondents who collaborated in the implementation of this research.

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