



Primary School Teachers' Digital Literacy: An Analysis on Teachers' Skills in Using Technological Devices

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Abstract: This research aims to analyze teachers' digital literacy in the learning process at public elementary schools in Bengkulu, Indonesia. The focus is on teachers' use of technological devices, especially their proficiency in operating, designing learning media, and utilizing digital media as a learning tool. This study employed qualitative research approach with descriptive type. The subjects were determined based on purposive with education background as the inclusive criteria. The data was collected using interview techniques where researchers were the primary instrument. The obtained data was analyzed through tabulation, coding, and conclusion withdrawal. Results showed that teachers firstly used technological devices as a learning tool due to the Covid-19 pandemic. They learnt to operate various device to transfer learning materials through visual, audio, and audiovisual methods. Teachers generally used smartphones and laptops, in which they can operate from the beginning to the end, including apps operation. Among the apps were Power Point, Canva, and Kinemaster with Zoom, Google Meets, Google Classroom, and WhatsApp as teaching platforms. This illustrates that teachers mastered the device in the learning process.

Keywords: digital literacy, teacher skills, technological devices

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INTRODUCTION

During the pandemic, Indonesia's Ministry of Education, Culture, Research, and Technology established a policy for distance learning (Kemendikbud, 2020). It regulates how learning process carried out remotely without direct interaction between teachers and learners. In so doing, the learning materials are delivered through the media (Muliani et al., 2021; Putra et al., 2020). Distance learning is closely related to e-Learning (Wijayanti & Fauziah, 2020) that utilizes internet networks with connectivity, accessibility, and flexibility to create various learning interactions (Harahap et al., 2017). It can be said that DL relies heavily on technologies to access information and learning resources at anytime and anywhere (Wijaya et al., 2016).

Teachers' lack of digital literacy skills in implementing DL is the main problem today (Putra et al., 2020). Digital literacy refers to individual interest in attitudes and abilities in utilizing communication tools and digital technology to access, manage, analyze, evaluate information, build and develop new knowledge, communicate with others, and be able to participate effectively in society (Agus Susilo, 2013; Gök & Sýlay, 2014). Skills in operating information and communication technology (ICT) are fundamental to one's digital literacy competencies. Those who master digital technology devices generally has digital literacy skills (Sherly et al., 2020). Teachers are expected to have such competencies to think critically, identify and even provide assessments of the truth of the information in learning using e-Learning (König et al., 2020).

Accordingly, the internet of things result in the massive flow of information, making it easier for humans to obtain and disseminate knowledge (Suranto, 2009; Sweller, 2018). This era gave rise to the explosion of information. Ideally, such rapid ICT development should be followed by digital literacy (Sudikan et al., 2015). Both students and teachers require digital literacy to respond to information critically (Abidah et al., 2020). They need to be educated about the rules of the game (Sohibun & Ade, 2017) as the freedom of ICT allows anyone to produce and consume information (Clay Shirky, 2016). Digital literacy is pivotal to bridge useful and correct information as every new technology will affect how information is searched (Asari et al., 2019).

A study by Kumari and Flavia found that the integration of ICT into learning cultivate skills related to creativity and innovation, communication and collaboration, critical thinking, problem-solving, and decision making (Effendy et al., 2020; Rahmawati, 2018). The role of teachers, in this case, is to realize these skills will impact on better generations in the future. At the same time, Murati (2015) shows that teachers must be digital literate in terms of internet search, directional guide (hypertext), evaluation of information content, and knowledge preparation (Puchner, 2003). In big cities, such as Surabaya, teachers' digital literacy is high in all

aspects of competence (Rahayu, 2019).

This present study views a need to investigate teachers' digital literacy in Bengkulu city especially about Teachers' ability to utilize technological devices and Used Applications and Their Constraints. Hence, teachers of primary schools in Bengkulu were chosen to analyze their skills in using technological devices during the learning process. Results of this study aim to illustrate teachers' understandings and strategies in improving their abilities to operate digital devices along with the platforms during the pandemic.

METHODS

This study employed qualitative research with descriptive approach (Yusuf, 2014). The data was collected through observation, interview, and document collection. The data sources were teachers and principals of public elementary schools in Bengkulu, Indonesia. The inclusive criteria were the subjects' educational background.

The steps taken are to arrange instruments in the form of questions and conduct interviews with teachers, in addition to the use of observation sheets to obtain more detailed information. After the data was collected, referring to the Miles and Huberman models, (Hardani. Ustiawaty, 2017), with the steps as follows: a) Data reduction by summarizing, selecting, and focusing on the primary essential things, searching for themes and patterns; b) Data presentation through displaying, describing, and presenting the resulting data in the form of images, graphs, tables, or charts, and; c) Data conclusion/verification through conclusion drawing in the form of descriptions or images of an object that was previously still unclear

According to models above, there are three main steps: to reduce data by choosing and focusing on two main things: the teacher's ability to utilize the technology and its use, and related to what device he used. Data unrelated to this researcher ignored. Then display data, especially related to the types of devices used and their use capabilities. As well as the last researcher concluded, the level of ability of the teacher as well as the classification of the device used. These steps are expected to clarify relationships among variables being studied, in which a causal or interactive relationship, hypothesis, or theory can be established. The validity of this research data uses source triangulation and techniques, Through cross-confirmation to several teachers as well as students. In addition, the data is also confirmed by observation (Kusumastuti & Khoiron, 2019).

RESULT AND DISCUSSION

Teachers' ability to utilize technological devices

This study was conducted from June to August 2021 in Bengkulu. The study subjects were teachers and principals (n=6; 4 females and 2 males) of public elementary schools who organized home learning.

To support the interview results, this study documented teachers' lesson plan, and learning materials in the form of power points and videos. A fifth-grader teacher stated that:

During this pandemic, we carry out learning by maximizing the use of technology, such as smartphones, laptops, PCs. But I mostly use smartphone wit What's App groups, So far, we face no difficulties in using smartphones. Most teachers are young and novice, they are more familiar with technological devices. The only challenge is to find the variety of media models. I often use videos from YouTube, which is quite successful.

The rapid development of technology has forced teachers to master and utilize technology to align with the learners. This level of mastery should be achieved gradually and sustainably, both self-taught and through training given by the ICT experts (Herdiawan, 2021). Therefore, teachers must integrate the effective use of ICT into classrooms besides their ability to teach (Zaim, 2017; Puchner, 2003). Teachers who integrate technology in their learning activities will make learning activities more enjoyable. Students understand learning materials better, which ultimately improve the quality of learning outcomes (Shirley, 2018).

Updated learning patterns are required to change outdated, irrelevant, and conventional learning system. Indonesia's Minister of National Education No. 16 of 2007 has regulated Academic Qualification Standards and Teacher Competence, in which teachers must master four competencies that include pedagogical, professional, individual competence, and social competence. The pedagogical competence urges teachers to use and utilize ICT to benefit learning (Yusrizal et al., 2017). In other words, being digital literate will boost daily learning process, one principal stated that:

Since the pandemic hits, our teachers have started to utilize technology in the learning process. But I see some teachers are not experts in using it. Few months after the pandemic, we made training programs on technological devices in learning. The training invited speakers and experts, such as computer experts from the University of Dehasen, to assist teachers in the use of video and image creation apps through

smartphones. I think the results are quite good as evidenced through teachers' learning media products.

This excerpt showed that teachers can operate technological devices. In addition, they can turn on/off device and choose the correct learning apps. However, teachers can be categorized into two groups where younger teachers are more familiar, and the senior ones faced difficulties (Zaim, 2017). To resolve this, the school offers more training to upgrade teachers' ability in using technological devices, especially laptops and smartphones (Zihan-Anju, 2021). Observation Data adopted from (Heinich et al., 2014) models are showed below.

Table 1. Activity of Teacher

Activity	Yes	No
Teachers have laptops	✓	
Teachers have smartphones	✓	
Teachers use laptops	✓	
Teachers can make Power Point presentation	✓	
Teachers use Zoom		✓
Teachers craft learning media using apps		✓
Teachers design art for teaching		✓
Teachers join the training	✓	

The observation table shows that most primary school teachers in Bengkulu faced difficulty in using technology to support the teaching and learning process. Their knowledge was limited as they did not improve their knowledge when pursuing the teaching profession.

In this study, the planning stage shows that teachers have utilized ICT quite well. It is seen that more than 80% of teachers fit the criteria of utilizing ICT in the lesson plan. In example, teachers navigated through the internet to browse teaching materials on several websites. They exchange information with colleagues through What's App in completing their work. However, this planning process is not directly proportional to the evaluation process.

This pandemic challenged me in explaining the subject matter. I felt burnouts, but I was not allowed to conduct face-to-face learning. When I tried to find learning materials on the internet, I found a video on YouTube that relates to my subject, so I used that to facilitate the learning process.

In the early days of the pandemic, I used voice notes in What's App to explain the material, but the student did not response was meager. Some even had the chance to listen to my voice note after several days, maybe because they must take turns using the smartphones. I changed my knowledge transfer method to PPT, and I found it ran better,

Aside from the impact home learning, primary school teachers in Bengkulu stated that electronic media could develop the potential use of participants' senses to the maximum level. By so doing, students' learning outcomes will increase as media combine various elements such as text, images, and animation (Ruiz et al., 2006). Multimedia presentations are considered to accommodate all these elements.

Used Applications and Their Constraints

I am not an expert in technology. I initially used What's App for the learning process. I give instructions and explanations on the material, but later I found this tiring and ineffective, so I used video and PPT.

This study shows that teachers utilize various applications and digital platforms in the learning process. Among the services are Google Classroom, Edmodo, Teacher Room, Your School, Smart Classroom, Zenius, Google Suite for Education, Microsoft Office 365 for Education (Daheri et al., 2020). In addition to these platforms, other digital platforms can be used, including What's App Group (WAG), Google Classroom (GC), Edmodo, and Zoom (Assidiqi & Sumarni, 2020).

I only know WA; it is the only application I use in learning. I sometimes use Google Classroom because the school made me do it. But I use WA most often,"
For assessment and evaluation, I use Google Classroom and Google Form, but I use WA again to explain,

These excerpts show that teachers used three different platforms, those are, What's App Group (WAG), Google Classroom, Google Form, and Google Meet. In particular, WAG was chosen because it was simpler and

easier to use. Teachers can send various things in WAG, including learning materials, evaluation questions, and explanations through video or voice notes. WAG can also facilitate two-way learning through video call services where teachers and students meet face-to-face. Previous research shows that most teachers used WA to conduct online learning ([Herdiawan, 2021](#)).

I initially used WA and created WAG. But I recently tried to use Zoom and I found it more effective. However, the internet network and data plan were main obstacles.

In addition to WAG, Zoom Cloud meeting is second most-used platform. Zoom offers classroom-like experiences where teachers and students can interact real time. This study documents that 20% research subjects used this application. This number is also due to the limitations of laptops and network requirement.

Teachers themselves no longer had problems with Zoom as they have laptops. However, some teachers are not proficient in using the available applications. As for students, they have to take turns using the laptops with their parents.

This present study found that various Google facilities was used by primary school teachers in Bengkulu. Among the facilities were Google Classroom, Google Form, and Google Meet. These apps were built and supported by Google to make it easier for teachers and learners to carry out learning. They were shown to help students learnt efficiently where information from teachers were conveyed accurately.

Primary school teachers in Bengkulu mostly used What's App as stated by the following participants:

I initially use What's App to explain the learning materials. After that, we switch to virtual meeting through Google Classroom and Google Meet. Meanwhile, the Google Forms was used for assessment,

Based on the data documentation, teachers rarely utilized blogs, emails, and websites during learning. This is contradictory to the fact that teachers must know how to improve students' interest through assignments using multiple platforms. In the practice, teachers' use of internet was limited to browsing activities, finding additional material to deliver, and looking for other information.

We rarely used email because we didn't feel like we needed it. We also rarely used websites. We have school website that only hosts school profile and activities, I never use email because the features are minimal. Students prefer What's App and Google Classroom. I used website to find teaching materials to add what's already in the book,

Online learning requires personal responsibility, independence, and perseverance ([Novita & Hutasuhut, 2020](#)). Independent learners must download and read the material, answer quizzes/questions, and submit tasks independently ([Suartama et al., 2019](#)). In this case, online learning capabilities will provide better student performance than conventional learning because they are knowledgeable and technologically literate ([Yuan & Powell, 2018](#)).

Online learning offers various learning media such as video connected to YouTube, video conference media, scientific journal media, or digitally systemized topics ([Husain, 2014](#)). It is noteworthy that advances in learning technology must be supported by adequate facilities and infrastructure ([Huang, 2002](#)). Especially in the countryside, schools need the most support to improve network. Online learning will work well if internet access can reach all regions where various levels of society can enjoy online education.

CONCLUSION

This study found that the Covid-19 pandemic requires teachers to do distance learning with various learning models and technicalities. As a solution, primary school in Bengkulu asked teachers to use technology in the learning process. In Bengkulu, the teaching materials were designed using various visual, audio, and audiovisual applications. Teachers generally used smartphones and laptops that they were familiar with. The most used applications to design learning materials are Microsoft Office, especially PowerPoint, Canva, and Kine Master. To deliver teaching materials, teachers used Zoom, Google Meets, Google Classroom, and What's App.

REFERENCES

- Abidah, A., Hidaayatullaah, H. N., Simamora, R. M., Fehabutar, D., & Mutakinati, L. (2020). The Impact of Covid-19 to Indonesian Education and Its Relation to the Philosophy of "Merdeka Belajar." *Studies in Philosophy of Science and Education*, 1(1), 38–49.
- Agus Susilo, F. (2013). Peningkatan Efektivitas Pada Proses Pembelajaran. *MATHEdunesa*, 2(1).

- Asari, A., Kurniawan, T., Ansor, S., Bagus, A., Rahma, N., & Malang, U. N. (2019). Kompetensi Literasi Digital Bagi Guru Dan Pelajar DI. *Bibliotika: Jurnal Kajian Perpustakaan Dan Informasi*, 3(2), 98–104.
- Assidiqi, M. H., & Sumarni, W. (2020). Pemanfaatan Platform Digital di Masa Pandemi Covid-19. *Prosiding Seminar Nasional Pascasarjana*, 298–303. <https://proceeding.unnes.ac.id/index.php/snpasca/article/download/601/519>
- Clay Shirky. (2016). The Political Power of Social Media: Technology, the Public Sphere, and Political Change. *Council on Foreign Relations*, 4(5), 28–41.
- Daheri, M., Juliana, J., Deriwanto, D., & Amda, A. D. (2020). Efektifitas WhatsApp sebagai Media Belajar Daring. *Jurnal Basicedu*, 4(4), 775–783.
- Effendy, A. A., Sudarso, A. P., Nurhadi, A., Arifianto, C. F., & Kartono. (2020). Peningkatan Profesionalisme Guru Dan Pengembangan Sdm Dalam Menghadapi Era Revolusi Industri 4.0 Pada Guru Smk Mulia Buana Parung Panjang Bogor. *Abdi Laksana: Jurnal Pengabdian Kepada Masyarakat*, 1(2), 198–204. <http://openjournal.unpam.ac.id/index.php/JAL/article/download/4969/3587>
- Gök, T., & Sýlay, I. (2014). The Effects of Problem Solving Strategies on Students' Achievement, Attitude and Motivation. *Latin-American Journal of Physics Education*, 4(1).
- Harahap, M. H., Hasibuan, N. I., Cerah, A., & Azis, K. (2017). Pengembangan Program Literasi Sekolah Untuk Meningkatkan Kualitas Pendidikan Dasar Tingkat Sekolah Menengah Pertama Negeri di Kota Medan. *Jurnal Pembangunan Perkotaan*, 5(2), 115–128. <http://ejpp.balitbang.pemkomedan.go.id/index.php/JPP/article/download/18/10>
- Hardani. Ustiawaty, J. A. H. (2017). *Metode Penelitian Kualitatif dan Kuantitatif* (Issue April).
- Heinich, Molenda, M., R., & Smaldino, S. E. (2014). *Instructional Media and Technologies for Learning*. Pearson Education.
- Herdiawan, R. D. (2021). Platform Pembelajaran Daring Dalam Masa Pandemi Covid 19 Pada Perkuliahan Teaching Internship. *Prosiding Seminar Nasional Pendidikan*, 29–32. <http://prosiding.unma.ac.id/index.php/semnasfkip/article/view/556>
- Huang, H. (2002). Toward constructivism for adult learners in online learning environments. *British Journal of Educational Technology*, 33(1), 27–37.
- Husain, C. (2014). Pemanfaatan teknologi informasi dan komunikasi dalam pembelajaran SMA YPPGI Nabire. *Jurnal Teknologi Dan Rekayasa*, 2(1), 184–192. <https://uswim.e-journal.id/fateksa/article/view/38>
- Kemendikbud. (2020, August). Penyesuaian Kebijakan Pembelajaran di Masa Pandemi COVID-19. <https://Covid19.Go.Id>.
- König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany. *European Journal of Teacher Education*, 43(4), 608–622.
- Kusumastuti, A., & Khoiron, A. M. (2019). *Metode Penelitian Kualitatif*. Lembaga Pendidikan Sukarno Pressindo (LPSP).
- Muliani, M., Novita, N., Marhami, M., & Sakdiah, H. (2021). Pengembangan Kompetensi Literasi Digital Pada Guru Untuk Optimalisasi Pembelajaran Jarak Jauh (PJJ). *Matappa: Jurnal Pengabdian Kepada Masyarakat*, 4(1), 51–58.
- Murati, R. (2015). The Role of the Teacher in the Educational Process. *The Online Journal of New Horizon in Education*, 5(2), 75–78.
- Novita, Diana; Hutasuht, A. R. (2020). Plus Minus Penggunaan Aplikasi-Aplikasi Pembelajaran Daring Selama Pandemi Covid-19. *Unimed Medan*, June, 1–11.
- Puchner, L. D. (2003). Children Teaching for Learning: What Happens When Children Teach Others in the Classroom. *Annual Meeting of the American Educational Research Association*, 3(3), 16.
- Putria, H., Maula, L. H., & Uswatun, D. A. (2020). Analisis Proses Pembelajaran dalam Jaringan (DARING) Masa Pandemi Covid- 19 Pada Guru Sekolah Dasar. *Jurnal Basicedu*, 4(4), 861–870.
- Rahayu, L. (2019). Penguatan Literasi Baru pada Guru Madrasah Ibtidaiyah dalam Menjawab Tantangan Era Revolusi Industri 4.0. *JRTIE: Journal of Research and Thought of Islamic Education*, 3(2), 23.

- Rahmawati, N. I. (2018). Pemanfaatan ICT dalam Meningkatkan Kemampuan Literasi Matematika. *Prisma*, 1, 381. <https://journal.unnes.ac.id/sju/index.php/prisma/article/view/19606/9529>
- Ruiz, J. G., Mintzer, M. J., & Leipzig, R. M. (2006). The impact of e-learning in medical education. *Academic Medicine*, 81(3), 207–212.
- Sherly, Dharma, E., & Sihombing, H. B. (2020). Merdeka belajar: kajian literatur. *UrbanGreen Conference Proceeding Library*, 1, 183–190.
- Shirley, T. A. (2018). School of Global Innovation and Leadership Business 162 International Management Section. *International Journal Of Whole Schooling*, 5(2). <http://www.sjsu.edu/people/thomas.shirley/>
- Sohibun, S., & Ade, F. Y. (2017). Pengembangan Media Pembelajaran Berbasis Virtual Class Berbantuan Google Drive. *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah*, 2(2), 121.
- Suartama, I. K., Putu, L., Mahadewi, P., Gede, D., Divayana, H., & Yunus, M. (2019). ICARE Approach for Designing Online Learning Module Based on LMS. *International Journal of Community Service Learning*, 7(3).
- Sudikan, S. Y., Diplan, Muhsyanur, Putra, C. A., & Setiawan, A. (2015). Kapita Selekta Metodologi Penelitian. *Prosiding Seminar Nasional Dan Workshop Metodologi Penelitian Pendidikan*, 3(1), 103–111.
- Suranto, B. (2009). VIRTUAL Classroom: Strategi Pembelajaran Berbasis synchronous e-learning. *Seminar Nasional Aplikasi Teknologi Informasi (SNATI)*, 2009(Snati), 78–86.
- Sweller, J. (2018). Critique: On the Limited Evidence for the Effectiveness of Teaching General Problem-Solving Strategies. *National Council of Teachers of Mathematics (NCTM)*, 21(411–411).
- Wijaya, E. Y., Sudjimat, D. A., & Nyoto, A. (2016). Transformasi Pendidikan Abad 21 Sebagai Tuntutan. *Jurnal Pendidikan*, 1(1), 263–278. <http://repository.unikama.ac.id/840/32/263-278> Transformasi Pendidikan Abad 21 Sebagai Tuntutan Pengembangan Sumber Daya Manusia di Era Global .pdf. diakses pada; hari/tgl; sabtu, 3 November 2018. jam; 00:26, wib.
- Wijayanti, R. M., & Fauziah, P. Y. (2020). Perspektif dan Peran Orangtua dalam Program PJJ Masa Pandemi Covid-19 di PAUD. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 5(2), 1304–1312.
- Yuan, L., & Powell, S. (2018). MOOCs and Open Education: Implications for Higher Education. *JISC Cetis*, 6(5), 1–29.
- Yusrizal, Intan Safiah, & Nurhaidah Nurhaidah. (2017). Kompetensi Guru dalam Memanfaatkan Media Pembelajaran Berbasis Teknologi Informasi dan Komunikasi (TIK) di SD Negeri 16 Banda Aceh. *Jurnal Ilmiah Pendidikan Guru Sekolah Dasar*, 2(April), 126–134.
- Yusuf, M. (2014). *Metode Penelitian: Kuantitatif, Kualitatif, dan Penelitian Gabungan* (1st ed.). Kencana.
- Zaim, M. (2017). Implementing Scientific Approach to Teach English at Senior High School in Indonesia. *Asian Social Science*, 13(2), 33.
- Zihan-Anju, S. P. (2021). Effectiveness of Online Learning Outcomes of Student Mathematics During the Covid-19 Pandemic Period. *Wiley Online Library*, 2(January), 11. <https://www.researchgate.net/publication/348080633>