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# Distance learning during the COVID-19 pandemic: School closure in Indonesia

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## ABSTRACT

This study investigates the distance learning process of teachers during school closure due to COVID-19's impact. This research focuses on the introduction of distance learning, the obstacles faced by teachers and approaches to addressing different hurdles in the implementation of distance learning. This study collected data from mathematics and science teachers spread in junior and senior high schools in Aceh Province, Indonesia. Data were collected through a questionnaire from 353 teachers and interview from 6 teachers to get in-depth information related to the focus of this study. The results of the study revealed that teachers could not directly utilize various Information and Communication Technology (ICT) devices and online learning platforms that are widely available in supporting distance implementation, either due to the ability of teachers, parents' economic factors, limited internet access, and the absence of guidance. However, over time, the teacher can independently adapt to environmental conditions and the characteristics of students in carrying out distance learning.

## ARTICLE HISTORY

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## KEYWORDS

Distance learning; learning during COVID-19; online learning platforms

## 1. Introduction

The COVID-19 outbreak, caused by the SARS-CoV-2 virus, was first confirmed in Wuhan City, Hubei Province, China, in December 2019. This virus has spread rapidly all over the world and caused many deaths, so the World Health Organization (WHO) set it as a pandemic on 11 March 2020 (WHO, 2020). However, COVID-19 case in Indonesia was confirmed by President of Indonesia on 2 March 2020. According to Nasional.kompas.com on 3 March 2020, Mr. President announced that two people of Indonesia were infected by COVID-19. Indonesia also followed step of WHO setting as a pandemic COVID-19 outbreaks since on 11 March 2020 (Ishanuddin, 2020). Appropriate penetration and vaccines have not yet been discovered and are still being studied by many experts who are racing against time (Adnan et al., 2020; Cao et al., 2020; Chang & Sun, 2020; Goo et al., 2020; Hu et al., 2020), so preventing the spread of the virus is the main effort made so far.

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COVID-19's preventive measures are implementing policies of social and physical distancing, and the temporary closure of schools (Fong et al., 2020; Pan et al., 2005; Prem et al., 2020; Regehr & Goel, 2020; Tian et al., 2020). When the research was conducted, more than 124 countries around the world, including Indonesia, have closed their schools and universities. Closing schools is one of the effective ways to prevent the spread of the epidemics, in particular, to prevent the virus spread among students (Cauchemez et al., 2009; Cowling et al., 2010; Wu et al., 2010; Jackson et al., 2013).

To avoid the spread of COVID-19, the Indonesian government policy is to suspend classrooms without stopping the learning, so that the schools perform distance learning. This policy is through a circular dated 17 March 2020 regarding online learning and working from home in the context of preventing the spread of COVID-19. Distance learning in the smallest meaning is the absence of face-to-face contact in the classroom between teachers and students (Midgely, 2018). The difference between distance learning and face-to-face learning is that students of all levels of education can receive education without even having to go to class. Thus, distance learning is a unique solution for the continuation of learning in critical times, such as the case of the recent global coronavirus pandemic.

Anticipating and reducing the number of corona virus sufferers in Indonesia has been carried out in all regions. Almost all activities were dismissed, and this policy was called Large Scale Social Restriction. Large Scale Social Restriction can help prevent the spread of the corona virus to an area, so that people in that area are expected to be able to avoid the fast-spreading outbreak (Yunus & Rezki, 2020). In term of this policy, teachers teach from home during this pandemic by optimizing the use of information and communication technology (ICT) to ensure students can still observe the learning process from home. The closing of schools is based on evidence and observations from previous outbreaks by the social interaction among students deemed acceptable (Barclay et al., 2014; Cauchemez et al., 2009; Jackson et al., 2016; Potter et al., 2012; Viner et al., 2020).

The problem concerning the policy of school closure and requiring students to continue study is that not every country has an effective system to ensure that the students keep learning as they should. The school closure policy, however, still needs to be implemented. As a result, teacher distance learning ability becomes an essential point to ensure the smooth learning process when COVID-19 spreads across the globe (Alexander et al., 2020; Mukhopadhyay et al., 2020; Qadir, n.d.; Shu et al., 2020).

Several countries face many obstacles and gaps in the distance learning process (Favale et al., 2020; Goldschmidt, 2020; Guernsey et al., 2020; Masters et al., 2020). However, to ensure that students can continue learning even during the COVID-19 pandemic, this distance learning still needs to be carried out. Therefore, governments in many countries aim to make structured home-based learning and guidance through their ministries of education (Cao et al., 2020; Cao et al., 2020; Setiawan & Ilmiyah, 2020). In Indonesia itself, through the Ministry of Education and Culture developing a distance learning application called as 'Rumah Belajar' that can be accessed via Android and computer (Abidah et al., 2020; Zaharah & Kirilova, 2020). Online programmes and courses are basically fully remote and face-to-face blends. According to Lowes, who explained that online learning consists of virtual courses and virtual classrooms (Watson, 2007).

Several studies on learning during COVID-19 pandemic from various point of views have been conducted and published (Cao et al., 2020; Favale et al., 2020; Mukhopadhyay et al., 2020; Setiawan & Ilmiyah, 2020; Sintema, 2020). To date, however, there has been

**Table 1.** Research Population

No	Population Group	Total
1	Junior High School	2,108
2	Senior High School	864
Total		2,972

Source: Education Office of Aceh.

no systematic work investigating teachers' methods, constraints, and strategies in implementing distance learning during the COVID-19 pandemic, especially concerning the use of ICT in distance learning. The process of implementing distance learning is very much related to the understanding of ICT as well as the process of using and criterion for the selection of ICT (Jatileni & Jatileni, 2018). Thus, there is a need for research related to the integration of ICT in distance learning during the COVID-19 pandemic.

The aims of this study figured out how the effect of COVID-19 outbreaks on transforming face-to-face learning to the distance learning process of teachers. This study specifically investigated teachers' ability to implement distance learning during the COVID-19 pandemic, the obstacles and problems faced by teachers in conducting distance learning, as well as the strategies and efforts made by teachers in implementing distance learning in Aceh Province located in Indonesia.

## 2. Methodology

This study used a mixed-method approach by investigating the research trend, involving multiple data sources (Creswell, 2014). In order to reach the ultimate goal of this study, it needs to develop on the sequential explanation design which is highly dependent on quantitative data supported by qualitative data to reach the research goals (Creswell, 2014). This study employed the quantitative method in the first stage, followed by the qualitative method in the second stage (Creswell, 2009; Hesse-Biber, 2014). The quantitative method played a role in the analysis and exploration of distance learning implementation during the COVID-19 outbreak. In contrast, the qualitative method contributed to explore information about the processes, constraints, and strategies of the teacher in implementing distance learning.

### 2.1. Participants

The population was 2972 Junior and Senior High School teachers from 23 districts in Aceh, Indonesia (Table 1). Given the high number of samples, this analysis took only a random portion of the current population using Slovin's formula to measure the size of the research sample (Consuelo et al., 2007), resulted in 353 teachers as the sample in this study. Furthermore, the interview subjects were selected based on research objectives in accordance with the study criteria. The study criteria referred to are based on the results of the high, medium and low questionnaires, totalling 6 people of each 3 people per education level. For qualitative research, generalization is not the main objective, but participation was chosen because it has the highest, medium and low scores from the questionnaire results.

**Table 2.** Research Sample.

No.	Population Group	Total	Calculation	Sample	Sample (Rounded)
1	Junior High School	2,108	$n = \frac{2,108}{2,972} \times 353n = \frac{2,108}{2,972} \times 353$	250.3	250
2	Senior High School	864	$n = \frac{864}{2,972} \times 353n = \frac{864}{2,972} \times 353$	102.6	103
	Total	2,972		353	353

The sampling technique used was proportional random sampling after determining the size of the research sample, a technique that determines the research sample based on the number of each school group in a study (Johnson & Christensen, 2019). See Table 2 for a more comprehensive description of the number of samples from each school.

## 2.2. Research procedures

In this study, quantitative data collection was carried out by administering a questionnaire to teachers via Google Form. The questionnaire consisted of a Likert scale of 1–5, aimed to investigate the distance learning process during the COVID-19 pandemic. It was distributed through WhatsApp, both through the personal WhatsApp and WhatsApp group of teachers, as well as some teachers' personal email. Meanwhile, qualitative data are analysed through semi-structured interviews via video conferencing and mobile phone applications to explore the process of implementing distance learning as well as the constraints and strategies the teacher pursues. Interview subjects were selected based on the criteria from the results of the questionnaire: the high, medium and low categories, each with three people from each level of schooling.

## 2.3. Data collection instruments

The quantitative data came from the questionnaire of distance learning during the COVID-19 pandemic, consisting of 26 statements covering the indicators of teacher perception in the use and selection of ICT criteria in distance learning. The questionnaire was established using the 5-point Likert Scale (Jatileni & Jatileni, 2018), where 1 – strongly disagree, 2 – disagree, 3 – neutral, 4 – agree, and 5 – strongly agree. The questionnaire was developed based on the aims of this study, divided into two sections, and comprises both open and closed questions. Part A of the questionnaire contains the respondent's personal information, such as gender, educational background, age, pedagogical training on ICT, educational levels, school origin and district origin. Part B consists of both closed questions, with 1–5 Likert-scale, and open questions to enable the respondents to express their views in accordance with the goals of this study. Open questions enable respondents to express their opinions and formulate responses without obstacles (Phellas et al., 2011).

Besides, semi-structured interviews were used for the qualitative data collection. This step was performed to find out more about the implementation of distance learning conducted by teachers during the COVID-19 pandemic. Interviews were conducted on in-depth problems that were the focus of the research. As for the questions in this event relating to the implementation of distance learning include; knowledge and ability to use ICT, select and plan learning and student readiness for distance learning. Meanwhile, other questions relate to problems and constraints faced by teachers in implementing distance

**Table 3.** Study Sample Demographic.

Sample Demographic	Total of Participant	Percentage	Total of Population
Gender			
Male	198	56.10	1668
Female	155	44.90	1304
Education			
Junior High School	250	27.10	2108
Senior High School	103	17.60	864
Level of Education			
Graduate	45	12.70	378
Undergraduate	308	87.30	2594

learning, then the latter relates to the teacher's strategy in overcoming problems and obstacles in the implementation of distance learning.

#### 2.4. Analysis of data

The quantitative data were analysed descriptively using SPSS version 22 for Windows. Concerning the descriptive analysis, all responses of respondents to distance learning was calculated and presented in a tabular form. The mean and standard deviation calculation was used primarily in the descriptive analysis. Averages were in the descriptive data analysis to calculate the mean value of respondents and standard deviations to calculate the sum of data variance (Kolog, 2017). Overall mean values represent the average responses of respondents while standard deviations indicate the amount of variation in the data. Furthermore, qualitative data analysis of the interviews was done by data reduction, data presentation, drawing conclusions and verification (Miles et al., 1994).

### 3. Findings

As previously discussed, this study examined the introduction of distance learning during the COVID-19 pandemic, including the obstacles faced and strategies applied by teachers. The results of the study are presented in detail in this section, including the process of integrating distance learning, by paying attention to the teachers' interpretation of the use of ICT and the selection criteria for ICT to help the distance learning process. These data are presented in tabular form according to the results of the questionnaire. The interview data concerning the teacher's processes, constraints, and strategies in implementing distance learning are also provided.

The demographic sample from this study can be seen in Table 3. This study involved 353 participants, consisting of 198 male and 155 female teachers, with the majority graduating from a bachelor's degree (308). Two hundred and fifty of the participants were from junior high school, while the remaining were from senior high school.

The following are the findings of the questionnaire related to teacher comprehension in distance learning (Table 4), teacher implementation in distance learning (Table 5), and teacher requirements when choosing ICT to help the distance learning process (Table 6).

Table 4 shows the findings of the expectations of teachers in distance learning during COVID-19. It can be seen that during the COVID-19 pandemic the level of confidence of teachers in the use of ICT tools and applications differed (Mean = 2.88). The teachers were

**Table 4.** Teachers' Understanding of Distance Learning.

Statement	N	Mean	St Dev
Using ICT tools and applications becomes a solution for me to ensure that the learning process runs during the COVID-19 pandemic.	353	3.22	0.79
I have enough knowledge to use ICT tools and applications, especially in supporting distance learning effectively and efficiently	353	3.08	0.77
I am confident in using different ICT tools and applications in teaching during the COVID-19 pandemic	353	2.88	0.79
The use of distance learning during the COVID-19 pandemic is very troublesome and time-consuming.	353	3.22	0.87
I commit to carrying out distance learning	353	3.55	0.87

**Table 5.** Implementation of distance learning.

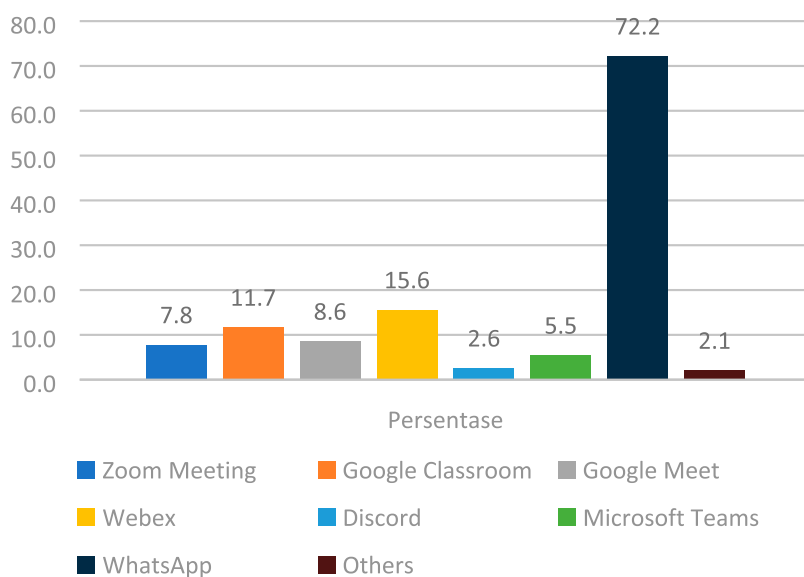
Statement	N	Mean	St Dev
I need to plan and prepare according to the characteristics of students and the compatibility with teaching materials before carrying out distance learning.	353	3.47	0.93
The distance learning that I apply during the COVID-19 pandemic helps students master the teaching material well.	353	2.99	0.72
The teacher needs guidelines for implementing distance learning during the COVID-19 pandemic.	353	3.69	0.91
I often encounter obstacles while conducting distance learning during the COVID-19 pandemic.	353	3.47	0.92
As a teacher, I have enough financial ability to conduct distance learning.	353	3.19	0.84
My students have enough financial ability to conduct distance learning.	353	2.78	0.71
The location of my residence is reachable in terms of internet access for smooth distance learning.	353	3.04	0.78
The location of my students' residence is reachable in terms of internet access for smooth distance learning.	353	3.010	0.815

**Table 6.** Criteria for choosing ICT in distance learning.

Statement	N	Mean	St Dev
The ICT tools or applications I use during COVID-19 in teaching largely depend on the availability and accessibility.	353	3.28	0.86
The ICT tools or applications and sites I use in teaching are mostly adjusted to the needs and abilities of the students.	353	3.41	0.91
I choose the type of technology (ICT device) that I know or use often	353	3.51	0.98
I choose distance learning media based on its conformity with the curriculum or the subjects I teach.	353	3.08	0.89
My students have adequate ICT tools for smooth distance learning	353	3.08	0.86

not prepared to do distance learning due to the sudden closure of schools, as indicated by the teachers lacking abilities in distance learning. As for the commitment of teachers to carry out distance learning, it can be said to be good (Mean 3.55). The high commitment was caused by several schools that required teachers to prepare reports on the learning process conducted during the COVID-19 pandemic.

Table 5 shows that the guidance and guidelines for implementing distance learning during the COVID-19 pandemic are urgently needed by teachers (Mean = 3.69). It also reveals that the absence of guidelines or technical instructions (Mean = 3.69) and the low financial ability of parents (Mean 2.78) leads to teachers experiencing difficulties. Furthermore, distance learning is constrained by the residential location of students and teachers and the limited access to the internet network, resulting in poor mastery of subject matter by students (Mean = 2.99).



**Figure 1.** The use of applications in distance learning.

The criteria for selecting ICT in learning are critical in the context of distance learning, particularly when it comes to select applications or websites used to help the learning process during the pandemic. It is shown from Table 6 that most teachers used familiar applications that they regularly use (mean, 3.51). It is also evidenced by the high use of WhatsApp application, shown in Figure 1. In addition, the challenges faced by teachers often impact the adherence of the curriculum standards and instructional materials of the subject taught by the teachers (mean, 3.08).

Figure 1 shows that many teachers use more than one application during the distance learning, such as WhatsApp, Zoom Meeting applications, Google Classroom with Webex, and others. Most teachers (278 or 72.2%) used the WhatsApp application in the learning process.

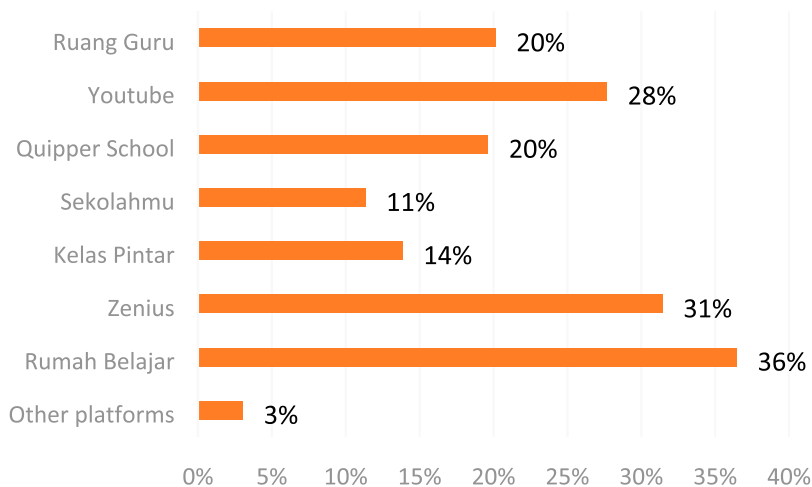
In addition to the applications, teachers can also use a range of sites or online learning tools to facilitate the learning process during the school closure. The most commonly used is *Rumah Belajar platform*, as shown in Figure 2, following the recommendation from the Ministry of Education.

### 3.1. The implementation of distance learning

The learning process is carried out by distance learning from home, under the Indonesian government policy during the COVID-19 pandemic, with the policy of closing schools without stopping the teaching and learning. Nevertheless, not all teachers are ready with this strategy of distance learning, even teachers who have earned ICT training in previous learning, as expressed by one of the teachers (CLK).

Prior to COVID-19, I had received instruction concerning the use of ICT in mathematics learning. However, for the current circumstances, what I learned was not very important





**Figure 2.** The use of online learning websites in distance learning.

because what I have learned is how to use ICT applications for the learning in classrooms. Thus, at this stage, I have to independently learn and adapt it.

Another teacher (JD) also shared a similar opinion. He has the capacity and expertise to use ICT. However, JD also faced difficulties in the early implementation of the school closure policy under the current condition.

I have good skills in using different ICT applications and online learning platforms, which I obtained from the training organized by the government or teacher associations. Nevertheless, in this current circumstance, carrying out ICT-based learning is not as straightforward as in a normal classroom.

Throughout the COVID-19 pandemic, teachers from remote areas in Aceh, with all the limitations, faced different challenges in introducing distance learning through online learning, as explained by one of the teachers (KR).

As a teacher in rural schools in Aceh Province, I have never been trained in using ICT for learning, so now I use an application that is easy for me to communicate with the students, to ensure that my students can continue to connect and learn.

In addition, in selecting the online learning programs for distance learning, before implementing distance learning, teachers typically pay attention to the characteristics of the student and the suitability with the content being taught. The use of the WhatsApp application is dominant in distance learning, in line with the results of the questionnaire (see Figure 1), due to the financial constraint of parents. One of the teachers (NL) mentioned that he uses one application only for distance learning.

I only use the WhatsApp application in conducting distance learning. Although the area where I and my student live have a good internet network, the financial ability of students' parents is generally very limited. Thus, it does not support me to do costly learning.

MH, one of the teachers in Bireuen Regency, Aceh, also conveyed the same issue. Moreover, not all the students' residences had good internet access.

I use the WhatsApp application, similar to other teachers in our city, taking into account the economic factors of the student families that are often from disadvantaged family backgrounds and the fact that not all places where my students live have internet access. Thus, I only use the WhatsApp in teaching by creating a study group in WhatsApp. Even if there is no internet network, students have time to search for places that have internet connectivity before the students receive or submit their assignments.

While several teachers use WhatsApp in distance learning, some teachers also combine their teaching and learning through the use of websites recommended by the Ministry of Education, as stated by MR.

I use the WhatsApp application and other government-recommended learning sites, such as Rumah Belajar, Zenius, and I also use some of the references on YouTube for my students to do distance learning. Through the WA group I created, I ask students to review the learning materials I provide, and I also send regular assignments via WhatsApp. Students can also ask questions to me directly in the WhatsApp group.

Some teachers also use various applications independently, including the use of video conferencing applications to support distance learning, as revealed by JD.

In carrying out the distance learning process, I used the Webex and Google Classroom platform. I am using Webex to replace face-to-face events, as I need to explain a variety of items according to the learning plan I have developed before. I use google classroom for providing instructional materials, tasks and assessing student learning outcomes. Besides, I also suggest that students visit other learning platforms, as additional learning resources or materials, including Rumah Belajar website, junior high school science learning materials on YouTube and using paid Ruang Guru for well-off students.

Concerning the introduction of distance learning, it is shown that teachers, in general, use the WhatsApp for various considerations.

### **3.2. Distance learning obstacles**

Based on the interviews, several obstacles are identified in the teacher's implementation of distance learning. Such obstacles include: (1) many teachers are not equipped with the skills to pursue distance learning because the sudden school closure and distance learning program policy; (2) teachers' knowledge and willingness to use ICTs before COVID-19 cannot be applied directly in the learning during the COVID-19 pandemic; (3) students have lack of awareness of independent learning at home; (4) parents' has lack of support in guiding and accompanying students learning at home; (5) the financial factors of students' families do not support the distance learning, such as insufficient budget to purchase an internet data, and not having the devices to help distance learning (not owning a smart phone and a computer), (6) the access to internet networks is bad or unstable, (7) students are not familiar with using the applications to support the distance learning (mainly, the new application for students), (8) the government is slow in issuing the regulations and subsidy policies for financing the distance learning through school operational assistance funds, and (9) there are no guideline and technical instruction for implementing distance learning issued by the government that can be a reference for teachers in Indonesia.

Regarding these obstacles revealed from the results of the interviews, as conveyed by NL, the main problem is the sudden closure of schools.

The abrupt orders for school closure led me not to be prepared to do distance learning. So I am a little late in starting the distance learning because I need to make some adjustments and find the best form according to the conditions of my students.

Another teacher, CLK, also conveyed the obstacles related to teachers' lacking ability to implement ICTs in distance learning during the COVID-19 pandemic, although he had previously received training and experience in learning using ICTs.

Even though I have the ability and have participated in training in the use of ICT for science learning in junior high schools, during this COVID-19, I cannot directly apply my knowledge and distance learning skills. Because, so far, the training that I received was directed to the normal classroom learning process. I think teaching via distance learning in COVID-19 situation is different from what I know and my experiences.

MH also expressed similar opinions.

I am not the only one who has trouble in effectively and efficiently integrating distance learning using various ICT applications. Many of teachers at schools and even those in my region do not have the ability and expertise to carry out distance learning under the current conditions.

Besides, there are still many students with low awareness of learning independently at home, and this also becomes an obstacle in distance learning. Unfortunately, there is also a lack of care and guidance from parents, as stated by MR.

I am committed to conducting distance learning. However, the students are used to studying directly in the classroom under the supervision of the teacher. Thus, students' poor awareness of studying independently at home is an obstacle for me in introducing distance learning. Besides the lack of motivation and awareness of students, there is also a lack of support and care from parents at home for various reasons, such as the busy schedule of parents and students.

Students cannot necessarily use the availability of different applications that support distance learning because they are still unfamiliar to them, as JD revealed.

While I can do distance learning, many students are unfamiliar with the numerous software available today for distance learning. So students have difficulties studying at home.

In addition, KR also conveyed the constraints of distance learning during the COVID-19 pandemic, those are not all students have good internet connectivity, and the financial considerations of the students' families.

The biggest challenge of my teaching in rural areas is internet access, that does not reach all residences of my students. This internet issue is a big challenge for me in incorporating learning from home. Financial resources are also very much needed to support the distance learning process, but many of my students come from poor families.

Also, the lack of government-issued guidelines and professional guidance for the introduction of distance learning is an obstacle for students, as reported by MR.

We, teachers at junior high schools, conduct the distance learning without technical instructions and guidelines from the Ministry of Education or the Office of Education in our area. Observing the state of this COVID-19, other teachers and I conducted the learning as we could.

CLK also conveyed a similar sentiment in the absence of guidelines and technical instructions for implementing distance learning.

Teachers are expected to report on the students' learning outcomes at senior high schools, as instructed by the provincial education office. Nevertheless, the Education Office does not provide technical instructions or guidelines to teachers in schools for implementing learning. So, we do the distance learning with personal initiative, taking into account the demands of the curriculum and the students' condition.

### **3.3. Teacher strategies in implementing online learning**

The teachers take the lead and experiment in introducing distance learning during the COVID-19 pandemic with the policy of school closure. Teachers have faced many challenges in conducting distance learning, and they have, so far, made various efforts and strategies to ensure students continue learning and to minimize the shortcomings and obstacles in the learning. The following are related to the teacher's efforts and strategies.

Teachers' unpreparedness in implementing distance learning is related to the sudden government policy of the policy of school closure and learning continues. In Indonesia, many teachers learn independently and with their peers, *as conveyed by MR.*

Like most teachers who are not ready for the sudden school closure policy, my colleagues and I utilize the existing facilities. Nevertheless, over time I continue to develop the distance learning I do by taking into account the situation of the students and the characteristics of the subject matter.

The sudden school closure policy makes teachers unprepared. It affects not only those who have a lack of knowledge and experience in learning using ICT tools but also those who have the expertise and have participated in the training of ICT use. This is because the demands of distance teaching differ from the experience of the teachers and their knowledge and experience are less relevant. Together with their peers, the teachers are seeking information and learning independently or together to improve their ability in conducting distance learning.

Because my knowledge is less relevant to the demands of distance learning, I find information and also learn independently and together with the teachers at my school. We share information and knowledge in this distance learning.

Meanwhile, the teacher does not provide a difficult task or homework for students. Furthermore, the teachers conduct intensive communication with both students and parents to overcome the large number of students who have low awareness and motivation to learn independently, and the lack of attention and guidance of parents in assisting students in studying at home, as mentioned by JD.

One of the strategies I did to motivate students to continue learning was using applications that can enable online face-to-face with all students, such as the Webex application, and not putting too much workload on the students. I often seek to connect over the phone with the students' parents or send short messages to ensure that the students continue to study at home. Moreover, I inspire students by offering a variety of information that can be freely accessed and the fun learning process during COVID-19.

KR, who teaches in a remote area with all the limitations of facilities and infrastructure to support distance learning, communicates through the teachers-on-duty at the school. The teachers remind parents to jointly ensure that students continue to study at home when they take lesson materials or deliver school assignments. Given the remote location

of the school, the school also creates communication posts for sending or receiving student materials and assignments.

As the conditions are not supportive in the area where I teach, with all its limitations, such as network access, supporting equipment or even family financial issues, the teachers at other schools and I have agreed to continue to interact intensively with parents, especially through teachers-on-duty at schools when parents pick up the learning materials or deliver student assignment to the school. We also formed clusters or posts in the areas in collaboration with the village head as a place for delivering and picking up learning materials for students or for them to submit assignments.

Additionally, other teacher made different efforts to overcome barriers related to the financial problem of students from underprivileged families that hinders the implementation of distance learning. The school and teachers approached the village officials to facilitate these families, as confirmed by NL.

Since not all of my students have ICT devices to support distance learning, we, from the school, communicate with village head or community leaders to encourage the sponsorship of devices that support the implementation of distance learning for disadvantaged students, particularly now that village funds can be used to support village learning during COVID-19. Although this effort has not been optimal, I keep trying to communicate it.

Regarding the limitations of internet access, the bad or the absence of connection, and not all students can access the internet for different reasons. MJ utilizes the government's learning facilities through television and radio broadcasts.

Our effort to overcome the issue of limited internet networks and parents financial is by utilizing the learning programs broadcasted by the government on television and radios. Through the well-structured and scheduled programs broadcasted live on TVRI (national TV) or RRI (national radio), I instruct students to watch them and summarize the lesson.

Another teacher, CLK, encourages students to use low-cost software and free websites because not all schools have subsidized the students and teachers to purchase internet data.

Even though I live in an urban area with good internet access and parents with a relatively good income, distance learning is very burdensome for the students' parents. Moreover, my school has not provided internet data subsidy to students. I do not know the reason for this, perhaps a technical issue. I, therefore, use an economical application to support disadvantaged students, in this case, a home learning application which can be accessed for free.

This is in line with MR, who also implemented a distance learning strategy by recommending free learning sites for students.

To overcome the high cost and reduce the cost incurred by students in participating in distance learning, I recommend free sites, so that students are no longer burdened with other costs than internet access.

Due to the lack of standard guidelines and technical instructions for the implementation of distance learning provided by the government as a reference in learning during the COVID-19 *pandemic*, the school has taken policy steps by formulating criteria for the implementation of distance learning for their schools, as reported by MJ.

To date, the Ministry of Education has not issued specific guidance on distance learning distributed to us at school, so we have taken the initiative to set our standards in the

implementation of distance learning in our school, which has become a reference for us teachers.

Furthermore, JD explained that the absence of guidance from the Ministry of Education makes teachers performed various distance learning. Yet, it also refers to the minimum requirement of learning implementation.

We do not have the guidelines and technical instructions in implementing distance learning. However, the provincial education office issued a policy for us, high school teachers across Aceh, to make a performance report according to the form distributed. Based on the criteria of performance report, we carry out distance learning according to the understanding and initiative, and we report our performance to the school monthly, which is then submitted to the education office.

#### 4. Discussion

The closures of schools due to the COVID-19 pandemic force teachers around the world to turn their face-to-face into online classes (Moorhouse, 2020; Pace et al., 2020). This has an impact on changes in the learning system implemented by the teacher. So that teachers need competence in managing learning that is different from before the COVID-19 pandemic.

Based on the questionnaire data presented in Table 4, it is revealed that the teacher's condition is related to self-confidence, knowledge, commitment and the ability of teachers to use ICT tools and applications for distance learning. Regarding the level of teacher confidence in using ICT tools, it is depicted that it is still low, this is based on the mean value of 2.88.

The confidence of teachers will grow directly by teacher professional development through various training and personal experiences in the implementation of learning; these will have a positive effect on teachers in term of pedagogy when implementing the learning (Eyles, 2018; Valtonen et al., 2015). However, the teacher's low self-confidence in carrying out distance learning is due to the sudden closure of schools, causing teachers not to be ready in conducting distance learning.

Furthermore, based on the result of interview, it showed that the skills and previous experiences of the teachers are not very important for the implementation of pandemic learning COVID-19. Besides, the previous training and experiences do not support the learning (Lipomi, 2020), because they are related to the use of ICT for learning in typical classrooms.

Whereas, the result of questionnaire reveal that teachers are committed to conducting distance learning, with an average of 3.55. In other words, teachers have a strong commitment to distance learning. This can also be seen from the teachers' initiative and creativity in overcoming the various challenges they face when implementing distance learning.

Furthermore, based on the questionnaire data in Table 5 about the implementation of the distance learning process related to guidelines, internet access, the ability of parents and location of residence. Basically, the distance learning process must be supported by a place having proper internet access. Based on the analysis, it was revealed that the residence lacks internet access which results in the students' low mastery of subject (mean 2.99). Furthermore, the obstacles faced by teachers are related to the absence of standard guidelines and technical instructions for implementing distance learning issued by the government as a reference in learning during the COVID-19 pandemic. Based on data exposure, it

can be seen that guidance and guidelines for implementing distance learning during the COVID-19 pandemic are urgently needed by teachers (Mean 3.69).

According to interview result, teachers' efforts to overcome the obstacles they face are through continuous development, both independently and with peers. So, the teacher's self-confidence gradually develops and improves the implementation of distance learning, in particular, when using ICT (Potter et al., 2012; Stambough et al., 2020; Valtonen et al., 2015). In addition to having a positive effect, the experience of using ICT in implementing distance learning during the COVID-19 pandemic not only has a positive impact but also improve teachers' efficiency and innovation in carrying out subsequent learning (Bhat et al., 2020; Skorupinska & Torrent-sellens, 2017). Therefore, for the smooth and successful distance learning process, the government needs to develop and improve teachers' competencies in utilizing ICT; this is necessary to integrate technology in teacher learning practices (Chien et al., 2012; Kaufman, 2014; Yilirim et al., 2009; Yusuf et al., 2020a, 2020b).

Teachers face many shortcomings and obstacles in distance learning, with all the existing limitations. Most schools primarily lack the infrastructure to support distance learning, and many teachers currently lack the confidence or skills to manage distance learning and need supports (Guernsey et al., 2020; Masters et al., 2020). Thus, most teachers use familiar applications they frequently use (Mean = 3.51). As indicated in Figure 1, the use of the WhatsApp application is very high or dominates in the learning process, with 72.2% of teachers using WhatsApp.

The teacher makes use of easy-to-use and existing facilities that are more familiar with the students. On the other hand, while internet access is good, the limited parents' financial ability is a consideration in selecting the application to support distance learning (Baloran, 2020; Brooks et al., 2020; Eyles & Monteburno, 2020; Favale et al., 2020; Goldschmidt, 2020; Masters et al., 2020; Shang, 2016; Viner et al., 2020). The data of this study reveals that the ability of students' parents is low (Mean 2.78), means that most parents are financially struggling.

Furthermore, based on the questionnaire data in Table 6 regarding the selection criteria for ICT in the distance learning process, it relates to the devices used, the selected devices that are tailored to the curriculum and the selected devices based on student needs. Based on existing data, teachers use ICT applications that are often used with grades (Mean 3.51). Furthermore, based on the analysis of the questionnaire data, it was also revealed that the selection of ICT applications was based on the needs and abilities of students (Mean 3.41). This is in accordance with the interview data which revealed that, in selecting online learning applications for distance learning, teachers generally pay attention to student characteristics and conformity with the material being taught, before implementing online learning.

In fact, the different conditions of students and paying attention to the economic conditions of students' parents and places of residence, teachers use the WhatsApp application as a cost-effective alternative. This is in accordance with the questionnaire data analysis of the use of ICT devices or applications in learning depending on availability and accessibility (Mean 3.28). In addition, based on interviews, teachers collaborate with various applications to support the distance learning process. This is in accordance with Figure 1 regarding the graph of the use of distance learning applications during the COVID-19 pandemic starting from WhatsApp, Zoom Meeting, Webex, Google Classroom and other platforms as



virtual classes. Distance learning classes as an alternative through virtual classrooms can be an alternative method for learning (Ng et al., 2020; Talidong et al., 2020).

The use of platforms enabling video conferencing applications such as Zoom, Webex, Google Meet requires higher costs; however, they allow students and teachers to exchange information and communicate, as part of learning activities through online discussion forums and in small or large group meetings (Alt, 2018; Nonthamand, 2020; Pace et al., 2020). Online networks, like Zoom (zoomnow.net) and Blackboard (blackboard.com), offer online forums for multimedia workshops, conferences, and presentations on cell-phones, laptops, and computers. With technology, online platforms extend conventional classrooms into virtual classrooms (Almarzooq et al., 2020; Ng et al., 2020).

Teachers use not only application but also several online learning platforms to facilitate the distance learning process. Based on Figure 2 (the usage of online learning sites), students mostly use *Rumah Belajar*, that are recommended by teachers, based on the government to boost school literacy movements, such as digital literacy and citizenship (Yusuf et al., 2020a; Zaharah & Kirilova, 2020).

There is also an online learning site, called Zenius, under *Rumah Belajar*, as the most frequently used online learning platform during the COVID-19 pandemic by teachers and students during the distance learning. The high ranking of the two websites, as mentioned above, is due to the free contents, such as *Rumah Belajar* operated by the Ministry of Education and Culture. To overcome the high costs incurred by students in participating in online learning, teachers recommend free websites, so students are no longer burdened with additional cost other than the cost of accessing the internet. Besides, programs must be tailored to address the unique needs of vulnerable students (Burdina et al., 2019; Masters et al., 2020).

The efforts and strategies of teachers teaching in rural areas, with all the limitations of the distance learning supporting infrastructure are to communicate with the teachers-on-duty at the school to encourage parents to ensure that students continue to study at home when parents pick up or deliver the students' assignment. Given the distance to schools in remote areas, communication posts are also made for the sending or receiving of students' materials and assignments (Guernsey et al., 2020). Moreover, the ability of parents to facilitate and support students in distance learning is another obstacle (Eyles & Montebruno, 2020; Goldschmidt, 2020). Thus, in this study, teachers have also made initiatives to address the challenges related to the economic conditions of underprivileged students that do not support the introduction of online learning. Schools and teachers also approached the village in facilitating low-income families.

Concerning the complex problems in online learning (Pace et al., 2020) and various obstacles to distance learning, teachers also utilize government-supplied learning facilities through television and radio broadcasts. Moreover, TVRI broadcasts are well-organized and structured. So, teachers instruct students to watch TVRI, listen to national radio or RRI live broadcast materials, and summarizes the lessons.

Meanwhile, regarding the fact that many students with lack of knowledge and motivation to study individually and parents with lack of concern and support in helping students study at home, the teachers do not provide students with difficult homework, and maintain regular contact with both students and parents. The level of support needed for vulnerable students is higher than the others, and there is still a lack of understanding among students, so the support from the family and teachers is necessary (Masters et al., 2020).



Furthermore, the use of full distance learning during a pandemic is also not supported by the location of the students and teachers with restricted access to the internet. As a result, these constraints lead to the low mastery of subject matters by students (Mean 2.99).

Some teachers also encourage students to use low-internet data applications (Tuli et al., 2020) and free sites, such as low-cost e-learning (Brown et al., 2020; Jackson et al., 2020; Yuhatriati et al., 2020), as not every school provides internet data subsidy for students and teachers. So, teachers implement the distance learning strategy by recommending free online learning apps for students.

Regarding the absence of specific guidelines and technical instructions for the implementation of distance learning provided by the government as a reference in learning during the COVID-19 pandemic, this study found that teachers urgently need the guidelines and technical instructions for the implementation of distance learning during the COVID-19 pandemic (Mean = 3.69).

Besides the absence of specific guidelines and technical instructions that causes teachers to encounter some difficulties, there are also some constraints related to the lack of instructors, guidance, and training (Lipomi, 2020), as well as the obstacles related to student and curriculum (Mailizar et al., 2020). Therefore, the challenges faced by teachers often affect the adherence between the curriculum specifications and teaching resources prepared by the teacher (Mean, 3.08). Thus, the schools establish their policies in formulating the requirements of distance learning for their schools. Also, there is no instruction from the Ministry of Education, so the distance learning that the teachers conduct is varied (Tuncer & Tanas, 2011). However, it satisfies the minimum requirement for learning implementation.

## 5. Conclusion

The sudden closure of schools caused teachers to be unprepared for distance learning, even though the teacher has a good understanding of the use of ICT, it is just that the understanding they got in the previous training is relevant for normal classroom conditions, so it does not necessarily apply during the COVID-19 pandemic. At the beginning of school closure, teachers' confidence was generally low in implementing online learning, however then teachers could adjust to environmental conditions and student characteristics. Teacher confidence is inseparable from the teacher's readiness to teach with online learning, mainly related to the ability of teachers to use ICT tools and online learning platforms. This is because there is a difference between the use of ICT in normal learning and learning during the COVID-19 pandemic. Over time the skills and confidence of teachers grow due to good commitment in carrying out distance learning by learning independently or sharing knowledge or experiences with other teachers.

The implementation of distance learning during the COVID-19 pandemic carried out through online learning by teachers in Indonesia has experienced various obstacles. Various ICT tools and online learning platforms are widely available but cannot be directly used by teachers in supporting the implementation of learning. In addition, the geographic factors where students live, where many students do not have good internet network access, and also the economic ability of the students' families do not support the implementation of online learning with various online learning platforms. Furthermore, the absence of clear technical guidelines and instructions for teachers in implementing distance learning,

makes teachers have no reference in implementing distance learning, so that teachers and schools carry out different learning without any minimum standards in implementing learning during school closings.

With the strong commitment of the teachers and education administrators at schools, numerous efforts and programs are made to ensure students continue to learn from home. They start with the strategy of using cost-effective apps, the collaboration between teachers and parents in encouraging students to learn and creating connection posts for students in remote areas who do not have internet connectivity. Furthermore, the school independently takes the initiative to formulate distance learning requirements for their respective schools.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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