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Elementary teachers's readiness to implement online learning during the covid-19 pandemic

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Abstract: This study reveals the experience and readiness of elementary teachers to carry out online learning during the COVID-19 pandemic. Readiness includes technological, technical, and pedagogical readiness. Internet survey research has been conducted on 203 teachers consisting of 50 male teachers and 153 female teachers. The research instrument consists of two parts. The first part consists of 14 items of teacher teaching experience during the pandemic, one item about the obstacles experienced by teachers, 10 items about the devices used by teachers during the pandemic. The second part consists of 30 items on the technological readiness: technical (17 items) and pedagogical (13 items) of teachers to carry out online learning. The results of the study describe various experiences, obstacles, and the use of various devices in carrying out learning during the pandemic. Technological, technical, and pedagogical readiness of teachers tends to be high where the age of the teacher is significantly correlated with teacher readiness. Another finding is that gender is not a significant factor in teacher readiness.

Keywords: readiness, online learning, COVID-19 pandemic

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INTRODUCTION

The COVID-19 pandemic as a world outbreak declared by WHO (2020) on 11 February 2020 has forced the closure and restrictions on business activities, sports, schools, religion and public services. UNESCO (2020) has determined that alternative education and learning activities are not carried out in schools due to an emergency. As with policies in various countries, the Indonesian government through the Ministry of Education and Culture has stopped activities in schools since March 2020 ((Surat Edaran Kemdikbud RI tentang Pelaksanaan Kebijakan Pendidikan dalam Masa Darurat Penyebaran COVID-19, 2020). The implementation of global social distancing policies, as announced by the WHO as a measure to contain the spread of Covid-19, has forced schools to close their activities, and this has caused an unexpected disruption to traditional teaching and learning methods (Adedoyin & Soykan, 2020). The shift of learning activities in schools to distance learning, and demanding the need for learning technology tools, migration has led to a mandatory change in the attitudes of educational administrators, instructors and students about the importance of online learning (Ribeiro, 2020).

The impact of the COVID-19 pandemic on education is an exciting study. Starkey et al. (2021) summarize three major themes of issues studied by education experts: technology and digital equality, development of emergency response plans, and appreciation of the role of the teacher. Technological and digital inequalities are impacting the way teachers teach, and students learn at home. It can be identified that technological and digital inequalities are correlated with rural-urban disparities Starkey et al. (2021), household socio-economic contexts (Greenhow et al., 2020; Scully et al., 2021), and cultural contexts such as restrictions on girls' access to the Internet (Khlaif et al., 2020).

Two research questions will be answered in this article: (1) how was the experience of teachers in carrying out learning in elementary schools during the COVID-19 pandemic? and (2) how prepared are elementary school teachers to carry out online learning? Since 2020, there have been scientific articles and reports on the experience and readiness of teachers in general, especially elementary school teachers both in Indonesia and in various parts of the world during the COVID-19 pandemic. This article will present the results of a literature review and empirical study on the implementation of learning in elementary schools during the COVID-19 pandemic and the readiness of elementary school teachers to carry out online learning.

Education during the COVID-19 Pandemic

The COVID-19 pandemic has changed the world of education, including how schools organize learning. Despite many efforts to apply technology to education, the emergency situation stemming from the pandemic has shown that the global education system is not ready to face the challenges of implementing online learning or blended learning in schools (Reimers & Schleicher, 2020). Emergency distance learning as a temporary solution has been adopted to reduce the impact of the pandemic on education (Bozkurt & Sharma, 2020). Various recommendations were made to develop an emergency response plan to prepare the education system for the future (Bokayev et al., 2021; Delcker & Ifenthaler, 2020; Ewing & Cooper, 2021; Palau et al., 2021). The types of preparation that can be done are the development of better infrastructure that allows all students to gain access to high technology; develop and support teacher competence in implementing online pedagogical practices; develop relevant student competencies to carry out individual and collaborative learning using digital technology; and the government provides policies and programs to develop teacher professionalism in the process of changing the education system (Starkey et al., 2021).

The level of available technology and the educational context influence pedagogical practice as students learn through instructional videos, interactive online learning,

educational television, and print resources (Starkey et al., 2021). Students with low access to technology and low socio-economic families are less involved in learning (Scully et al., 2021). Students with access to high technology, from high socio-economic families, and possibly also from parents with higher levels of education can better support their children's learning (Bokayev et al., 2021; Greenhow et al., 2020). Digital inequality can magnify educational inequities as formal education moves from school to home in times of crisis (Starkey et al., 2021). However, changes in student education due to the COVID-19 pandemic have led to (1) the emergence of new educational tools; (2) improving the relationship between teachers and families; and (3) the importance of digital equality (Khlaif et al., 2020).

The use of online platforms has developed and is widely used in the world of education. The COVID-19 pandemic has transformed a situation educators have never experienced before, where they are forced to shift from face-to-face to online (or emergency online remote teaching). This situation encourages some people to support changes and even revolutions that need to be continued in education, while others are more careful because they are worried about the impact of equity and social inequality (Bozkurt & Sharma, 2020). issues of inequality and exclusion in education are becoming more impactful and important during and after the Covid-19 pandemic. The challenges and disruptions caused by the closure of schools and universities can be seen as opportunities to learn and reshape traditional educational roles and practices (Assunção Flores & Gago, 2020).

Based on the research results of Oyedotun (2020) in Guyana, there are several challenges faced during the Covid-19 pandemic: (1) resource shortages include inequalities in the ability of teachers and staff to use digital devices, unavailability of computers, and lack of training for teachers and students; (2) weak national infrastructure such as weak internet network at home and electricity; (3) problems in the presentation of learning such as teacher-student interaction, slow completion of work, compromising with time, opportunities to monitor assessments, and malpractice; (4) problems experienced by students such as inflexible students, problems at home and mental health challenges; and (5) cyber security issues. In some ways, this problem is very likely to occur in Indonesia, which has a diversity of access to the internet and diversity demographics. The Indonesian government has provided internet access support by providing internet quota assistance for teachers and students and recommended using School Operational Assistance (SOA) for learning needs during the pandemic (Kemdikbud RI, 2020a, 2020b).

To accommodate the diversity of settings and resources around the world, UNESCO (2020) points out the importance of identifying different strategies for distance education that use high-tech, low-tech, and non-technological approaches in various situations to meet the diverse needs of students. The government must provide digital resources for students and education must include digital resources in the curriculum model. The Indonesian Ministry of Education and Culture has provided and recommended several learning resources platforms for students that teachers can utilize, including *Rumah Belajar* (https://belajar.kemdikbud.go.id), *TV Edukasi* (https://tve.kemdikbud.go.id/live/), online application packages A, B and C (http://setara.kemdikbud.go.id/kesetaraan), and *Guru Berbagi* (http://guruberbagi.kemdikbud.go.id) and several facilities which was developed in collaboration with the Indonesian Ministry of Education and Culture with SEAMOLEC (https://seamolec.org/).

In times of crisis, teachers must use various strategies for learning activities, involve students and carry out evaluations focused on learning in a virtual environment (Khlaif et al., 2020). Jimola & Ofodu (2021) provide several recommendations in this regard: (1) designing a curriculum to accommodate various learning alternatives to actualize educational goals during a crisis; (2) formulating literacy policies that are relevant to needs such as digital literacy to accommodate distance learning needs; (3) education stakeholders must provide various learning channels to assist students in times of crisis or

not; and (4) provide the necessary infrastructure facilities for various distance and online learning channels.

Although it has been developed and practiced since before the COVID-19 pandemic, online learning has other related terms, such as distance learning or remote learning, digital learning, hybrid learning, and blended learning. Online learning has become a general approach to learning during the COVID-19 pandemic in various forms, adapted to the readiness of teachers and students, both in terms of skills and the availability of technological devices. According to Fry (2001), online learning uses the internet and several other important technologies to develop materials for educational purposes, instructional delivery, and program management.

By definition, distance learning is characterized by the time and/or space distance between students and learning resources. While remote learning refers to spatial distance, distance learning considers distance in a different perspective and seeks to explain it through transactional distance (Bozkurt & Sharma, 2020). Distance learning (distance learning) emphasizes on the interaction between different parties and through different channels to make students more involved in the learning process (Riggs, 2020). In this sense, distance learning and emergency remote learning are not the same things. What is currently being done, emergency remote learning should be considered as a temporary solution to immediate problems (Golden, 2021).

Hrastinski (2008) mentions that there are two types of online learning, called asynchronous and synchronous, both of which are becoming known and practiced by teachers for learning and their professional development. In practice, asynchronous elements must be combined with synchronous activities; online students must interact with other students, teachers and their content, with interdependence in cooperative learning and continuous formative feedback (Means et al., 2009). The Indonesian Ministry of Education and Culture has encouraged the provision of learning videos broadcast on national television and the learning portals provided. This is an asynchronous model. In principle, distance education through television has goals such as providing information on the topic of the lesson, summarizing information about the topic, strengthening learning with teaching materials, engaging the eyes and ears through multimodal presentations, and disseminating information about the topic to a broad audience (Fiş Erümit, 2021).

In carrying out online learning, readiness must meet four things: the availability of integrated computer equipment, the environment or facilities, digital and printed learning materials and resources and a learning management system. Learning preparation that must be done includes: (1) determining learning objectives; (2) analyzing student characteristics; (3) prepare learning materials; (4) choosing a learning method; (5) designing learning activities; (6) involving students in classroom learning; (7) selecting learning materials; (8) choosing learning techniques; (9) decide how to assess learning outcomes; (10) designing the learning process; (11) making learning tools; and (12) creating online study groups (Zhao et al., 2020).

Teacher Readiness for Online Learning

There is a clear emphasis on how teachers respond to the pandemic to support their students and continue educate (Starkey et al., 2021). In addition, teachers need to pay attention to and support students' emotions (Palau et al., 2021; Yates et al., 2020). In a pandemic situation, the role of the teacher is felt to be very important. In fact, in a neoliberal global context, teachers are often placed as a problem and often blamed for their shortcomings (de Saxe et al., 2020). For this reason, the experience of teachers when adapting to a pandemic situation and their readiness to prepare alternative learning became the focus of research studies.

The readiness of teachers and the quality of teaching cannot be separated from the institutional context in which the institutional structure and policies are unclear in a crisis.

According to Khlaif (2020), in the early days of the COVID-19 pandemic, schools and teachers were left alone to continue their routine activities. Teachers have difficult experiences, unplanned lessons, ask questions and share ideas, Googling and finding suitable materials, and supporting themselves and their students. However, Al-Awidi & Aldhafeeri (2017) report that teachers are quite ready to implement a digital curriculum both in the readiness component (technical and pedagogical). Teachers identify several factors that hinder their readiness. These factors are related to limited time, knowledge and skills, infrastructure, and technical support.

Technology readiness can be defined as a concept that describes the tendency of people to use technology to achieve goals (Parasuraman, 2000). Readiness relates toteachers' awareness, knowledge of use, perceptions, and attitudes towards their abilities and skills for technology integration and gaining experience in the use of educational technology (Msila, 2015). There are two components of technological readiness: technical and pedagogical readiness. These factors are considered important for any technological innovation in the teaching and learning process (Ng, 2010).

Al-Awidi & Aldhafeeri (2017) mention the factors that influence the readiness of teachers to use technology in education, namely: teacher characteristics, subject matter knowledge, technological considerations, and organizational capacity. Buabeng-Andoh (2012) adds other factors that hinder teachers from integrating technology in their classrooms, such as teachers' technology skills, teacher self-confidence, pedagogical teacher training, inadequate access to information and communication technology (ICT), the structure of the education system, and a limited curriculum. Online teaching requires more technological skills and a different pedagogical approach than face-to-face teaching (Gurley, 2018).

Areas of teacher knowledge that need development know digital technology and what kinds of tasks for online learning; provide clear instructions and how to communicate most effectively; assess learning effectively (Gurley, 2018). In this case, the terms digital literacy and digital competence are known as a conceptual framework for understanding what abilities teachers should have to carry out online learning. Gilster (1997) defined the term of digital literacy ,and a digital competency model was developed by Janssen et al. (2013). Terms such as 'information literacy', 'computer literacy', 'internet literacy', 'media literacy' and 'multi-modal literacy' all associated with the use of digital resources in learning are promoted as components of an inclusive view of digital literacy (Gruszczynska & Pountney, 2013). All these types of literacy are considered relevant in explaining a form of teacher readiness in carrying out online learning.

The International Society for Technology in Education (ISTE) has published standards for educators designed to turn students into empowered learners. In this standard, teachers must have the ability as: learners, leaders, communities, collaborators, designers, facilitators, and analysts (ISTE, 2017). To provide direction on how teachers' ICT competencies should be mastered, UNESCO (2018) has developed The UNESCO ICT Competency Framework for Teachers. The framework contains six aspects: (1) understanding of ICT in education; (2) curriculum and assessment; (3) pedagogy; (4) application of digital skills; (5) organization and management; and (6) teacher's professional learning. These three aspects cover three levels of knowledge: (1) knowledge acquisition; (2) deepening of knowledge, and (3) knowledge creation. The framework is illustrated as **Figure 1**.

It is hoped that such a framework will provide direction in preparing teachers to face the challenges of digital online learning. Such a framework is considered important to describe and then develop literacy and competence to face educational challenges during the COVID-18 pandemic and beyond.

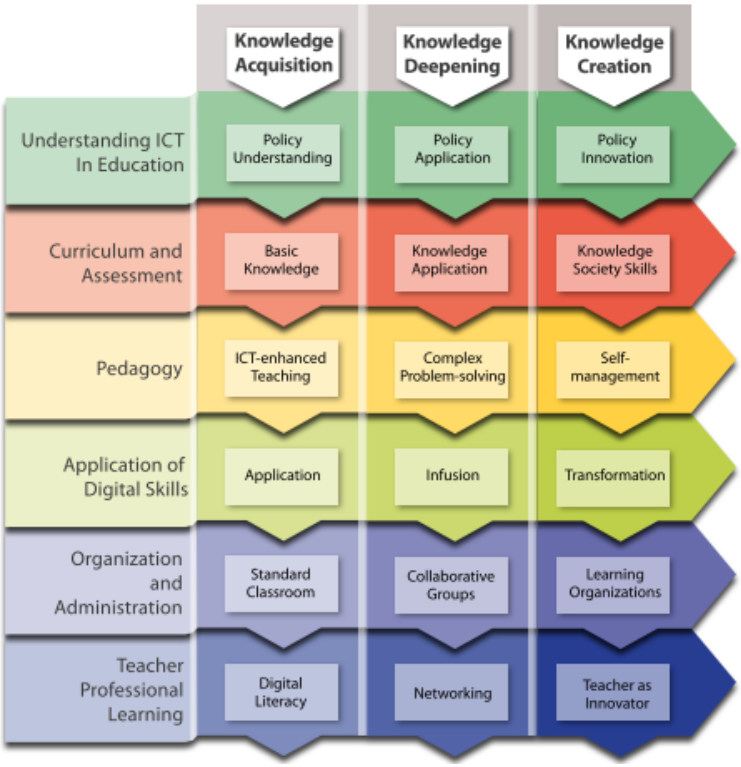

FIGURE 1. *The UNESCO ICT competency framework for teachers* (UNESCO, 2018)

METHOD

Research Design

The design of this research is survey research. The method used is a cross-sectional survey that aims to uncover current issues. The survey method collects data at a certain time to describe the nature of existing conditions or identify standards that can be compared with existing conditions, or determine the relationship that exists between certain events. (Cohen et al., 2018). The survey method was carried out using an Internet Survey which could be conducted via email with a questionnaire as an attachment, or with a hyperlink to a website (Cohen et al., 2018). This study reveals the teachers' experiences in carrying out learning during the COVID-19 pandemic and the readiness of elementary school teachers in carrying out online learning during the COVID-19 pandemic. Teacher's experience data during the COVID-19 pandemic consists of teaching strategies, teaching obstacles, and the use of ICT devices. Meanwhile, teacher readiness data consists of pedagogic readiness (PR) and technical readiness (TR) based on gender and age. The following is a research design used for the teacher readiness variable in carrying out learning during the COVID-19 pandemic.

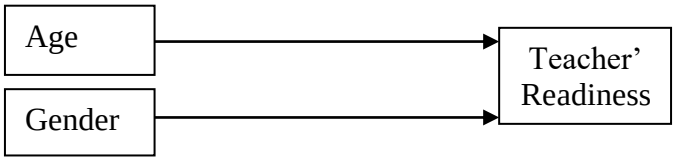

FIGURE 2. *Research design*

Participant

The number of participants in this study amounted to 203 elementary school teachers whose detailed categories are presented below :.

TABLE 1. *Category of research respondents*

Category	n
1. Gender	
Male	*50*
Female	*153*
2. Age	
21-30 years old	125
31-40 years old	67
41-50 years old	8
51-60 years old	3
Total	203

The domicile of 84.73 % of the participants is in the East Priangan Region (Tasikmalaya, Ciamis, Garut, Banjar, Pangandaran), West Java, Indonesia. Respondents obtained the questionnaire via the Google Form link. This participant data is dominated by young teachers by age who also show teaching experience.

These participants were obtained not through random sample selection, but through open access to the questionnaire link provided. That way, participants are considered to have proficiency in using the Google Form tool used for the Internet Survey. Although the sample was not randomly selected, the available data can be used to present descriptive data that describes the characteristics of the group of research participants.

Data Collection Techniques and Instruments

Data was collected through a questionnaire prepared using the Google Form application. The questionnaire contains two main themes, namely the experience of teachers in carrying out learning during the COVID-19 pandemic (Teachers' Experiences Questionnaire) and the readiness of teachers to carry out online learning during the COVID-19 pandemic (Teachers' Teachnological Readiness Qiestionnaire). Supporting data collected in the form of participant demographic data. Data collection was carried out on 7-14 June 2021.

The Teachers' Experiences Questionnaire consisted of three parts: (1) 14 items using five frequency scales (never – very often); (2) one closed item for uncovering teaching obstacles during the COVID-19 pandemic accompanied by one open item still related to learning barriers during the COVID-19 pandemic and (3) 10 items for collecting data on teacher use of devices for learning from it. The reliability of The Teachers' Experiences Questionnaire is high, with a Cronbach's Alpha value of 0.761 (greater than 0.5).

The Teachers' Technological Readiness Qiestionnaire consists of: (1) 17 items related to technical readiness, and (2) 13 items related to pedagogical readiness. These two main questionnaires were developed based on research conducted by Al-Awidi & Aldhafeeri (2017); Msila (2015); Ng (2010); dan Singh & Chan (2014). The reliability of The Teachers' Experiences Questionnaire is high, with a Cronbach's Alpha value of 0.954 (greater than 0.5).

Data Analysis Technique

The data that has been collected is presented descriptively. The author presents data one by one including two main variables, namely the experience of teachers in carrying out learning during the COVID-19 pandemic and the readiness of teachers to carry out online learning. Comparison of data is done descriptively and then analyzed to produce a conclusion in accordance with the research questions posed. Teacher experience data in carrying out learning during the COVID-19 pandemic and teacher readiness to carry out online learning obtained from questionnaires are presented and grouped as follows:

TABLE 2. *Criteria for grouping data based on the mean (M)*

Level	Score Interval (M)	Category
V	4,50 < M ≤ 5,00	Very High
IV	3,50 < M ≤ 4,50	High
III	2,50 < M ≤ 3,50	Moderate
II	1,50 < M ≤ 2,50	Low
I	M ≤ 1,50	Very Low

The data obtained on the readiness of elementary school teachers to carry out online learning during the COVID-19 pandemic was analyzed quantitatively by testing the comparison of technical readiness, pedagogical readiness, and overall readiness (technological readiness) by gender and testing the correlation between teacher age. The statistical test used was the independent sample t-test and the Pearson correlation test using SPSS. In this test, the age used is the age of the teachers one by one.

RESULT

In this section the research results are presented with the stages of data reduction, data presentation and conclusions. The data presented are based on two research questions that have been asked and relevant supporting data.

Experiences of Elementary Teachers Conducting Learning During the COVID-19 Pandemic

Data on the experience of teachers carrying out learning during the COVID-19 pandemic and other supporting activities are presented based on a questionnaire consisting of 14 items using a scale of 5 (ideal score of 70) which is presented as follows:

TABLE 3. *Teacher's experience condcting learning during the covid-19 pandemic*

No.	Survey Items	M	SD
1.	Implement synchronous online learning	3,15	1,11
2.	Implement asynchronous online learning	3,53	1,06
3	Implement limited face-to-face learning in schools	2,98	1,25
4	Implement face-to-face learning at students' homes individually	1,95	1,12
5	Implement face-to-face learning at students' homes in groups	2,94	1,35
6	Prepare a special lesson plan during the Covid-19 Pandemic	3,81	0,93
7	Developing special teaching materials during the Covid-19 Pandemic	3,72	0,90
8	Leveraging online learning resources for students to use	3,95	0,92
9	Implement tests using online applications	3,05	1,35
10	Collect student assignments online	3,61	1,22
11	Communicating online with students via social media or LMS	3,31	1,36
12	Communicating with parents about student learning activities	3,88	0,99
13	Participate in online teacher professional development activities	3,77	0,94
14	Participate in coordination activities or school meetings online	2,78	1,16

The data in **Table 3** shows the diversity of responses given by respondents to each questionnaire item in the average size of each item, and the distribution of answers based on the frequency scale. The average of each item can be grouped based on **Table 2** that there is no response to items that fall into the very high category; seven items are in the high category, six items are in the moderate category; one item in the low category; and there are no items that fall into the deficient category. Teacher experience data during the COVID-19 pandemic is presented for each item to illustrate how the teacher responds analytically in order to draw experiences in detail. Items numbered 4, 5 and 14 show a lower average than the others and moderate and low. This shows that some teachers take

the initiative to conduct face-to-face learning at home. Teachers also tend to carry out official activities face-to-face and online in a more balanced manner.

In the following, information is presented regarding the obstacles experienced by teachers in carrying out learning during the COVID-19 pandemic. The questionnaire section is presented in the form of a checklist, so that participants choose what obstacles are appropriate to their experience, plus open fields to fill in other barriers.

TABLE 4. The teacher' *obstacles experienced in carrying out learning during the covid-19 pandemic*

Obstacles	n	%
Inadequate ICT skills of teachers	44	21,67
Difficulties and limitations of internet access for teachers	61	30,05
Inadequate tools for online learning	86	42,36
Insufficient ICT skills of students	124	61,08
Parents' ICT skills are inadequate	146	71,92
Parent-owned devices for online activities are not sufficient	157	77,34
Difficulties and limitations of internet access for students	155	76,35
Lack of parental participation in guiding student learning activities	127	62,56
Lack of communication between teachers and parents	36	17,73
Parent's economic difficulties that hinder student learning activities	142	69,95
Lack of student access to learning resources	89	43,84

Based on **Table 4**, aspects related to parents' ICT abilities, devices owned, internet access for students, and parental participation show dominance as obstacles experienced by teachers during learning during the COVID-19 pandemic. Several other obstacles obtained from the open-ended questions were still related to the obstacles mentioned in **Table 5**. However, some additional information was obtained that became obstacles for teachers, such as: (1) support for local government policies; (2) uncontrolled learning activities and student behavior; (3) lack of motivation and interest of students to learn, such as students prefer to play games; (4) learning schedules that change frequently; (5) student assessment is not completely objective, including attitude assessment; (6) the delivery of learning materials is not effective; (7) the innovation of learning media that can be used by teachers is still lacking; and (8) the teacher conducts mobile learning, although it is less effective.

The data from the questionnaire also provides information regarding the hardware and software used by teachers in carrying out learning during the COVID-19 pandemic, especially for online learning.

Table 5 presents data on devices commonly used or started by teachers in conducting learning during the COVID-19 pandemic, and can also be used for teacher professional development activities. Several items indicatethe choice of other devices is quite wide, such as applications used by teachers to conduct assessments where as many as 34.98% of respondents use other devices other than those contained in the choice. The researcher does not provide an open field that allows the teacher to mention alternative devices used.

The data in **Table 5** shows that WhatsApp, Youtube, Canva, Kinemaster, Google Form became the software that dominated the use for learning during the COVID-19 pandemic in elementary schools, besides teachers also using Microsoft Office tools such as Ms Word, Ms Excel, Ms Power Point. Teachers use smartphone and Laptop/Notebook devices for online learning activities by utilizing independent internet network access plus internet access services at schools and assistance from the government.

TABLE 5. *Using devices/apps for learning during the covid-19 pandemic*

Survey Items	Device/Apps	%	Device/Apps	%
Applications used for learning during the Covid-19 Pandemic	Zoom Meeting	38,92	Telegram	5,91
	Edmodo	2,96	Instagram	2,46
	WhatsApp	97,54	School LMS	2,46
	Google Classroom	31,03	Cisco Webex	0,49
	Facebook	6,90	Others	10,84
Learning resources recommended by teachers are used by students in learning during the Covid-19 Pandemic	Anchor/podcast	1,97	*Ruang Guru*	23,65
	Cakap	1,48	*Rumah Belajar*	31,53
	Icando	0,49	*Sekolahmu*	3,45
	Kelas Pintar	1,97	Tiktok	1,48
	Kipin School	4,93	Wikipedia	23,15
	Ms Office 365	5,42	Youtube	80,79
	Quipper	4,43	Others	24,14
	Zenius	10,84		
Supporting applications used by teachers and students for document processing	Google Document	31,53	Ms Word	91,63
	Google Sheet	24,14	Ms OneNote	1,97
	Ms Excel	66,50		
Supporting applications that teachers and students use for presentations	Slideshare	8,87	Google Side	7,39
	Ms Power Point	83,74	Canva	27,09
	Slides	12,81	Others	24,63
	Powtoon	3,94		
Supporting applications used by teachers and students to process images	Adobe Photosop	23,65	Powtoon	6,90
	Canva	48,28	Others	31,03
	Paint	38,92	Corel Draw	9,36
Supporting applications used by teachers and students to process audio-video	Anchor	1,48	TikTok	5,42
	Filmora	25,62	Google Podcast	0,49
	Kinemaster	63,05	Video Maker for Youtube	5,42
	Adobe Captive	1,97		
	Powtoon	3,45	Others	36,45
Supporting applications that teachers and students use for assessment	Google Form	67,98	Quizezz	25,62
	Kahoot	8,37	Proprof	0,49
	Liveworksheet	7,88	Others	34,98
Devices used for online learning	Laptop/Notebook	71,92	Liveboard	2,46
	Headset	29,56	Webcam	11,82
	Speaker	14,78	PC /Desktop	8,87
	Smartphone/Tablet	82,76	Lainnya	10,84
Channels owned by teachers used for learning	Anchor/ podcast	1,97	TikTok	1,97
	Blog	8,37	Others	35,96
	Youtube	72,41		
Internet access used by teachers	Paid public internet access (wifi.id etc.)	3,94	Postpaid access (IndoHome etc.)	15,76
	Free public Internet access provided by local government	2,96	Government Aids Prepaid Data Package	49,75
	School Internet Access	46,80	Self Prepaid Data Package	81,28

Elementary Teacher Readiness to Implement Online Learning

To determine teachers readiness in teaching-learning during the COVID-19 pandemic, a questionnaire has been developed for use in internet-based surveys. this questionnaire is generally divided into two parts, namely aspects of technological readiness and pedagogical readiness. The following is the data obtained containing the mean (M) and standard deviation (SD) of each response to each survey item. A high average item response value indicates a high tendency of teacher readiness to carry out online learning on aspects according to the survey item and vice versa.

Table 6 shows the average response to each item of readiness. Following the category criteria in **Table 2**, there are no items that have an average value in the very low and low categories. Two survey items fall into the moderate category related to web creation and use of the web to publish learning activities and outcomes. Other items show high, and very high categories.

To see in more detail, the following is a comparison of teacher readiness to carry out online learning by type of readiness, gender and age, as shown in **Table 6** below.

Through **Table 7**, it can be seen a more detailed comparison of teacher readiness to carry out online learning by type of readiness, gender and age. To be able to draw more precise conclusions, the following are the results of the independent sample t-test to compare readiness by gender.

Based on statistical tests as shown in **Table 8**, it can be concluded that technical readiness, pedagogical readiness and overall (technological) readiness by gender are not significantly different with either =5% or =1%. This shows that gender factors do not affect differences in teacher readiness in carrying out online learning.

Meanwhile, to see the relationship between teacher readiness in carrying out online learning and teacher age. This is done to determine whether the age factor that shows the age generation can be a factor in the readiness of teachers to carry out online learning.

TABLE 6. *Elementary teacher readiness to implement online learning*

No.	Survey Items	M	SD
A.	**Technical Readiness**		
1.	I carry a mobile device that is connected to the internet at any time	4,72	0,64
2.	I am competent to use email	4,56	0,68
3.	I am competent in using word processing software	4,39	0,78
4.	I can do file management on the computer	4,74	0,59
5.	I can use Internet browser	4,64	0,64
6.	I am competent in using presentation software	4,43	0,72
7.	I know and can create a blog	3,36	1,06
8.	I know and can make a website	2,83	1,10
9.	I can use social media to communicate with students	4,58	0,73
10.	I am familiar with learning management system	3,53	0,97
11.	I am able to convert printed content and curriculum materials to digital form	3,51	1,05
12.	I am able to design online quizzes and use them for learning	3,60	1,11
13.	I can use online discussions and teach my classes	3,37	1,08
14.	I can use chat to teach my class	4,14	0,91
15.	I can publish my lessons and class activities on the web	2,96	1,15
16.	I can use LMS learning management system	3,15	1,10
17.	I can develop online learning so that students become critical	3,39	0,95
B.	**Pedagogical Readiness**		
18.	I am familiar with how to integrate technology into the curriculum	3,31	0,93
19.	I believe the digital curriculum is as strict as the printed curriculum	3,57	0,96
20.	I believe high quality learning happens even without face to face	3,20	1,09
21.	I support collaborative interaction as a teaching-learning tool	4,12	0,80
22.	I believe that community is an important part of implementing a digital curriculum	3,96	0,78
23.	I encourage my students to bring life experiences into the classroom	4,20	0,74
24.	I am comfortable communicating online and delivering written messages	3,33	0,99
25.	I can manage my time well in the technology-enriched class	3,58	0,95
26.	I am flexible in dealing with students' problems online	3,63	0,92
27.	I am quite able to plan in my technology based teaching	3,57	0,83
28.	I can manage students studying in a technology-enriched classroom	3,46	0,96
29.	I provide constructive and timely feedback	3,78	0,76
30.	I regularly correct misunderstandings and keep students learning	3,87	0,80

TABLE 7. *Comparison of readiness of elementary teachers to implement online learning by type of teacher readiness, gender and age*

Teacher Readiness	n	M	SD	%	Min	Max
Technical Readiness	203	65,91	10,57	77,54	18	85
Gender						
Male	50	66,64	12,63	78,40	18	85
Female	153	65,67	9,84	77,25	36	85
Age						
21-30 years old	125	68,66	8,60	80,78	44	85
31-40 years old	67	63,16	9,51	74,31	44	85
41-50 years old	8	55,88	18,07	65,74	36	85
51-60 years old	3	39,00	18,73	45,88	18	54
Pedagogical Readiness	203	47,56	8,51	73,17	14	65
Gender						
Male	50	47,66	10,28	56,07	14	65
Female	153	47,53	7,88	55,92	25	65
Age						
21-30 years old	125	48,84	7,59	75,14	31	65
31-40 years old	67	45,96	8,36	70,70	25	65
41-50 years old	8	45,25	13,13	69,62	31	65
51-60 years old	3	36,33	20,74	55,90	14	55
Technological Readiness	203	113,47	17,85	75,65	32	150

TABLE 8. *Comparative statistics test results of teacher readiness to implement online learning based on gender*

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
TR	Equal variances assumed	3,267	0,072	0,564	201	0,573	0,97333	172,447
	Equal variances not assumed			0,498	69,494	0,620	0,97333	195,476
PR	Equal variances assumed	4,539	0,034	0,094	201	0,925	0,13059	138,926
	Equal variances not assumed			0,082	68,782	0,935	0,13059	158,788
R	Equal variances assumed	5,614	0,019	0,379	201	0,705	110,392	291,449
	Equal variances not assumed			0,326	67,507	0,745	110,392	338,309

TR: Technical Readiness; PR: Pedagogical Readiness; R: Technological Readiness

Based on **Table 9**, it is found that the correlation between technical readiness, pedagogical readiness and overall (technological) readiness of teachers with teacher age is -0.385, -0.183, and -0.315 which all show significance at =5% and =1%. This shows that younger teachers show higher readiness in implementing online learning. That way the age of the teacher can be a factor in their readiness to carry out online learning. **Table 9** also shows that Technical Readiness (TR) , Pedagogical Readiness (PR) and Tecnological Readiness (R) have a significantly positive correlation.

Meanwhile, the following **Table 10** presents the categories of teacher readiness in implementing online learning based on the type of readiness, gender and age of the teacher.

TABLE 9. *Statistical test results of the relationship of teacher readiness to implement online learning with teacher age*

		TR	PR	R	AGE
TR	Pearson Correlation	1	0.749**	0.949**	-0.385**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	203	203	203	203
PR	Pearson Correlation	0.749**	1	0.920**	-0.183**
	Sig. (2-tailed)	0.000		0.000	0.009
	N	203	203	203	203
R	Pearson Correlation	0.949**	0.920**	1	-0.315**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	203	203	203	203
AGE	Pearson Correlation	-0.385**	-0.183**	-0.315**	1
	Sig. (2-tailed)	0.000	0.009	0.000	
	N	203	203	203	203

**. Correlation is significant at the 0.01 level (2-tailed).

TABLE 10. *Category of teacher readiness to implement online learning based on type of readiness, gender and age*

Category	Total	Gender		Age			
		L	P	21-30	31-40	41-50	51-60
	n=203	n=50	n=153	n=125	n=67	n=8	n=3
Technical Readiness							
Very High	32	12	20	26	5	1	0
High	122	25	97	81	39	2	0
Moderate	45	12	33	18	23	2	2
Low	3	0	3	0	0	3	0
Very Low	1	1	0	0	0	0	1
Pedagogical Readiness							
Very High	18	7	11	12	4	2	0
High	109	22	87	71	36	1	1
Moderate	70	19	51	41	24	4	1
Low	5	1	4	1	3	1	0
Very Low	1	1	0	0	0	0	1
Technological Readiness							
Very High	22	8	14	19	2	1	0
High	118	24	94	77	39	2	0
Moderate	59	17	42	29	25	3	2
Low	3	0	3	0	1	2	0
Very Low	1	1	0	0	0	0	1

DISCUSSION

Experience of Elementary Teachers Carrying Out Learning During the COVID-19 Pandemic

The COVID-19 pandemic that began in early 2020 has changed the education landscape in various countries. Indonesia, like other countries, is following the recommendations from WHO and guidelines from UNICEF to stop learning activities in schools and shift them to learning in schools. That way, the situation provides a spatial distance between the school and the teacher and the students. Through the Ministry of Education and Culture, the Government of Indonesia has provided a home learning guide (BDR), curriculum simplification, and accompanied by a policy of eliminating national exams.

Various internet-based learning models are increasingly recognized during the learning period at home, although with diverse understandings and various abilities to implement them. General terms such as digital learning, remote learning, distance

learning, synchronous and asynchronous online learning, blended learning, hybrid learning, and virtual learning, although they have developed before the COVID-19 pandemic, they are better known as and much discussed in the world of education. To reduce the impact of the pandemic on education to keep the educational process running, distance learning is an emergency solution that can be implemented (Bozkurt & Sharma, 2020). The pandemic situation prompted the development of emergency response plans to prepare the education system for the future (Bokayev et al., 2021; Delcker & Ifenthaler, 2020; Ewing & Cooper, 2021; Palau et al., 2021). The COVID-19 pandemic, which prompted the response of the education world to adopt an online learning model that requires high technological literacy, has divided the world of education into groups that are ready and unprepared both technologically and pedagogically in their respective levels of readiness.

To understand the full response of the world of education, especially the experience of teachers in carrying out learning during a pandemic, a more comprehensive survey research is needed nationally for Indonesia. This research can be aimed at mapping school readiness to integrate technology into curriculum and learning in schools. This national survey has not been carried out due to pandemic reasons as well. This survey research has not yet represented a national picture of the experience of teachers in implementing learning during the COVIS-19 pandemic, but at least it can describe the sample group normatively. The sample age group, which is primarily young teachers, can provide an overview and prospects for future education. A description of the teacher's experience in carrying out learning during the pandemic and other professional activities can be seen in **Table 2**. The table provides an overview of teacher learning activities during the COVID-19 pandemic. A small number of teachers try to carry out learning activities in schools on a limited basis (Item 3) and face-to-face learning activities at students' homes in groups or individually (Items 4 and 5) which are carried out as solutions to learning barriers faced by teachers and students. Meanwhile, teacher administrative activities tend to be balanced between online and offline (Item 14).

Table 2 illustrates what barriers teachers experience during the COVID-19 pandemic. Some of the obstacles that tend to be more dominant than others are: (1) students' ICT skills are not adequate (61%); (2) parents' ICT skills are inadequate; (3) the tools that parents have for online activities are not sufficient; (4) difficulties and limitations of internet access for students; (5) lack of parental participation in guiding student learning activities; and (6) parents' economic difficulties that hinder students' learning activities. These dominant barriers tend to be related to students and parents. This shows that the obstacles that occur from the teacher's side tend to be more overcome than the obstacles experienced by students and parents. In addition to the barriers mentioned in **Table 3**, some of the barriers that are considered necessary are also related to government support and school leadership, student behavior, schedules, presentation of learning materials and assessments. The efforts of teachers to carry out learning at students' homes are also considered to face obstacles as well.

During the pandemic, teachers are required to use various applications, some of which are commonly used but some are known and started to be used during the pandemic. To carry out learning activities, although the Zoom Meeting, Google Classroom, and Google Meet applications are widely used in higher education, at the elementary school level, WhatsApp is the most widely used application to adjust to the readiness of parents to guide and facilitate students for online learning.

The Indonesian Ministry of Education and Culture has provided various platforms to provide learning resources and encourage the private sector to provide them. Some of them appeared, such as *Ruang Guru*, *Rumah Belajar* and Zenius, but Youtube became the portal most widely used by teachers because it was considered better known by students. Microsoft Office applications dominate applications used by teachers to process documents and presentation media. But start using online-based applications such as from Google Apps, Canva, and Slides. Canva is also a new alternative for processing images

other than Adobe Photoshop, Corel Draw and Paint. Some teachers are starting to make learning videos with applications that are starting to be widely used during the pandemic, such as Filmora and Kinemaster. Google Forms and Quizezz are mostly used for online assessments, although a few use Kahoot and Liveworksheets. Most teachers use more Smartphones than Laptops/Notebooks for online learning activities. A small number of teachers are equipped with other tools. Most teachers have their own Youtube Channel. To support online learning activities, most teachers rely on independent access, and as alternative, use access to quota assistance from the government and internet access facilities in schools. The use of these various applications can describe a transformation process in learning activities carried out by teachers. Teachers are required to have high ICT skills and literacy in order to carry out online learning. It is also in line with the various professional activities of teachers, most of which are carried out through online activities.

Readiness of Elementary Teachers to Implement Online Learning

During COVID-19 pandemic, the role of the teacher is felt to be very important. Because student learning carried out at home without face to face with the teacher experienced many problems, especially the readiness of parents technically and pedagogically. Teachers are often positioned as a problem and often blamed for their shortcomings (de Saxe et al., 2020). In carrying out the task of educating, support for teachers at the beginning of the pandemic period was very lacking. Schools and teachers are left to continue their routine activities with difficult experiences and find their way of implementing learning in a pandemic situation (Khlaif et al., 2020)). Al-Awidi & Aldhafeeri (2017) reported that teachers are quite ready to implement a digital curriculum in the readiness component (technical and pedagogical) with various obstacles and limitations. From the data obtained in **Table 6**, the teachers' technical and pedagogical readiness, which refers to the type of technological readiness according to Ng (2010), to carry out online learning is at least moderate and mostly very high and high. Only related to web creation and the use of the web to present results and learning activities are categorized as low, this is because it requires higher skills than other tools and applications.

Al-Awidi & Aldhafeeri (2017) mention factors that influence teacher readiness to use technology in education, teacher characteristics, subject matter knowledge, technological considerations and organizational capacity. In this study, the characteristics of the teachers used were gender and age. These characteristics were chosen to explain gender issues in technological readiness and age which shows generational differences in mastering technology in general and for learning.

Based on the results of statistical tests, it was concluded that gender was not a significant factor to distinguish technological readiness, technical readiness and teacher pedagogical readiness to carry out online learning (see **Tables 7** and **8**). Meanwhile, teacher age can have a significant correlation with technological readiness, technical readiness and pedagogical readiness. This indicates that younger teachers tend to have higher readiness than the older generation (see **Tables 9** and **10**).

This finding can be considered to describe the future potential of elementary school teacher readiness in the future in integrating technology into the curriculum in learning. Teachers need to develop knowledge of digital technology and the various demands for online learning, provide clear instructions and how to communicate most effectively, and assess learning effectively (Gurley, 2018).

CONCLUSION

Survey research has not been able to fully describe how schools and teachers respond to the COVID-19 pandemic. However, this study can describe the readiness of teachers to carry out online learning in accordance with the demographic characteristics of the

sample group. Teachers have experienced unusual situations as have parents and students. In the early stages of the pandemic, teachers are trying to develop various learning strategy initiatives. Teachers try various digital applications that have just been used for learning activities even though they have been known and used before the pandemic. The biggest obstacle is not the ability to use digital applications for the personal benefit of teachers, but how to use them for learning activities where parents and students tend to be unprepared to carry out online learning. In this study, a description of teacher readiness was obtained, most of which were young group teachers who showed high readiness to carry out online learning. It was also concluded that teacher gender was not a significant factor in differentiating technological, technical and pedagogical readiness. However, the teacher's age shows a significant correlation with the teacher's technological, technical, and pedagogical readiness.. Teachers who tend to be younger have higher technological, technical, and pedagogical readiness.

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