



Semi-Online Learning as a Solution to the Digital Divide in Education in Frontier, Outermost, and Disadvantaged Regions (3T)

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Abstract: This research aims to explore semi-online learning practices as a solution to the digital divide in education in the Frontier, Outermost, and Disadvantaged (3T) regions. This research method uses qualitative research conducted at SMK N A Waingapu, East Sumba and SMP B Merauke, Papua. The data collection technique was through interviews and literature studies which were then analyzed using the interactive analysis technique of Miles and Huberman. The results of the research indicate that both schools applied a semi-online learning model to support learning amid limited digital access. SMK N A Waingapu chose to implement a finite face-to-face learning system for students with a weak economy, while SMP B Merauke provided problem modules for students to work on at home. The main obstacle to online learning at the two schools was the digital divide. In addition, SMK N A Waingapu East Sumba and SMP B Merauke also implemented internal policies and took steps to maintain the effectiveness of learning during the Covid-19 pandemic. These steps are the implementation of Circular Letter Number 4 of 2020 about the Implementation of Education Policies in the Emergency Period for the Spread of Coronavirus Disease (Covid-19).

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Introduction

Education is one aspect of life that has been impacted by the Corona Virus Disease 19 (Covid-19) epidemic (Schleicher, 2020; Siahaan, 2020). According to the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), the Covid-19 pandemic has infected at least 407,000 schools, 3.4 million teachers, and 56 million students (Prasetyo, 2021). When Covid-19 first appeared in Indonesia, all levels of education (from early childhood education, elementary school, junior high school, high school/vocational school, and university) chose to conduct learning activities from home to stop the spread of Covid-19. The adoption of online learning is tailored to the capabilities of each institution and is typically accomplished through the use of digital technologies such as Google Classroom, Zoom, telephone, live chat, and so on (Sudarsana, et al., 2020, p.5).

The online learning policy has been in effect in several provinces in Indonesia since March 16, 2020, but it was not implemented in several schools in the regions at the time due to a lack of readiness to conduct online learning—which, of course, required facilities such as smartphones, laptops, or computers, as well as internet constraints (both network quality and the cost of purchasing internet data) (Harnani, 2020). According to Winaya (in Sudarsana et al., 2020, p. 175), there are several barriers to the implementation of online learning, including: 1) technological inequality between schools in big cities and regions, 2) limited teacher competence in the use of learning support applications, 3) limited resources in the use



of technology—for example, the internet, and 4) the lack of an integral relationship between teacher-student-parents in online learning.

Seeing numerous challenges toward online learning, the government, particularly the Ministry of Education and Technology, took steps to address them, including issuing Circular Letter Number 4 of 2020 concerning the Implementation of Education Policies in the Emergency Period for the Spread of Coronavirus Disease (Covid-19) (Mendikbud, 2020) and providing assistance Learning of internet data for students, teachers, and lecturers that can rely on it. The following are the provisions for online learning contained in Circular Letter No. 4 of 2020 about the Implementation of Education Policies in the Emergency Period for the Spread of Coronavirus Disease (Covid-19) point two:

- a) There is no obligation to accomplish curriculum objectives for grade promotion or graduation (point 2a);
- b) Emphasis on life skills education, including the Covid-19 epidemic (point 2b);
- c) Activities and assignments may differ among students depending on their interests and circumstances, taking into consideration gaps in access and learning facilities at home (point 2c);
- d) Evidence and results of home learning activities receive qualitative and meaningful feedback from the teacher—quantitative scores/values are not required (point 2d).

Schools can alter their activities or learning systems with available facilities, as stated in point two of Circular Letter Number 4 of 2020 about the Implementation of Educational Policies in the Emergency Period for the Spread of Coronavirus Disease (Covid-19). One of the efforts of schools to overcome the limitations of technology and internet access in order to continue to deliver effective learning is to implement a semi-online learning system—a combination of online and offline learning (outside the network), for example, students come to school only to take and submit assignments, the rest is communication done via mobile phones (Arika, 2020). This is also consistent with the methods and media for implementing learning from home (BDR) as stated in Circular Letter Number 15 of 2020 concerning Guidelines for Organizing Learning from Home in an Emergency Period for the Spread of Corona Virus Disease (Covid-19) issued by the Ministry of Education and Culture, which states that "*in implementing PJJ, education units can choose an approach (online or offline or a combination of both) in accordance with the availability and feasibility of resources*" (Kemendikbud, 2020).

Education in the 3T regions (frontier, outermost, and underdeveloped) is undoubtedly impacted by the Covid-19 pandemic, given the limited access to Information and Communication Technology (ICT) that is lower than in areas outside the 3T (Mardianto & et al, 2021)—the digital divide, which is the difference in digital use (ICT) caused by economic and social inequality. The majority of study on the digital divide focuses on access to computers, networks, the internet, and other technology (Muchamad, Gani, & Wahyuni, 2020). Even before the pandemic, education in the 3T region faced a number of challenges, and the situation became even more precarious during the Covid-19 pandemic (Arkiang, 2021, p. 60). President Joko Widodo (in Kominfo, 2019) urged all ministers to give special attention to the 3T area in order to get development facilities, one of which is in the field of education—considering that one of the issues of education in Indonesia is access to education in suburban areas.

Arkiang (2021) conducted research on online learning during the Covid-19 pandemic in the 3T region, particularly in East Nusa Tenggara (NTT). According to the findings of his research, the Covid-19 epidemic has degraded the quality of education, particularly in the 3T area, because online learning does not operate effectively. The NTT schools then developed a

methodical, planned, and simple schedule to ease communication between parents and educational institutions using the WhatsApp application, which was the most extensively utilized communication medium during online learning.

Another research, done by Hasan, Thamrin, Rahmatullah, Pratama, and Darwis (2021), focused on the application of learning at various levels of school in the 3T region during the Covid-19 pandemic, particularly in North Morowali Regency, Central Sulawesi Province. He found that the barrier to online learning was a lack of facilities and infrastructure, with economics and technology also playing a role. Online learning did not function properly in North Morowali Regency due to numerous challenges such as low teacher competence, family economic level, internet network, increasing costs during the Covid-19 outbreak, and a lack of support for learning facilities.

Table 1. ICT Development Index (IP-TIK) Category
 (BPS, 2021, p. 5).

Category	ICT Development Index	Graphic Color
(1)	(2)	(3)
High	7,51-10,00	
Medium	5,01-7,50	
Low	2,51-5,00	
Very Low	0,00-2,50	

The 3T regions selected in this research are East Sumba which is part of the Province of East Nusa Tenggara (NTT) and Merauke which is part of the Papua Province. The basis for selecting these two regions is because NTT Province and Papua Province have had the lowest ICT Development Index (IP-TIK) for two consecutive years, with NTT's IP-TIK in 2019 was 4.13 and in 2020 was 4.49, and Papua's IP-TIK in 2019 was 3.29 and in 2020 was 3.35. (BPS, 2021, pp. 5-6). IP-TIK is a standard metric that describes the amount of ICT development in a region at a given time. It may be used to quantify the digital divide and provide information on the region's potential in terms of ICT development (BPS, 2021). BPS (2021) creates eleven indicators that are grouped into three sub-indices that comprise IP-TIK, as shown below.

Table 2. Sub-index and 11 Compiling Indicators of IP-TIK
 (BPS, 2021, processed by researchers)

Infrastructure and Accessibility	<ol style="list-style-type: none"> 1. Number of fixed telephone users per 100 people 2. The number of mobile phone subscribers per 100 people 3. International internet bandwidth per user (bit/s) 4. The proportion of households that own a computer. 5. The proportion of homes that have access to the internet.
Usage	<ol style="list-style-type: none"> 1. Percentage of people who use the internet 2. The number of fixed broadband internet subscribers per 100 people 3. Number of active mobile broadband internet subscribers per 100 people
Skill	<ol style="list-style-type: none"> 1. Average number of years of schooling for people above 15 years old 2. Secondary gross enrolment rate (junior high/equivalent and senior high/equivalent) 3. Tertiary gross enrolment rate (D1 to DIV/S1) education



The topic of semi-online learning techniques implemented at SMK N A Waingapu, East Sumba, and SMP B Merauke was then raised in this research. These two schools were chosen because they are part of the 3T area and have restrictions in terms of technology, networks, and human resources, all of which contribute to the establishment of a digital divide. The existence of a digital divide made online learning at SMK N A Waingapu and SMP B Merauke challenging, therefore the two schools opted to implement semi-online learning approaches. East Sumba and SMP B Merauke as a means of bridging the digital divide.

Research Method

This research approach employs qualitative research that focuses on the meaning, reasoning, and characterization of a situation, and it is extensively utilized to investigate topics connected to daily life (Rukin, 2019). In this study, data were gathered through semi-structured interviews with informants who served as research subjects, as well as literature reviews of government programs, research journals, and news from credible sources. Teachers from SMKN A Waingapu in East Sumba and SMP B Merauke were involved in this research.

The Miles and Huberman model data analysis was used in this study, in which activities in qualitative data analysis were carried out interactively and continuously (continuously) until the data owned by the researcher were saturated—if the subject's answers are not satisfactory, the researcher continues the question until a satisfactory and credible answer is obtained (Sugiyono, 2019). The steps in the Miles and Huberman model data analysis were as follows: 1) data reduction, in which the obtained data were summarized and sorted according to the research objectives, 2) data display (the process of presenting data was in the form of a brief description, charts, relationships between categories, flowcharts, and so on), and 3) conclusion drawing/verification (drawing conclusions or verifying findings) to describe or characterize discoveries that were previously obscure to become clearer following study (Miles, Huberman, & Saldana, 2014).

Results and Discussion

Based on informant interviews, this research discovered that SMK N A Waingapu, East Sumba, and SMP B Merauke faced challenges with online learning during the Covid-19 pandemic. In order to retain learning effectiveness, the two schools decided to use semi-online learning.

Table 3. Interview Results

Findings	Teachers of SMK N A Waingapu, East Sumba	Teachers of SMP B Merauke
Digital divide: Technology and Network	Limited network areas, natural disasters, particularly in early 2021, disrupted network installations, causing the network to become increasingly unstable. Inadequate electronic facilities and network limitations.	Inadequate electronic facilities and network limitations.
	The government's free internet data	The allocation of internet data



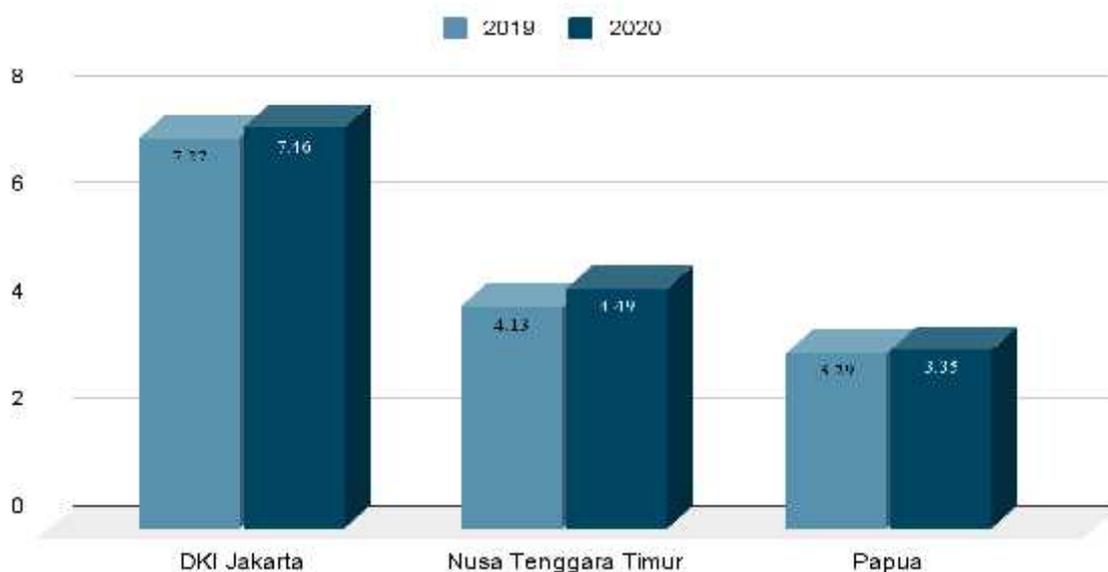
	is not being directed efficiently for two key reasons: not all students have mobile phones, and students frequently change phone numbers.	from the government is not evenly distributed (Not all teachers and students get free internet data)
Digital divide: Human resource	Students are still unable to utilize their laptops and/or smartphones in a competent or dependable manner. In addition, because students range in socioeconomic status from middle to lower, not all have laptops or smartphones, and not all can afford to purchase internet subscriptions.	When using Zoom or Google Meet, the majority of the students are not interested in listening to the teacher. Students keep themselves busy by playing or bothering their peers during Zoom meetings.
	Teachers who do not have laptops are assisted by the school; teachers are also given in-house training in the form of training on the implementation of learning activities and the use of supporting applications such as Google Classroom, and Google Forms, as well as creating learning videos and PowerPoint.	
Semi Online Learning	Implement a limited face-to-face method (semi online) so that all students receive subject content on a distinct schedule for each student, preventing crowding at school.	Giving tasks that aren't too difficult through modules with a processing duration of about two weeks.
		There are students that do not want to come to school and do not complete their tasks.

Key Constraints of Online Learning: The Digital Divide

The overall number of internet users in Indonesia reached 202.6 million, or 73.7% of the population, in January 2021, a 27-million increase from 2020. (Hootsuite, 2021). Despite an increase in internet users, Indonesia still has a digital divide. The digital divide is the difference in how people use and receive Information and Communication Technology (ICT), which includes the gap in internet access, the gap in information access, and the disparity in the usage of digital resources (Norris, 2001, in Choudrie & Davari, 2020). In several Indonesian locations, infrastructure and human resource readiness are still the primary causes of the digital divide (Kuputri, 2020). Residents of Java and other areas with strong economic systems are more aware of Internet connectivity and its supporting infrastructure. This is consistent with findings from study at SMK N A Waingapu, East Sumba, and SMP B Merauke.

The teacher at SMK N A Waingapu in East Sumba indicated that due to different constraints in the field, online learning (without face-to-face encounters between teachers and students) was ineffective. First, the internet network in this location is limited. This was aggravated further by the Seroja natural disaster, which happened in early 2021 and hampered the installation of the internet network, causing the internet network in East Nusa Tenggara (NTT) to become progressively unreliable. As Head of the Meteorology, Climatology, and Geophysics Agency (BMKG) (in Chaterine, 2021), Dwikorita Karnawati declared that the tropical cyclone that happened in NTT was the second strongest after the previous one in 2008. According to the National Disaster Management Agency (BNPB), the flash flood triggered by the tropical cyclone is the natural disaster with the greatest impact in the province of NTT in the last 10 years (Chaterine, 2021). This natural disaster destroyed public infrastructure. Second, human resources (teachers and students) are still not competent in using laptops and/or cellphones to facilitate learning. Third, there are educational facility restrictions. In this example, the majority of pupils at SMK N A Waingapu, East Sumba come from moderate to lower socioeconomic backgrounds, therefore they have difficulty accessing the internet network adequately; in fact, some of them do not even own a laptop or smartphone.

SMP B Merauke faces the same issue, namely the absence of adequate electronic equipment (both smartphones and laptops) that can support online learning, particularly on the student side—where the majority of SMP B Merauke students are likewise from the middle to lower economic class. Aside from that, there are additional challenges at SMP B Merauke, such as low student enthusiasm for online learning, which can be described as insufficient. When using Zoom or Google Meet, students are less likely to focus on the teacher's instruction and are more likely to be distracted by their peers in the Zoom session.



Picture 1. IP-TIK of Three Provinces: DKI Jakarta, Nusa Tenggara Timur, and Papua in 2019 and 2020 (BPS, 2021, p. 5-6, processed by researchers).

The absence of access to ICT is something that both SMKN A Waingapu East Sumba and SMP B Merauke share. This is consistent with data from 2019 and 2020 issued by BPS in 2021, which reveal that NTT Province and Papua Province have the lowest IP-TIK, by a



wide margin when compared to DKI Jakarta Province, which has 7.27 IP-TIK in 2019 and 7.46 in 2020. (BPS, 2021). In other words, the high digital divide is the biggest impediment to online learning in the 3T region, particularly in East Sumba, NTT Province, and Merauke, Papua Province.

One of the causes of the digital divide in the two provinces, according to the BPS study, is directly tied to the access and infrastructure sub-index and usage sub-index. In the access and infrastructure sub-index, one of which is the percentage of households owning or mastering computers, NTT Province only reached 13.56% in 2019 while Papua only reached 11.41% (BPS, 2020). Regrettably, the BPS data does not include information on ownership and control.

Furthermore, one of the usage sub-indices concerns the percentage of people who use the internet. According to BPS data (2020, pp. 204-205), the percentage of SMA/equivalent students in NTT Province who accessed the internet in the previous three months was only around 37.98%; on the other hand, the percentage of junior high school students/equivalent who accessed the internet in the previous three months in Papua Province is very low, at only 17.56%. Interestingly, despite being in a province with low IP-TIK, teachers at SMK N A Waingapu in East Sumba are concerned about ICT capabilities. The existence of internal policies demonstrates this. First, the principal assists teachers who do not have laptops so that all teachers have laptops and are gradually learning to make videos of learning materials. Second, schools assist teachers who lack credit or internet data by providing wi-fi so that they may generate materials and conduct semi-online learning. Third, schools hold meetings with teachers in the form of in-house training, in which schools provide training in the form of special materials to support semi-online learning, such as training on applications such as Google Classroom, Google Forms, PowerPoint, and creating videos of learning materials.

On the other side, in order to address internet access barriers, the government has attempted to implement a Learning Quota (Kemendikbudristek, 2021). However, in practice, SMK N A Waingapu and SMP B Merauke continue to encounter difficulties in distributing and utilizing quotas. At SMK N A Waingapu, the problem arose because students frequently changed their phone numbers, even though they had been recorded from the beginning, resulting in the distribution of the free quota being unable to take place because the student's number was no longer active. Meanwhile, at SMP B Merauke, the distribution of the free internet data is unequal for both students and teachers—some can, while others cannot—due to technical limits unidentified to the school.

Semi-Online Learning as a Solution

Learning activities must continue to be conducted in the middle of numerous issues that arise so that students do not lose their learning experience (Bona, 2021). Obstacles to online learning must be overcome so that 3T learning activities have a genuine impact on the growth of students' knowledge and creativity. One method used to overcome what was done by SMK N A Waingapu, East Sumba, and SMP B Merauke was to conduct semi-online learning. Semi-online learning is a combination of online and offline (outside the network) learning; in practice, it includes the activities of students who come to school only to take and submit assignments; the rest of their communication is done through mobile phones (Arika, 2020) or other practices that modify school policies.

SMK N A Waingapu East Sumba uses a limited face-to-face system to ensure that all students receive subject matter on a different schedule so that there is no crowding at school. This is a solution that has been used thus far in an effort to make it easier and more accessible to students from the medium to lower socioeconomic classes, particularly those who do not



have devices (either computers or cellphones) to perform online learning. Meanwhile, at SMP B Merauke, the semi-online learning practice was carried out by giving modules, with most students coming to school to take the module and complete the assignments that were given within two weeks.

Based on the findings of the research, SMK N A Waingapu, East Sumba, and SMP B Merauke implemented Circular Letter Number 4 of 2020 concerning the Implementation of Educational Policies in the Emergency Period for the Spread of Coronavirus Disease (Covid-19), particularly point 2b, which reads "Learning activities and tasks." Learn from Home can differ across students depending on their own interests and circumstances, including the gap in access/learning facilities at home." (Mendikbud, 2020) and Circular No. 15 of 2020 on Guidelines for Organizing Learning from Home in an Emergency Period for the Spread of Coronavirus Disease (Covid-19) on the permissibility of a mixed online and offline (or semi-online) learning system (Kemendikbud, 2020).

In actuality, semi-online learning (particularly at SMP B Merauke) continues to face a number of issues or challenges, particularly those arising from students' refusal to attend school and failure to complete given assignments. As a result, the practice of semi-online learning at SMP B Merauke is limited because students are disengaged in learning and tend to be indifferent to learning. However, semi-online learning is the best option for SMP B Merauke and SMK N A Waingapu East Sumba since they do not rely on the internet network or electronic facilities, which have been the main obstacles in daily life, particularly when it comes to pursuing online education in Indonesia. Offline learning, on the other hand, is the type of learning that the two schools are most excited about.

Conclusion

According to the findings of this research, both schools chose semi-online learning as a means of bridging the digital divide. SMK N A Waingapu, East Sumba, implements a limited face-to-face learning approach for students from middle to lower socioeconomic backgrounds, whereas SMP B Merauke provides problem modules for students to work on at home. However, semi-online learning, particularly at SMP B Merauke, continues to face issues connected to students' low enthusiasm for learning—not working on module questions and not even taking the module at school. Online learning at SMK N A Waingapu, East Sumba, and SMP B Merauke encounters various challenges, including a lack of supporting resources (laptops, smart phones, and adequate internet connectivity) and a lack of student motivation in participating in online learning (especially at SMP B Merauke).

In other words, the digital divide is the primary impediment to online learning at the two schools. Furthermore, SMK N A Waingapu East Sumba and SMP B Merauke create internal regulations and make initiatives to keep learning effective throughout the Covid-19 pandemic. These procedures are in accordance with Circular Letter No. 4 of 2020 on the Implementation of Education Policies during the Emergency Period for the Spread of Coronavirus Disease (Covid-19).

Recommendation

The research recommendation for the Educational institutions and for Schools (both from SMK N A Waingapu and SMP B Merauke) is to increase the socialization of Learning Quotas in order to maximize acceptance and utilization among teachers and students in the Frontier, Outermost, and Disadvantaged (3T) areas. Furthermore, dialogical communication between teachers, students, and parents is required to enhance students' poor interest in learning and foster an effective learning environment.

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