

Teaching with Technology during COVID-19 Pandemic: An Interview Study with Teachers in Indonesia

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Research Article

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This paper reports on an interview study with eight secondary school teachers in Indonesia regarding their experiences of teaching with technology during the COVID-19 pandemic. Employing semistructured interview questions and geared under a qualitative research approach, the study probes explicitly into (1) the availability of technology access at home, (2) teachers' difficulties in teaching online, (3) teachers' ability to adapt during online teaching, and (4) teachers' experiences of teaching with technology. Findings from the study suggest insights into the impact of forced changes in teaching that could have implications for the professionalization of teacher education in terms of digitalization. The interview analysis informs that the participating teachers negotiated efforts in online teaching during the COVID-19 pandemic using technology vis a vis with the challenges of an ever-changing era. Teachers were baffled with explaining lessons in details during the online teaching and knowing which students have understood or not. The study reveals that learning is mainly dependent on the Internet connection as many teachers suddenly lose their connection when they are teaching.

1. Introduction

Since the outbreak of the coronavirus disease 2019 (COVID-19) in Wuhan city, Hubei province, China, in early December 2019, the World Health Organization (WHO) has warned that COVID-19 is up to 30 times deadlier than seasonal influenza and at least ten times more contagious than SARS [1]. Therefore, WHO declared an international public health emergency on January 30, 2020. Because of the perceived disease risk, many governments have implemented various protective measures [2]. The COVID-19 pandemic has infected almost every country, including Indonesia [3, 4]. Moreover, it impacts many aspects of life, particularly the educational system [5]. The COVID-19 pandemic is causing educational disruptions worldwide, and educational

institutions have used various types of online distance learning to fill the void [6, 7].

In recent times, the pandemic has significantly impacted education [5]. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) reported in March 2020 that massive school closures had affected 87% of the world's students—more than 1.5 billion students in 165 countries [8]. Because of this pandemic, many educators have been forced to teach online classes, necessitating opportunities to reshape education, teacher education, and educational institutions [9, 10]. Distance learning advice published following the spread of the coronavirus will assist teachers in using this learning approach to minimize the impact of school closures on academic progress [11]. Distance education addresses geographic distance and other

factors that prevent students from attending in-person classes [12–16]. Unfortunately, due to a lack of training in online-based learning, some teachers and students are having difficulty. Based on previous flu pandemics, it has been suggested that outbreaks are likely to continue and that governments should brace themselves for possible periodic relapse of the disease over the next two years [17]. As a result, distance learning is likely to continue whenever social distancing measures are implemented. It is critical to understand how distance learning is used to explain how to improve student learning [18, 19].

The government expressly encourages or anticipates teachers having direct online contact with their students. Synchronous learning activities occur via live video and audio conferencing, with real-time feedback [12, 20]. Teachers are expected to provide students with materials and assignments via online media, both visually and audibly. Email is the most common form of online communication. Web-based platforms, scheduled work hours, phone calls, and work-from-home guidelines are some of the other options [21, 22]. Students will then work independently or collaborate with their parents, seeking assistance from teachers during business hours if they have questions [23]. Teachers take on the role of “advisers,” with whom they communicate via video chat or phone [23–25]. Uneven implementation is exacerbated by inconsistent ownership or access to technology [26, 27]. However, there are advantages to using media, such as gaining new knowledge and increasing opportunities for social contact [28–30].

Although electronic learning has long been promoted in the education sector [31, 32], this is the first time that it has been used in an extended period during the COVID-19 pandemic. According to our preliminary observation, most kindergartens and primary schools rapidly adapt their curricula by offering online learning to help children learn. Online learning must engage students in intuitive interactions, support social learning, provide active facilitation, offer learning support and feedback, and use appropriate technologies to enhance the experience to be effective [33, 34].

Previous studies have investigated how technology frames professional learning for students and educators [35, 36] or the use of online tools for personal teaching and learning [21, 37, 38]. Most parents struggle to gain access to technology and the Internet. According to the Indonesian Internet Service Providers Association (APJII) data, Indonesia has 143.26 million Internet users, or approximately 55% of the population [39]. In other words, 45 percent of Indonesia’s total population lacks Internet access. Students who cannot access the Internet at home sit outside the business with free WiFi to complete their homework [40–42].

Several other previous studies have also discussed the challenges and opportunities of teachers teaching remotely and experiencing a lot of time pressure and increased workload during the COVID-19 pandemic. For instance, Scarpellini et al. [43] found that if students lack adequate home access to appropriate Internet devices for learning activities or if online learning is ineffective, their academic development may be affected. Additionally, Clark et al. [44] reported that students who received online lesson recordings from

higher-quality external teachers performed better on tests than students who received lesson recordings from teachers at their schools. Moreover, Francom et al. [45] revealed that teachers experienced various challenges during the COVID-19 pandemic, including difficulties involving students and parents, a lack of school/regional rules, and issues with Internet connection and students’ computers. Investigating primary school teachers’ perceptions of online teaching during COVID-19, Aliyyah et al.’s Aliyyah et al. [46] study unpacked four main themes: instructional strategies, challenges, support, and motivation of teachers. The findings showcase the empirical fact that online learning success in Indonesia is dependent on various contextual factors that support each other. Atmojo and Nugroho Atmojo and Nugroho [47] explore the enactment of online learning in English classrooms and how 16 EFL teachers navigate the challenges in their practice. Anchored by semistructured interviews, the study revealed that the participants faced multiple challenges in teaching online ranging from students and parents’ minimal involvement to lack of preparation and planning.

Given the extensive studies of teachers’ teaching enactment during the pandemic, unfortunately, Indonesian teachers’ teaching experiences with technology during the COVID-19 pandemic have not been widely studied, particularly in the northern area of Indonesia (except for [46, 47]). Thus, in this paper, we examine teachers’ experiences of teaching with technology in the secondary schooling sector during the COVID-19 pandemic. The current study’s findings provide an alternative to address the research gaps using a sample of senior high school teachers in Asahan, North Sumatera, Indonesia. In addition, this research contributes to the field of education through teaching experiences gained from experienced teachers to serve as lessons learned for future teacher candidates.

2. Theoretical Frameworks

The global COVID-19 pandemic has spread worldwide, affecting many aspects of life, particularly the educational system [5]. Teachers are required to prepare for education necessities, decisions, choices, and adaptations to meet student expectations, teacher education requirements, and the conditions under which universities and schools operate [48, 49]. Because of the COVID-19 pandemic, many educators have been forced to teach online classes, necessitating opportunities to reshape education, teacher education, and educational institutions [9]. As a result, the face-to-face teaching and learning process must be modified to accommodate the e-learning environment. In practice, e-teaching and learning activities are conducted virtually via Google Classes, WhatsApp groups, the Moodle platform, and Zoom meetings [50]. As a result, all schools and universities in Indonesia are currently conducting online learning as an alternative method of dealing with the pandemic situation.

Since the short transition period from regular teaching to distance teaching, there is an urgent need for teacher professionalization in terms of digitalization. However, technology adaptation has become a goal for international

educational institutions [51, 52]. Teachers are generally unprepared to incorporate digital teaching techniques into their curricula [53, 54], and their support system is not yet fully prepared. Teachers are burdened because they do not always have the social-emotional skills to deal with such situations [55].

Aside from the teachers' lack of preparedness in implementing online learning with such a short transition period. A teacher must maintain their professional status. The teacher's perception of technology is the determining factor in teacher professionalization in incorporating technology. According to Blignaut et al. [56], to fully engage with information and communication technology/ICT-rich education, teachers must adopt a lifelong learning attitude. In general, technology adoption necessitates an open mind. The technology acceptance model (TAM) by Venkatesh and Davis is a model that can be used to map this attitude. This model addresses two beliefs: the application has perceived usefulness and ease of use. This model can predict teacher attitudes or behavior when implementing new technologies [57]. TAM is used to establish a theoretical framework for the attitude-intention-behavior link. TAM has empirical backing due to its reliability and cost effectiveness in predicting technological acceptance and adoption. According to TAM, an individual's ability to perform a given behavior is determined by their behavioral intention to undertake that behavior. TAM is used to predict an individual's or organization's chances of adopting new technology [58]. This model is based on the theory of reasoned action, which states that one's purpose governs conduct to take the step, attitudes about the move, and societal pressure to act [59]. TAM shows that future technology use may be predicted by applying a model to the initial use of the technology [60].

The present study explored Indonesian teachers' teaching experiences with technology during the COVID-19 pandemic. In particular, the objectives of this study have been divided into four points, including (1) the availability of technology access at home, (2) teachers' difficulties in teaching online, (3) teachers' ability to adapt during online teaching, and (4) teachers' experiences of teaching with technology. The results of this study shed light on the impact of forced changes in teaching and could have implications for the professionalization of teacher education in terms of digitalization.

3. Method

3.1. Design. The present study employed a qualitative research approach with semistructured interview as the design [61]. Participants involved were eight teachers teaching in secondary schooling sectors in Asahan Regency, the province of North Sumatra, Indonesia. It explores the teachers' shared voices on their experiences in teaching with technology during the COVID-19 pandemic. As Kvåle and Bondevik Kvåle and Bondevik [62] argue, interviews allow researchers to explore participants' activities, experiences, and perspectives in their language. Interviews were used as a guide to explore information related to the background

of research participants, academic, cultural, and psychological experiences. To detail participants' experiences, Creswell [63] suggests eight procedures in an interview session: (1) identifying the participants based on the selected sampling procedure, (2) determining the type of interview to be conducted and what information is relevant in answering the research questions, (3) preparing an appropriate recording device, such as a microphone for the interviewer and participant. A microphone should be sensitive enough to record conversations, especially when the room does not have a decent acoustic structure and there are many parties to record, (4) checking the condition of the recording device, for example, the battery. If recording starts, the recorder button has been pressed correctly, (5) developing an interview protocol, approximately four to five pages long with about five open-ended questions, and leaving sufficient space between questions to record responses from participants' comments, (6) deciding on a place to conduct the interview. If possible, the room is quiet, with no distractions and comfortable for participants. Ideally, researchers and the participants sit opposite the recorder in between to record both voices properly. This position also made it easy for researchers to record participants' nonverbal expressions, such as laughing, patting the forehead, etc., (7) giving informed consent to potential participants, and (8) the interview questions being elaborated based on participants' responses.

3.2. Participant Recruitment. Initially, 15 teachers who teach at secondary schooling sectors in Asahan Regency were randomly selected to participate in the study via WhatsApp message. However, 7 teachers withdrew and 8 were willing to participate. Before the study commencement, we explained the research objectives, methods, and possible risks experienced by the participants [64]. The teachers involved in this study expressed their willingness to participate in a series of interviews to share lived experiences about teaching with technology during the COVID-19 pandemic. Participants' names were kept confidential [65]. Table 1 shows participants' demographic information.

3.3. Research Procedure. The interview method was chosen as a design to answer the research questions. Interview activities were conducted face to face and through video calls from the WhatsApp application. Video call interviews were conducted for teachers with long distances. At the outset, the purpose of the study was explained to the participants and they were also asked about their willingness to participate in the project. After the participants agreed on their desire, we began addressing questions about their teaching experiences with technology during the COVID-19 pandemic. The interview sessions were done around 10–15 minutes for one participant and were recorded using a smartphone. The interview data were collected and copied into a file for easy identification and classification.

3.4. Data Collection. Data collection techniques were carried out through interviews conducted via WhatsApp video calls covering teachers' teaching experiences with technology

TABLE 1: Participants' demographic information.

Participants	Sex	School	Field of study	Age
Kha	Woman	School A	English	29
Sho	Man	School A	Mathematics	35
Yuy	Woman	School A	Sociology	28
Fit	Man	School B	Indonesian	30
Yul	Woman	School B	Mathematics	26
Suh	Man	School B	Physics and sports science education	34
Pri	Woman	School C	Economy	32
Nur	Woman	School C	History	30
Fir	Woman	School C	Mathematics	29
Fet	Woman	School D	Mathematics	38
Asr	Man	School D	Indonesian	36
Dat	Woman	School D	English	39

during the COVID-19 pandemic. Interview questions include what problems the teachers face during the online teaching, solutions, and roles in solving these problems and how far the level of achievement of learning targets in each meeting. In general, the data were classified into four themed findings, namely, (1) the availability of access to technology at home, (2) the difficulty of teachers in teaching online, (3) the ability of teachers to adapt, and (4) teachers' experiences of teaching with technology. Data collection through interviews conducted through video calls contributes as an interview method that can be applied during the COVID-19 pandemic, which is different from the traditional interview method shown in person. This method through videocalls can also ¹ carried out as a form of research that continues to strive to prevent the spread of the COVID-19.

3.5. Data Analysis. The collected data were analyzed using thematic content analysis [66]. As a flexible and valuable research tool, thematic analysis has been suggested to produce rich and detailed yet complex data reports [67]. The thematic analysis involves locating and identifying common threads that run across an interview or set of interviews [68]. This thematic approach is aimed at understanding "what is being told," not the structure of the story, and at identifying problems and experiences based on predetermined themes. The analysis focuses on reading the interview transcripts repeatedly to understand the meaning and discourse of the storied experiences. Then, the transcripts were coded according to the themes and subthemes. In detail, the interview data analysis procedure follows Widodo's Widodo [65] analytical method in the qualitative approach, which begins with transcribing the results of the interview with the following process: (1) listening to interview data recorded repeatedly to find the themes or important points needed, (2) writing interview transcripts in the suitable format for coding, sorting, and classifying important data easy, (3) interpreting interview data and every word and sentence conveyed by the participant, in the forms of opinions viewpoints (inner voices) of the participants, and (4) producing reliable data by providing opportunities for participants to provide feedback on the results of data interpre-

tation. This is important because the participants are the data source, so the participants' voices must be conveyed correctly. Feedback was also made by expert researchers who were invited to focus group discussions (Table 2).

4. Findings and Discussion

Findings from the study are detailed into four emerging themes, including (1) availability of access to technology at home, (2) the difficulty of teachers in teaching online, (3) the ability of teachers to adapt, and (4) teachers' experiences of teaching with technology.

4.1. The Availability of Access to Technology at Home. Internet access is used to facilitate distance learning. This is to achieve the predetermined learning goals of the students. Adequate Internet access will affect learning comfort enacted by teachers and students in learning during this COVID-19 period. Among the Internet access that is often used are modems, Wi-Fi, and smartphones (data). This evidence is seen from the interview data with Kha, Sho, and Yuy. They shared that

"Internet access that I use more often is via mobile phone because I usually carry a cellphone everywhere, checking assignments sent by students to WhatsApp or Google Classroom anywhere. After all, the government has provided free internet data for online learning" (Kha#1, WhatsApp Interview, April 27, 2021).

"I use the Wi-Fi provided by the school. So I will focus on sending materials or correcting student assignments at school. Because internet access at my house is not adequate, even though there is data, sometimes the signal is not strong" (Sho#2, WhatsApp Interview, April 27, 2021).

"I use a smartphone with personal data. You could say that my internet access has never been disturbed, it is always stable, making it easier for me to teach, but the problem is that my students don't have smartphones" (Yuy#3, WhatsApp Interview, April 27, 2021).

Most teachers use smartphones as Internet access because almost all teachers have smartphones as a communication tool. Only on a few occasions did the participating

TABLE 2: Sample of thematic data analysis.

Sample	Word encoding	Theme
Kha#1	I use Internet access more often via mobile phone because I usually carry a cellphone everywhere, checking assignments sent by students to WhatsApp or Google Classroom anywhere. After all, the government has provided free internet data for online learning.	Technology access
Yul#4	I have difficulty explaining the material, especially since my field of study is mathematics. In the absence of direct offline (interaction), I cannot know which students already understand or which students only pretend to understand. This causes the completion of random assignments for students who do not understand.	Teacher difficulties
Nur#6	I have to get used to giving learning materials using (learning videos) so that students' level of understanding does not decrease during the COVID-19 pandemic on the material I explain.	Adaptability
Fet#7	As long as I teach during the covid pandemic, students absorb very little of the material acquainted. Because learning online, it is difficult to control students in understanding the knowledge being taught, plus not all students are diligent in following the lessons given. Many students complain because they do not understand the task. Many lazy students to open classes are even more busy opening games (online) and social media. Students are not interested in learning, let alone learning only online from home; this causes learning to be less memorable for students.	Teachers' use of technology

teachers use their laptops. In addition to the ease of use, smartphones also have several advantages in terms of efficiency, such as the small data used compared to laptops [69]. Teachers' limited time using computers/laptops is also related to the teachers' skills in using this media [70]. Almost all teachers are more skilled at using smartphones than computers, while in learning, it is better for the teacher to use a laptop, for example, with the Zoom meeting application. Using a laptop makes it easier for the teachers to explain the materials detailed in Microsoft PowerPoint [71].

4.2. Teachers' Difficulties in Online Teaching. Since the government established social restrictions, almost all schools have enacted online learning. This results in various complexities encountered by teachers in teaching the lessons. Such a situation is depicted in the interview with Fit, Yul, and Suh.

"...unstable internet access is one of the causes of my difficulties in teaching online, this is due to the location of my house, which is located in a remote area" (Fit#4, WhatsApp Interview, April 22, 2021).

"I find it difficult to explain the material, especially my field of study is mathematics. With no direct offline interaction, I can't tell which students already understand or which students only pretend to understand. This leads to random assignments for students who don't understand" (Yul#5, WhatsApp Interview, April 27, 2021).

"My field of study is a field of study that is more practical than theory. I teach sports studies. You can imagine how difficult it is for me to achieve learning goals with online learning methods during this COVID-19 pandemic" (Suh#6, WhatsApp Interview, April 27, 2021).

Teachers complain that online learning is not optimal due to Internet connection barriers that impact changes to the sometimes-erratic assignment collection schedule. Even though teachers are now skilled at using technological tools, Internet connection is still a problem, especially in areas where Internet networks are problematic due to Internet data and geographical location [46, 47]. The teachers' limitations in delivering the material also result in the comprehen-

sion of learning materials. Students who do not understand the material will be limited in asking questions compared to face-to-face learning [72]. Assuredly, this condition reduces the activeness of students in asking questions. Moreover, this is also indeed very difficult for practical lessons. Teachers can only see practice videos sent by their students, which is a constraint [73].

4.3. Teacher's Ability to Adapt during Online Learning. Distance learning implemented by schools during the COVID-19 pandemic is a new experience for teachers. They have experience teaching through a blended learning approach before the pandemic, allowing face-to-face opportunities with students. However, during the quarantine (lockdown), teachers are asked to adapt to online learning fully at a very urgent time [74]. Based on the interviews, teachers need to adapt to students' very minimal Internet access and learning times change so that it is not effective. It is evident in the interview with Pri, Nur, and Fir.

"...if the signal is unstable, then I have to change the study schedule. I will try to do learning when I am in a location that has strong internet access, for example at school" (Pri#7, WhatsApp Interview, April 28, 2021).

"I have to get used to giving learning materials using learning videos so that the level of understanding of students does not decrease during the COVID-19 pandemic, on the material I explain" (Nur#8, WhatsApp Interview, April 28, 2021).

"When I teach online, often the internet connection suddenly goes bad, and students can't hear my voice very well. The alternative that I do when facing a situation like this is to record the online learning activities and then upload them on my YouTube channel so that students can listen to explanations related to my teaching materials anytime and anywhere" (Fir#9, WhatsApp Interview, April 28, 2021).

Teachers feel that the effectiveness and efficiency of online learning are not ideal due to Internet connection barriers that impact schedule changes that are sometimes unpredictable [75, 76]. With a tentative schedule, it is feared that student understanding will also decrease. The teacher

tries to use engaging learning media such as learning videos in delivering the material. This is useful so that students seem to be dealing directly with the teacher.

4.4. Teacher's Experiences of Teaching Using Technology. Technological developments have rapidly advanced, especially in the education sector [77]. This is very beneficial for both teachers and students. Both must learn and adapt to the latest learning technology, especially during the current COVID-19 pandemic. During distance learning, teachers gain a lot of experience and new strategies in delivering materials to achieve learning objectives. In relation to this, Fet, Asr, and Dat contended that

"As long as I teach during the covid pandemic, very little of the material taught is absorbed by students. Because learning online, it is difficult to control students in understanding the knowledge being taught, plus not all students are diligent in following the lessons given. Many students complain because they do not understand the task. Many lazy students to open classes are even more busy opening games (online) and social media. Students are not interested in learning, let alone learning only online from home; this causes learning to be less memorable for students" (Fet#10, WhatsApp Interview, April 28, 2021).

"It is a new experience for me to manage online classes. It becomes interesting with some new patterns and adaptations that require students and me to be better prepared to face the challenges of an ever-changing era" (Asr#11, WhatsApp Interview, April 28, 2021).

"Initially, I was blind in using technology when teaching, such as using Google Classroom and Zoom meetings. Because, before the pandemic hit, even if I had to collect assignments online, I only used WhatsApp groups. But gradually, I started to use technology, especially those two applications; it turns out that their use is not as difficult as I imagined; maybe it was a bit heavy at first. Still, the more you use it, the more interesting it becomes" (Dat#12, WhatsApp Interview, April 28, 2021).

The interview data shows that teachers gradually adapted to learning during the COVID-19 pandemic by using technology to face the ever-changing era's challenges [78]. Empirically, technology cannot be solely used to explain the learning materials presented and teachers do not know which students understand and which do not [79]. With distance learning that uses Internet access, learning is very dependent on signals since many teachers suddenly lose their connection when they are busy teaching. However, some teachers feel that learning becomes more interesting by using technology because the material can only be shared with colleagues and directly stored on smartphones, laptops, or digital accounts such as YouTube.

The external variables, in this case, can be identified using TAM in the way discussed in the previous subdiscussion [57]. For instance, teachers are aware of several devices due to the presence of technology at home. Teachers are also expected to learn and utilize software or applications that they have never used before to develop an attitude toward using them, ultimately resulting in increased intention to use them in the teaching [80].

5. Conclusion and Implications

This present study was designed to explore the experiences of teachers teaching using technology during the COVID-19 pandemic in Asahan Regency, Indonesia. The study specifically looks at (1) the availability of technology access at home, (2) teachers' difficulties in teaching online, (3) teachers' ability to adapt during online teaching, and (4) teachers' experiences of teaching with technology. Findings uncover that Internet access is available and stable for teachers in urban areas but tends to be unstable or indecent for those in rural areas. The teachers gradually adapted to using technology to achieve the predetermined learning goals. Despite these, the participating teachers encountered complexities during the online teaching, such as explaining a lesson in detail and knowing which students have understood the materials. Eventually, it is evident in the present study that with distance learning that uses Internet access, learning is very dependent on Internet signals as many teachers suddenly lose their connection when they are teaching.

The study's findings implicate both theoretical and practical lenses for researchers and practitioners. First, access to technology greatly supports distance learning implemented by the government during the current COVID-19 pandemic. Through good access to technology, learning materials can be fully attained. Due to minimal Internet access, teachers in urban areas are more accessible to convey learning materials than teachers in rural areas. They tend to be less stable for those who live in rural areas. Second, online teaching hinders teachers from monitoring students' learning progress. It is a complex case for teachers who are not accustomed to teaching online and students with minimal facilities in online learning. Thus, policymakers should consider pedagogy training for teachers to carry out online teaching effectively and provide ample facilities for students' online learning. Third, mastery of technology and teachers' adaptation in delivering materials are essential. It is thus imperative for teachers to have a well-performed understanding of effective online pedagogy in their teaching careers.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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